Just Energy Transition on the local level

Perspectives from community members in the coal-dependent town of Ermelo, South Africa

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Student: Dax Eisen
Student number: 2395401
Supervisor: dr. Eric Cezne
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Abstract

This thesis has explored the perspectives of coal-dependent communities in Ermelo, South Africa, on the energy transition through the lens of the three-tenet framework of energy justice. Methodologically, the research employs qualitative methods, including participatory observation, semi-structured interviews, and a focus group discussion, to gather insights from community members and topic-focused experts. The research identifies significant concerns across distributive, recognition, and procedural justice. Communities fear that phasing out coal will exacerbate existing socio-economic challenges, including unemployment and energy poverty, while lacking adequate consultation and participation in decision-making processes. The study further highlights the ingrained economic, cultural and livelihood dependency on coal and the necessity of integrating local needs, awareness, and knowledge into decision-making surrounding an energy transition. Findings suggest that a just energy transition must address systemic socio-economic inequalities, ensure transparent and inclusive decision-making, and recognize the cultural and practical of coal to these communities. In conclusion, a just energy transition requires the need to acknowledge historical inequalities and ensure the voices of the communities are heard.

Content

1. Introduction

In November 2022, approximately one hundred people gathered at a primary school in the town of Komati, South Africa. In a meeting, organized by the national government, they were informed that the Komati coal-fired power plant, the primary source of employment in the town, would be decommissioned as part of South Africa's efforts to decarbonize its economy. The announcement was met with anger and fear by the residents, who were concerned about how they would find work and sustain themselves without the coal industry. The timing of the consultation was particularly criticized, as the power station had already been closed four days prior to the meeting without notice to the community. The people felt like they had been lied to and that plans were made behind their backs. ''This is not justice!'', an inhabitant of Komati exclaimed after consultants ended the meeting (Groundworks, 2022).

The decommissioning of the Komati coal power plant has caused uproar among communities in South Africa who are dependent on coal in terms of employment and livelihood (Oxpeckers, 2023; Nel et al., 2023). To understand this dependency, it is important to first look at South Africa's coal sector from a national perspective. The country is significantly dependent on coal in terms of energy supply. South Africa's energy sector exists for 88.9% of fossil fuels, of which almost 80% are coal (Akinbami et al., 2021). Moreover, the coal sector is a major source of employment. It is estimated that around 91.000 people are directly employed in the coal industry (Statista, 2022) with many more being indirectly employed (Nel et al., 2023). Looking through an environmental lens, coal is also responsible for most of South Africa's CO2 emissions, making the country the 14th largest emitter of greenhouse gasses globally (Statista, 2023).

In the wake of the urgent global need to cut CO2 emissions and combat climate change, the South African government has officialized its ambitions to transform its energy system based on fossil-fuels to renewable sources like solar, wind and hydrogen in its first National Determined Contribution (NDC) (Department of Environmental Affairs, 2016). This process is also often referred to as an 'energy transition' (see e.g. Baker et al., 2014). In South Africa's 2021 updated Nationally Determined Contribution (NDC), the country emphasized the urgent need to reduce coal production and consumption. As a result, plans have been announced to gradually close coal mines and coal power plants (UN, 2021).

An important topic within the scholarship of energy transitions is the expectation that an energy transition will produce and, most likely, perpetuate existing winners and losers of the energy system. Whereas winners will benefit from renewable sources of energy in the form of lower emissions, employment opportunities and technological innovations, losers will carry the burdens as they often deal with a lack of opportunities and, thus, access to the system (Carley & Konisky, 2020). Considering these concerns for increasing inequalities, the discussion of how an energy transition can be realized in a just way has gained increasing importance over the last decades (Wang & Lo, 2021; Williams & Doyon, 2019).

As illustrated by the Komati coal power plant case, one group at high risk of becoming 'losers' of a new energy system are coal-dependent communities. While struggling with inequality, unemployment and poverty (Cock, 2019), these communities often lack resources making them ill-prepared to deal with the expected down-scaling of mines and closure of coal power plants (Marais, 2021). These impacts will become especially significant in the province of Mpumalanga, where most of South Africa's coal sector is based. Following Nel et al (2023), expected closures of coal mines and power plants will cause many jobs to be lost, local economies to be significantly impacted and social unrest to increase.

Moreover, due to their marginalized position, coal-dependent communities often face exclusion from decision-making processes. Following Nel et al (2023), the national, provincial and local governments often lack transparency in decision-making and fail to consult communities about who they make decisions. This results in a lack of awareness and participation (Mirzania et al., 2023). , coal-dependent communities fear that with an energy transition this exclusion will be worsened.

To ensure that people and communities vulnerable to such exclusion will be treated fairly within the process of an energy transition, the South African government has adopted the idea of a just energy transition (JET) (Mirzania et al., 2023; Winkler et al., 2023). This started in 2020 with the appointment of the Presidential Climate Commission (PCC), a commission dedicated to ensuring a just and equitable transition towards a low-emissions and climate-resilient economy (PCC, 2022). In a document called the 'Just Transition Framework', the Presidential Climate Commission (PCC) laid out its plans and visions for a just transition in South Africa (PCC, 2022). Following the PCC, a Just Transition aims to achieve quality of life for all South Africans, contributes to the goals of decent work for all, and puts people, and especially those who are most impacted, at the center of decision making while increasing the resilience of the economy and people through affordable and decentralized renewable energy systems (PCC, 2022).

1.1 Research problem

In existing literature, South Africa's energy transition has received increasing attention (Mirzania et al., 2023; Cock, 2019; Tyler & Mgoduso, 2022). However, following Marzania et al. (2023), a knowledge gap exists on the perspectives of local communities on an energy transition. Integrating the perspectives and needs of local communities is important for the development of an energy transition, as it builds trust between decision makers and local communities (Perlaviciute, 2018), adds valuable local knowledge to the discussion (Swilling and Annecke, 2012), prevents conflicts, stimulates social cohesion (Caldecott et al., 2017) and, is crucial for achieving justice within the process of an energy transition. The knowledge gap stems from the fact that much of the discussion on a just energy transition is centered on the techno-economic implications rather than the socio-economic and environmental implications (Burton et al, 2019). This entails that scholars and decision-makers mainly look at how an energy transition would impact South Africa's energy security and Gross Domestic Product (GDP), rather than also taking into account the broader impacts on vulnerable communities and on the environment.

To acquire valuable insights on this topic, more empirical qualitative research is needed to better understand the relationship between decision-making and the individuals and communities directly affected by an energy transition (Marais, 2021). By analyzing the perspectives from coal-dependent communities on an energy transition, this thesis will contribute to addressing these insufficiencies.

1.2 Research aim

This thesis sets out to explore how an energy transition is perceived by coal-dependent communities in South Africa. With these communities often dealing with poverty, unemployment and inequalities, understanding their perspectives is important to limit injustices from happening in the implementation process of an energy transition (Marzania et al., 2023). This thesis aims to contribute to this understanding through a case study of three communities in Ermelo, a town situated at the heart of South Africa's coal industry. To analyze perspectives, the three tenet-framework of energy justice as explained by Jenkins (2016) has been used as it offers a theoretical foundation for identifying and analyzing issues related to energy challenges (Lee & Byrne, 2019). The three-tenets of the framework; distributive, recognition and procedural will form the guiding structure of this thesis. They will be discussed more thoroughly in chapter 3.

2. Geographical context

The following chapter will showcase the national and local context in which this research has taken place. The aim of this chapter is to examine how coal mining has influenced the socio-economic landscape of the research area and to anticipate how an energy transition is likely to reshape the current situation. By exploring different strands of literature, this chapter will provide an account of the geographical context in which this study has taken place.

2.1 Ermelo

This study has been conducted in Ermelo. Ermelo is a town with 131,000 inhabitants situated in the middle of Mpumalanga province (see figure 1). The main languages spoken in the town are Zulu, English and Afrikaans. Like many towns in South Africa, Ermelo has a colonial past. Coupled with the influence of apartheid, the political system that segregated people based on race, this has resulted in significant inequalities within the town. Many, primarily, dark skin-coloured communities live in impoverished circumstances, having little access to energy, electricity and clean water. Moreover, due to a lack of education, infrastructure and services, there is often little opportunity to escape this marginalised position. Another problem faced by many communities is unemployment. Besides working in the coal sector, as I will address in the section underneath, there are not many alternatives, leaving community members employment and without an income.

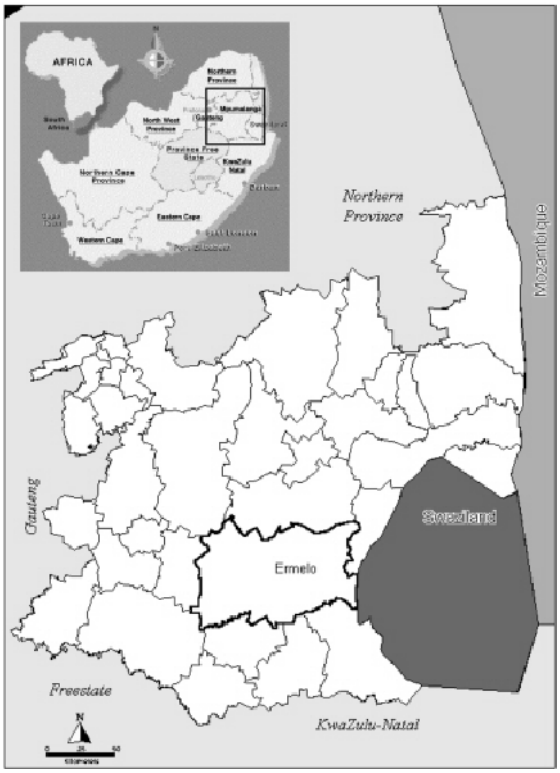

Figure 1: Map of Ermelo. Source: (Durheim & Harris, 2003).

Coal forms the economic backbone of Ermelo. According to an estimate of a local environmental organisation in Ermelo, around 80% of the working population works in either coal processing, coal mining or coal transport (Oxpeckers, 2023). Camden power plant, located approximately 15km outside the town, has been the main employer of people in Ermelo. However, following the plans of the South African government to phase out coal, Camden is planned to be decommissioned in 2025.

In terms of mining a difference should be made between large-scale mining (LSM) and artisanal small-scale mining (ASM) (Rodríguez-Novoa, 2023). In terms of LSM, which describes mining with large machinery, 12 mines are located in or near Ermelo. In terms of ASM, which describes mining with small or no machinery often conducted by individuals, Ermelo has around 3000 artisanal miners who mostly mine from one of 15 abandoned mines surrounding the town. Artisanal miners play a crucial role in Ermelo, selling coal to local communities who use it for cooking and heating during periods of electricity outages. Artisanal mining is often associated with physical hazards, due to the dangerous state of abandoned mines. Due to these safety concerns and the impact of artisanal mining on the rehabilitation efforts of abandoned mines, it is frequently criminalized by official authorities (Mhlongo, 2015; Oxpeckers, 2023).

2.2 Implications of an energy transition

Communities in Ermelo and other towns in Mpumalanga rely heavily on coal for income and livelihood, yet also suffer from its negative impacts. According to Cock (2019), air and water pollution from coal cause significant health problems, while dispossession and loss of agricultural land cause communities to experience loss of livelihood. Additionally, mining companies and government institutions frequently fail to provide transparency regarding the social licenses under which they operate, keeping local communities uninformed (Marais et al., 2023).

In the context of an energy transition, these issues may worsen. Burton et al. (2019) highlights that closing coal plants and mines can lead to massive loss of jobs and unemployment without alternative opportunities for displaced workers. Although the national government suggests renewable energy as an alternative, Nel et al. (2023) argue that lack of awareness and education could limit opportunities for displaced workers to work in this sector. Burton et al. (2019) also warn that coal production reduction could disrupt regional economies heavily dependent on the sector. Marais (2024) draws parallels with the Free State goldfields, where, during the 1980's, significant job losses and a collapse of the economy were experienced due to heavy reliance on the gold sector and lack of a diversified local economy. Cock (2019) highlights the issue of land use, noting that mining companies frequently abandon mines without rehabilitation once mining operations stop, despite the requirements of their social license. This neglect causes the land unusable for alternative economic development or community use. Cock (2019) cautions that these issues could be exacerbated with the anticipated mine closures during an energy transition.

Moreover, scholars argue that an energy transition is likely to exacerbate the existing inequalities that were entrenched during the apartheid era. Many communities in Mpumalanga have become dependent on coal for income and livelihood because of their marginalized positions and lack of opportunities (Motau, 2023). When coal is then phased out without a proper plan or framework on how to include communities in the "life after coal" (Burton et al., 2019, p.5), these inequalities are likely to be exacerbated.

2.3 Just Energy Transition

In order to prevent these injustices from continuing or even worsening during the process of an energy transition, there is a growing realization in scholarship to see justice as an integral part of any energy transition (e.g. Mirzania et al., 2023; Swilling, 2016). In South Africa, much of the discourse surrounding the 'just energy transition' is based on labor implications (Cock, 2019). The general presumption is that for an energy transition to be just labor-wise, coal-workers who lose their jobs should be re-deployed within similar employment sectors, re-skilled for alternative employment sectors or compensated financially (Todd & McCauley, 2021; Nel et al., 2023). However, the discourse surrounding just energy transition is starting to take a broader scope, also involving broader economic, social and environmental aspects (Motau, 2023; Cock, 2019). Much of the discourse emphasizes the importance of including coal-dependent communities in the development of the renewable energy sector, ensuring that these communities do not face additional burdens during the transition (Todd & McCauley, 2021). This includes creating awareness programs (Mirzania et al., 2023), ensuring that local communities are involved in the planning and implementation processes (Cock, 2019), ensuring the access to energy and clean drinking water (Oxpeckers, 2023) and offering opportunities in terms of local economic diversification (Nel et al., 2023).

As mentioned before, with the publication of the 'Just Transition Framework', the South African government has, on paper, also adopted the notion of justice within energy-transition planning. This adoption is likely stimulated by the Just Energy Transition-Partnership (JET-P). In this partnership with the European Union and the United States, South Africa has been given a commitment of $8.5bn to contribute to its efforts to phase away from coal while supporting and recognizing vulnerable communities (UN, 2021).

2.4 Barriers facing the achievement of justice

2.4.1 The Mineral-Energy Complex

Despite the partnership, Baker & Burton (2024) state that some doubts exist whether an just energy transition can be achieved in coal-dependent towns like Ermelo. At the basis of these doubts is South Africa's Mineral-Energy Complex (MEC). This concept describes the interdependence of energy and mining in South Africa, where the economy and energy security have become heavily reliant on these sectors. The MEC has created significant barriers to South Africa's energy transition. Policies favour the MEC by ensuring cheap electricity and labour for mines and heavy industries (Fine & Rustomjee, 1996). Additionally, infrastructural and technical investments prioritise the MEC, making it financially difficult to invest in renewable energy (Froestad et al., 2018). Furthermore, the economic and political interests tied to the MEC have empowered large mining companies to influence political decisions, maintaining the status quo and impeding progress toward an energy transition. Marzania et al. (2023), state these barriers have caused a system of inequality and injustices with regards to energy access and community involvement. The dependency on the MEC makes a shift away from this unjust system structurally difficult (Baker & Burton, 2024).

2.4.2 Barriers identified from literature

From literature multiple other barriers could be identified. Firstly, with many institutions starting to adopt 'just energy transition' in their policies and plans, there are also multiple ideas of what the term means and how it could be best implemented. To date, South Africa does not have an overarching framework which gives direction to how exactly a just energy transition should be interpreted and how it can be achieved (Baker & Burton, 2024). Secondly, there is little cooperation between the different governmental layers on how to achieve a just energy transition. As a consequence, there is no coherent plan on how to tackle injustices and implement a just energy transition (Marzania et al., 2023). Nel et al. (2023) adds that especially local governments often lack resources, capacity and visions to deal with challenges resulting from an energy transition. Thirdly, a knowledge gap exists between the needs of local communities and the plans of the government. Following a report of Oxpeckers (2023) coal communities are not consulted by the government and also do not incorporate specific needs of communities in their plan-making.

2.4.3 Implications for this research

The literature indicates that local governments often lack the resources, capacity, and vision needed to manage an energy transition effectively. This could impact how communities in Ermelo view their local authorities and their overall trust in any transition process. Furthermore, the knowledge gap between government plans and community needs could lead to policies that are poorly adapted to local contexts, potentially exacerbating injustices. This thesis aims to close this gap. Furthermore, by looking how communities at ''the frontline'' of the energy transition perceive justice within an energy transition, this thesis aims to build on the understanding of how the concept of a just energy transition should be interpreted (Oxpeckers, 2023).

3. Theoretical framework

In this thesis a framework of energy justice will be used to explore how a just energy transition is perceived by coal-dependent communities. This chapter will highlight the fundamental theories and concepts belonging to this framework by analyzing existing literature. The first concept that will be discussed is energy justice and its implications for this thesis. Secondly, I will present the three-tenet framework as formulated by Jenkins et al., (2016) and discuss each of its pillars and its relation to energy justice. Thirdly, I will look at how the three-tenet framework has been applied in community literature.

3.1 Energy justice

Over the last years, energy justice has emerged as an interdisciplinary framework to deal with injustices produced by the energy sector. Energy justice focuses on the question on how the burdens and benefits of the energy system should be distributed in order to create a fair and equal system (Jenkins et al., 2016). Moreover, energy justice revolves around the principle that every person should have access to energy that is affordable, safe, sustainable, and sufficient to maintain a decent quality of life. Additionally, it emphasizes the importance of giving individuals the opportunity to participate in and influence energy decision-making processes with the power to enact change (Heffron, 2022). Within academia, energy justice is a fairly new topic (Heffron, & McCauley, 2017). In their 2015 paper, Sovacool and Dworkin were the first to emphasize the importance of integrating the concept of justice into energy scholarship. From a philosophical perspective, they argued that existing energy analyses are inadequate for addressing the significant threats posed by climate change, pollution, and energy insecurity. Hereby advocating for a new moral framework to better address these challenges and ensure a just and equitable approach to energy policy and practice.

Furthermore, within literature, energy justice is often considered a sub-branch of environmental justice, which focuses on the fair distribution of burdens and benefits of environmental issues (Rasch & Kohne, 2017), and climate justice, which seeks to resolve injustices emerged from climate change (Schlosberg & Collins, 2014). These branches of justice have often been discussed in relation to each other in what is called CEE (Climate, Energy and Environmental) scholarship (see e.g. McCauley & Heffron, 2018). Taking into account the limited space, this thesis will focus primarily on energy justice, meaning that primarily injustices emerging from the production and consumption of energy will be discussed. However, with an energy transition being likely to extend beyond the notion of energy justice alone (Jenkins et al., 2016; Fuller & McCauley, 2016), environmental and climate injustices resulting from an energy transition will be taken into account in the analysis of this thesis. This will be done by using the three tenet-framework of energy justice.

3.2 Three-tenet framework

Within energy justice scholarship, the three-tenet approach is one of the most widely used frameworks (Lacey-Barnacle et al., 2020). The framework exists of three tenets each representing a different form of justice. These forms are; distributive justice, recognition justice and procedural justice (see figure 2) This thesis will use the three tenet framework as formulated by Jenkins et al. (2016). In what they call their ‘’what, who and how’’ approach, they argue that energy justice is to be analyzed by identifying *what* concerns there are (distribution), *who* it affects (recognition) and *how* injustices can be remediated (procedural). In this section, each tenet will be explained separately and its different components will be discussed as found in literature.

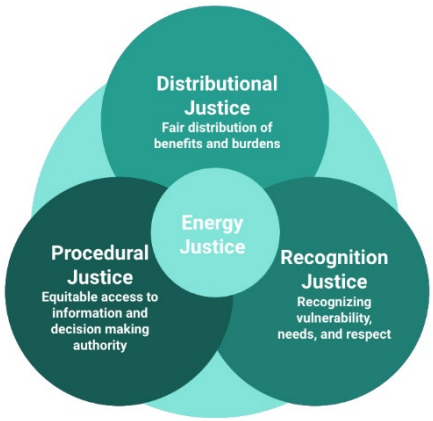

Figure 2: The three tenet framework (source: Aspen global change institute, 2023).

3.2.1 Distributional justice

Distributional-based justice focuses on the fair distribution of energy-related benefits and ills among all members of society regardless of individual or communal characteristics (e.g. race, income, gender) (Jenkins et al., 2016). While this tenet encompasses a wide range of energy-related problems, with regards to an energy transition, three important pillars can be identified: equitable access to clean, affordable and reliable energy for all communities fair allocation of environmental burdens resulting from the energy system and an even distribution of adapting and mitigating responsibilities to an energy transition (Carley & Koninsky, 2020; Jenkins et al., 2016). Within these pillars, not only the material burdens and benefits are important (Grossmann & Trubina, 2021), non-material burdens and benefits like mental health, self-worth and feelings of identity should also be considered.

3.2.2 Recognition justice

Recognition-based justice revolves around the right representation, equal rights and freedom in speech for every individual (Jenkins et al., 2016). This involves assessing existing cultural valuation and distinctiveness and removing any unjust power-relations that exist between them (Hurlbert & Rayner, 2018). Justice is then reached if individuals’ and communities’ needs and interests are recognized despite their culture, race or possibly lower social or economic status. This matter is highly relevant in South-Africa. Monyai et al. (2023), state that poor communities in South Africa are constantly being marginalized because of power-relations stemming from the apartheid period. The interests of these poor communities stand opposite of those higher on the socio-economic ladder, leaving them with little social and economic opportunities.

3.2.3 Procedural justice

Procedural-based justice seeks the inclusion and equal treatment of all actors involved in the decision-making process of the burdens and benefits of an energy system (Jenkins et al., 2016). As the name states, procedural justice is involved with the legal and governmental institutions of a system. To create fair decision-making it is of importance that these institutions are transparent (see e.g. Michalena & Angeon, 2009), lack a bias towards a certain outcome and represent marginalized communities in these processes (Mundaca et al., 2018). Moreover, procedural justice refers to the representation within institutions. The unequal representation of groups in governmental bodies, businesses and non-governmental entities (e.g. labor unions) can cause unjust decision-making to be taking place. In South Africa, marginalized communities frequently face this type of injustice as third parties with differing interests often represent their voices (Nel et al., 2023).

3.3 Three-tenet framework in literature

Following Heffron (2022), the three-tenet framework is a sufficient tool to identify injustices within energy transitions. A distinction, however, should be made between using the framework as a practical tool or as a theoretical tool. Following the aim of this thesis, which is identifying the perspectives of coal-dependent communities through the lens of energy justice, the three-tenet framework will be used as a theoretical tool as it allows for a conceptual analysis of the distributional, recognition, and procedural injustices experienced by communities (see e.g. Velaso-Herrejon & Bauwens (2020), who used the three-tenet framework in a similar way in a case-study in Mexico). Building on the principles of the three-tenet framework, Baker et al. (2019), propose the addition of a fourth pillar, namely restorative justice. Restorative justice focuses on whether injustices emerged from historical processes will be remediated. Whereas this thesis has not chosen to use this pillar in the energy justice framework, it will be taken into account as an underlying thread of the other tenets of justice.

A limitation of the three-tenet framework is that much of the scholarship surrounding energy justice is focused on developed countries rather than developing countries (Lacey-Barnacle et al., 2020). Consequently, many case studies apply the three-tenet framework to developed countries. While such case-studies are useful, it does contribute to the limitation of energy justice's theoretical foundation being mainly based on 'western' ideas (Lacey-Barnacle et al., 2020; Sovacool et al., 2017). Because of this, it can be questioned whether the implications of energy justice in the western context also depicts justice in non-western contexts. While the three-tenet has been applied in non-western contexts (as discussed in section 3.4), more research is needed to understand how the concept of energy justice can be theorized and applied in a set of countries that is expected to take more than half of the total energy demand in the upcoming decades (Lacey-Barnacle et al., 2020). By applying the three-tenet framework of energy justice in South Africa, this thesis aims to add to the understanding of energy justice in the global south.

3.4 Application of the Three-Tenet Framework in community research in the global south

Several studies have applied the three-tenet framework of distributive, recognition, and procedural justice to understand how energy transitions can cause injustices (e.g. McCauley et al., 2016 or Velasco-Herrejon & Bauwens, 2020). This section will look at how the three tenet-framework has been applied to community-based research. Furthermore, as pointed out by Lacey-Barnacle et al. (2020), much of the energy justice scholarship focuses on developed countries in the global north. Highlighting the importance for more research about energy justice in the global south and acknowledging the topic of this research, this section focuses specifically on studies conducted in South Africa and other countries located in the global south.

Distributive Justice in Community Research

Mohlakoana (2023), in her research in Mpumalanga, South Africa, emphasizes the importance of equitable benefit distribution during energy transitions. She points out that communities economically reliant on coal should be provided with opportunities to reskill or transition into other sectors as coal is phased out. Given the marginalized status of these communities, as detailed in chapter 2, providing employment alternatives or financial grants is essential to mitigate the unequal distributive impacts of the energy transition on coal-dependent communities. Looking at energy access, a study by Lacey-Barnacle et al. (2020) explored the distributional justice implications of renewable energy projects in rural areas of Kenya. They found that while renewable energy projects brought significant benefits such as improved energy access and reduced energy costs, these benefits were not always fairly distributed. Communities that were already economically disadvantaged often received fewer benefits, leading to feelings of injustice and resentment. Following the International Energy Agency (IEA, 2022), a problem with renewable energy is that communities are often not aware about how renewable energy works, how they can benefit and why it is implemented. Following this, a lack of recognition justice (awareness) and procedural justice (consultation) can lay at the basis of distributive injustices.

Recognition Justice in Community Research

The importance of recognition justice is highlighted by Velaso-Herrejon & Bauwens (2020) in their study about community acceptance of wind energy in Mexico. They state that communities are more likely to accept initiatives of renewable energy if policy-makers respect the indigenous identity of communities. This entails respecting their cultures, using language which is understandable for all parties involved and listening to the specific concerns and needs of a community. Without the recognition of justice implications, communities are likely to resist initiatives due to fears of being subjected to an unjust extractive system (Velasco-Herrejon & Bauwens, 2020). Following Setyowati (2021), acknowledging and addressing the political rights and vulnerabilities of underrepresented groups is an important implication for recognition justice. In Indonesia, remote and indigenous communities often lack access to electricity due to large-scale, grid-focused policies that overlook small-scale, off-grid renewable solutions. This, in turn, can lead to distributive injustices, where communities lack access to energy due to their marginalized position leading to exacerbated inequalities. One aspect of recognition justice under-researched in the global south context, but often mentioned in the global north context, is the interconnectedness of coal and communal cultural heritage. In a case study in Wales, Berger et al. (2020) mention that the common dependency of coal has shaped communities' feelings of solidarity, resilience and heritage. Furthermore, Lewin (2017) who did a case study of coal-dependent communities in the Appalachians (USA), highlighted that coal mining enhanced communities' feelings of self-sufficiency, family values and pride, making that despite the negative influences of coal on the region's economy, health and environment, communities strongly supported the production of coal.

Procedural Justice in Community Research

Nel et al. (2023), highlighted the importance of procedural justice in South Africa's coal-dependent communities. They found that top-down approaches to energy policy often led to feelings of disenfranchisement and opposition among local communities. In contrast, bottom-up approaches that emphasized community participation and social cohesion were more effective in achieving equitable outcomes. The study suggests that involving communities in the governance process can lead to higher levels of acceptance and support for energy transitions. Highlighting the importance of transparency in procedural justice, Marais et al., (2017) state that in South Africa, there are problems with the public access to information about policies and decision-making processes. As a result, decision-making becomes a one-sided affair: ''if you were not present, you remain unaware and uninformed unless and until the final outcome of that discussion – the policy itself – is released'' (Marais et al., 2017, p.46).

This issue is intrinsically linked to distributive problems faced by marginalized communities, who frequently lack access to essential information channels such as the internet (Noruwana et al., 2018).

3.5 Conceptual framework

The conceptual framework presented in figure 3 illustrates the framework used in the thesis to analyze the perspectives of coal-dependent communities on energy transition through the lens of energy justice. The collected perspectives will be analyzed through looking at distributive justice, recognition justice and procedural justice. By analyzing these, an account on how energy justice is perceived in an energy transition is given. The framework aims to bring together the different strands of justice to conceptualize what a just energy transition means for these communities, forming the foundation of the research.

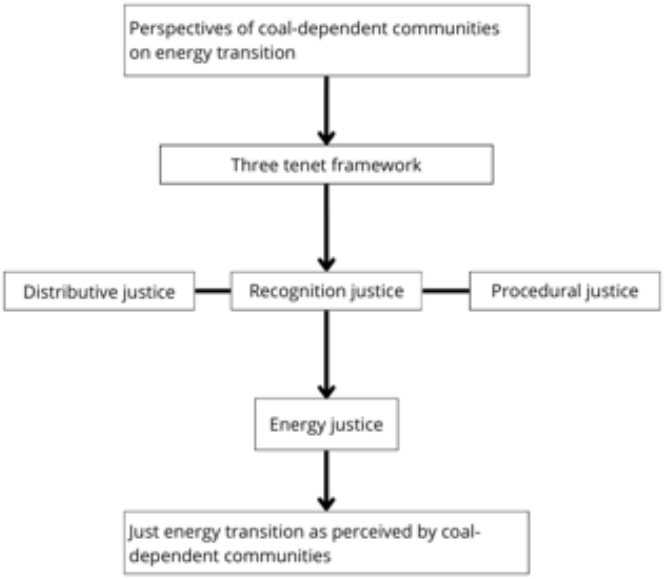

Figure 3: Conceptual framework

3.6 Research questions

Following from the theoretical framework of this research, several research-questions have been formulated. The main question is:

How do coal-dependent communities in South Africa perceive justice within an energy transition?

This thesis will use three sub-questions to answer the main research question. Each sub-question is based on one of the three pillars of the three-tenet framework of energy justice as formulated by Jenkins et al. (2016). This means that the first question is based on the distributive pillar, the second question on the recognition pillar and the third one on the procedural pillar. The questions are formulated as follows:

Distributive: *How do coal-dependent communities in Ermelo perceive the distribution of benefits and burdens associated with an energy transition?*

Recognition: *How do local communities perceive their representation and position within the process of an energy transition?*

Procedural: *How do local communities assess their opportunities for meaningful participation and inclusion in the decision-making processes related to an energy transition?*

4. Methodology

This research has been conducted in the form of a fieldwork period during February and May 2024. In this chapter, the methodological backdrop of this research will be discussed. First, the used research method will be presented. After this, the research design will be discussed. At last, the limitations of this research will be discussed. A positionality statement of the researcher can be found in the appendix (see appendix D).

4.1 Research and data collection methods

This research employs a qualitative method. According to Lune and Berg (2017), qualitative research methods "allow researchers to share in the understandings and perceptions of others and to explore how people structure and give meaning to their daily lives" (Lune & Berg, 2017, p. 16). In the context of this research, qualitative research will aid in understanding the underlying perspectives of communities regarding energy transition and justice.

Moreover, this research adopts a case study strategy. By focusing on a single case, the research can provide more detail, variation, and completeness than by examining multiple cases (Denzin & Lincoln, 1994). Following a descriptive approach, the aim of the case study is to describe how coal-dependent communities in Ermelo perceive an energy transition in the broader context of energy justice.

4.2.1 Participatory research

Participatory research involves working directly with the people whose perspectives are being studied, combining scientific knowledge with practical insights (Bergold & Thomas, 2012). In this study, the researcher collaborated with Khuthala, a community-led environmental care group in Ermelo. This partnership allowed the researcher to join relevant projects, like mine visits and small-scale energy initiatives, while experiencing daily community life. Moreover, an important feature of community-based research is the process of trust-building (Christopher, 2007). By participating in projects and showing genuine interest in the daily lives and cultures of the communities, the researcher noticed that community members were more comfortable and open to a potential interview.

Ethically, this collaboration ensured community inclusion in the research design, which can be considered as an important aspect of community-based research (Flicker et al., 2007). Representatives of Khuthala reviewed the research plan, suggested necessary changes, and potential interviewees were well-informed about the research objectives through prior consultation

4.2.2 Interviews

This research involves semi-structured discussions with community members of communities in Ermelo as well as semi-structured interviews with experts on varying topics relating to energy transition, energy justice, the coal industry and the consequences on vulnerable communities. This method has been chosen as it allows for a topic-focused interview, while still allowing the researcher the autonomy to explore relevant ideas that may arise during the interview, which can further enhance the understanding of the research topic (Adams, 2015).

Community-based semi-structured interviews

Community-based semi-structured interviews have been conducted in three communities in Ermelo: Wesselton, Bambinani Village and Nomzamo Village (see figure 3). In total, 18 interviews have been conducted over a period of 2,5 weeks. The selection of participants has been done with the help of members from Khuthala. In order to gain different perspectives, a range of community members with different functions have been interviewed (see table 1 for an overview of the participants in this research).

The interviews have followed an interview guide. However, as new insights came up during the fieldwork, the interview guide has been adjusted multiple times. Moreover, some questions have been restructured for specific participants to accommodate for the clearness of the interview. The primary interview guide upon which other versions are based, can be found in the appendix of this thesis (see appendix A). Interviews were mostly conducted in English, however as some participants only spoke zulu, a member of Khuthala has helped to translate the interviews. Before being interviewed, the participants have either signed a consent form (see appendix C), or gave oral permission to use the interview in this research.

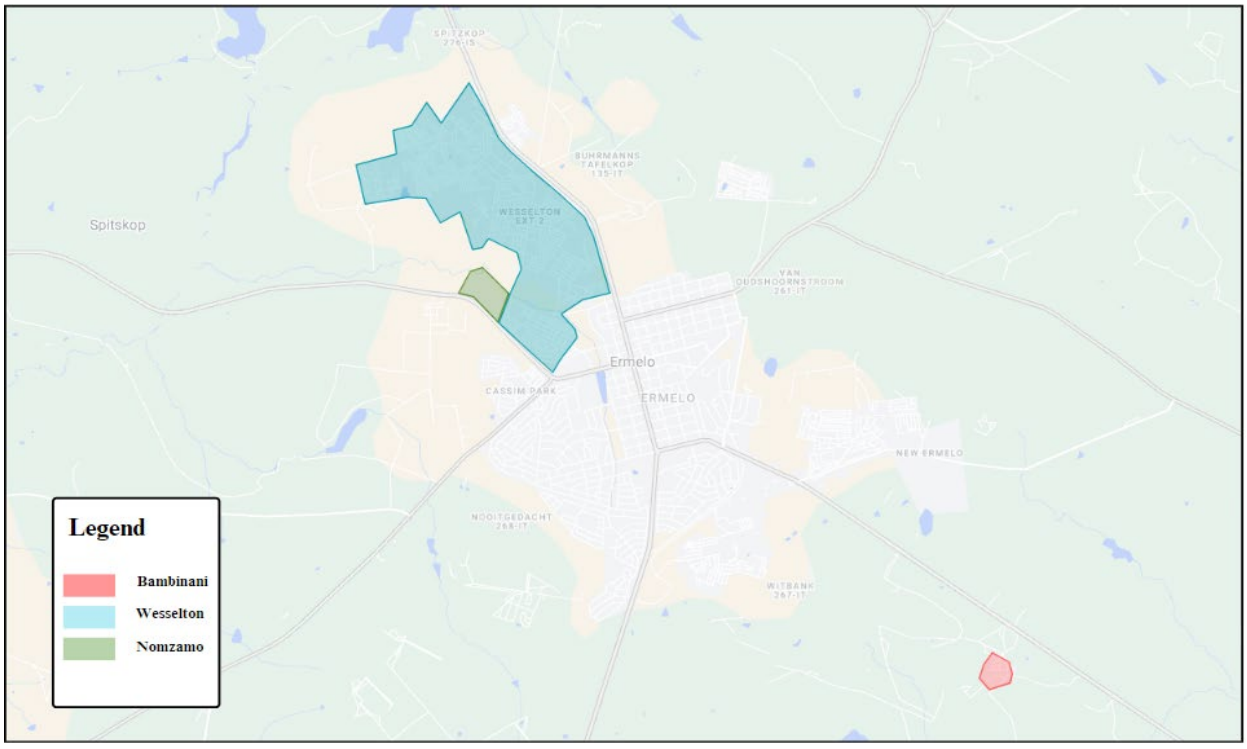

Figure 3: Location of interviewed communities in Ermelo.

Respondent code	Respondent function	Community	Date
C1	Artisinal miner's spokesperson Wesselton community Ermelo	Wesselton	04/04/2024
C2	Artisanal miner	Wesselton	04/04/2024
C3	Community leader of artisanal miners Wesselton	Wesselton	04/04/2024
C4	Former coal worker	Bambinani	05/04/2024
C5	Former coal worker	Bambinani	05/02/2024
C6	Chairman Khuthala environmental care group	Wesselton	06/04/2024
C7	Community member and buyer coalyard	Wesselton	06/04/2024
C8	Owner of a coalyard in Wesselton community	Wesselton	06/04/2024
C9	Co-founder Khuthala environmental care group and community member Wesselton	Wesselton	07/04/2024
C10	National spokesperson for National Association Artisinal Miners	Wesselton	08/04/2024
C11	Community leader Nomzamo village	Nomzamo	09/04/2024
C12	Community member Wesselton community	Wesselton	09/04/2024
C13	Wesselton community counselor at Msukaligwa local municipality	Wesselton	09/04/2024
C14	Community member Nomzamo village	Nomzamo	10/04/2024
C15	Representative Khuthala environmental care group.	Wesselton	12/04/2024
C16	Former worker Camden power station	Wesselton	12/04/2024
C17	Representative Khuthala environmental care group.	Wesselton	12/04/2024
C18	Representative National Waste Pickers organization and community member Wesselton	Wesselton	12/04/2024

Table 1: Overview of participants community-based interviews

Expert-based semi-structured interviews

Expert-based semi-structured interviews have been conducted in order to gain an understanding of the broader processes influencing the perspectives of communities. A total of 5 interviews have been conducted. In order to address multiple relevant dimensions, a different range of experts has been contacted (see table 2 for an overview of the participants). Participants have been approached by email and via referrals of other participants.

An interview guide was used to structure the interviews (see appendix B). With the semi-structured nature of the interviews, additional questions were asked about topics that were brought up during the interview. Additionally, specific questions were posed to different participants to align with their roles or areas of expertise. Participants have all given permission to use the data that arose from the interview by signing a consent form.

Respondent code	Function	Location	Date
E1	Researcher on energy governance University of Johannesburg (UJ)	University of Johannesburg	18/03
E2	Lead-researcher Benchmarks foundation	Online	19/03
E3	Representative environmental services Msukaligwa local municipality	Msukaligwa local government office building Ermelo	11/04
E4	Representative of Mining Affected Communities United in Action (MACUA)	MACUA head-office Johannesburg	19/04
E5	Representative from Environmental Organization Witbank, Mpumalanga	MACUA head-office Johannesburg	19/04

Table 2: Overview of participants of expert-based interviews.

Focus group discussion

One focus group discussion (FDG) has been conducted with five representatives of Gert Sibrande regional municipality and Msukaligwa local municipality. This focus group discussion contributed to the research by offering insights from different layers of government, allowing for a more comprehensive understanding of the varying perspectives and concerns at both regional and local levels.

4.3 Data analysis

Data analysis started after the data had been collected and transcribed. First, the transcript has been read through to create an oversight of the data and to write down first insights. Coding was done by using the coding-programme Nvivo. The three tenets of justice formed as overarching codes. While this thesis used inductive coding to keep true to the perspectives of community members, themes identified in the literature were used to organize and label data. In table 3 can be seen that coding shows some overlap in themes identified from the literature and in the data. Other codes were identified that came up in the data, but not in the literature. The coding process has resulted in the coding tree as showcased in figure 5. This coding tree forms the basis upon which the themes presented in the analysis are based.

Tenet of justice	**Identified themes from literature**	**Overlapping codes**	**Non-overlapping codes**
Distributive	Employment alternatives	Lack of opportunities	Income and employment
	Unfair distribution of energy access	Energy poverty	
Recognition	Acknowledgement of rights and needs	Local needs and knowledge	Awareness
	Local knowledge		
	Coal and identity	Dependency on coal	
Procedural	Community participation	Consultation	
	Access to information		
	Transparency and bottom-up governance	Transparency	

Table 3: Overview of themes identified from literature and identified codes.

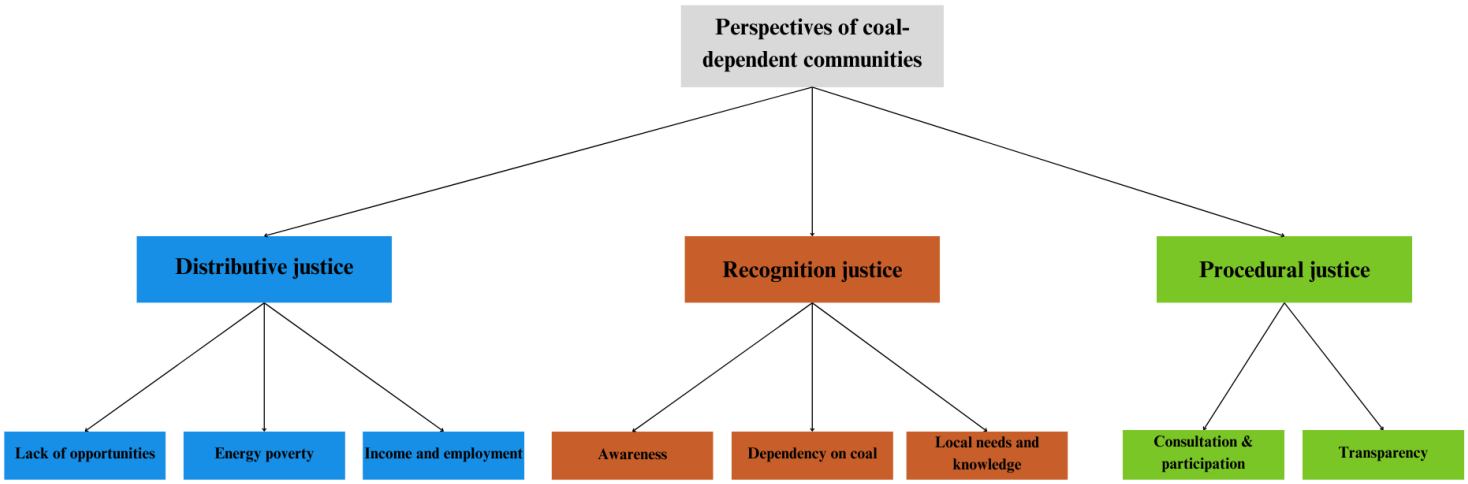

Figure 5: Coding tree

4.4 Limitations

In this section, the most important limitations of the research will be outlined. Firstly, limited data has been collected on the role of mining companies. Although mining companies play a crucial role in the governance processes of the energy sector and significantly impact the livelihoods of coal-dependent communities (Marzania et al., 2023), limited opportunities for interviews and data gathering in this field limited the opportunity and relevancy of including this perspective in this thesis. In turn, this thesis will focus more on the national, provincial and local governments as actors. In the context of energy justice, this means that mainly the relations and implications between the national, provincial and local governments, and the communities have been analyzed Secondly, limited data is collected on the differences between the different communities. Whereas demographic and socio-economic differences between the communities existed, this study has not accounted for these differences. This limitation can cause the analysis to be generalized. Thirdly, the data is sensitive to bias. In terms of gender, this is because, especially in the interviews with communities, only male participants have been interviewed. While there was no intent for the overrepresentation of male participants, naturally, in the process of selecting participants mostly male participants were suggested by the members of Khuthala. Fourth, the difference in awareness and knowledge about an energy transition and energy justice can have caused misinterpretations during the interviews. While the researcher has tried to mitigate these risks by using understandable terms and not using jargon, misinterpretations, and therefore a misrepresentation of perspectives about the meaning of justice an energy transition can still have occurred.

5. Results

The following chapter will present the results found during this research. Each paragraph will describe a different tenet of justice in which the ''what, who, how'' approach as explained by Jenkins (2016) will be followed. This means that in the first section, the perspectives on distributive justice will be discussed by identifying *what* concerns local communities have. Secondly, the perspectives on recognition justice will be discussed by identifying *who* are affected and, thirdly, perspectives on procedural justice will be discussed by identifying strategies on *how* injustices can be remediated.

Whereas this chapter aims to merely discuss the perspectives of the communities for each separate tenet, chapter 6 will provide an analysis on how the different tenets relate to each other and how they relate to the perception of energy justice in Ermelo.

5.1 Distributive justice

The first section will discuss how local communities in Ermelo perceive distributive justice within the context of an energy transition. In line with the structure of this thesis, this section tries to provide an answer to the first sub-question:

How do coal-dependent communities in Ermelo perceive the distribution of benefits and burdens associated with an energy transition?

This section includes perspectives on the current situation, but primarily how this tenet of justice should be represented in an energy transition. I will discuss three themes that have originated from coding. The section will start with discussing the perspectives on income and employment. Secondly, the lack of opportunities will be addressed, and finally, concerns about energy poverty will be discussed.

5.1.1 Concerns about income and employment

As mentioned earlier in this thesis, coal is very important for the town of Ermelo in terms of economic revenue and jobs. From the community's perspective, coal is deemed as economically important for two reasons. First, working in the coal sector puts money on the table. A former worker of a coal mine mentioned for example that he liked working in the coal sector not because of the work itself, but because of the quick money it makes (C4). Secondly, incomes earned in the coal sector are being spent in town causing the local economy to profit (C6, C16). Coal has been integrated with Ermelo's economy for a long time. The long-time dependency on coal has, however, also led to the coal sector sometimes being seen as the only option of employment. When talking about the dependency on coal from people in Mpumalanga, a representative from an environmental organization explained this as follows:

''*Communities are coming from this legacy of coal mining. Coal mining has always been our lifeline. And now the kids, the coming up generation, if i am not working in a mine, i am not going to think of becoming a scientist. I am not going to think of anything else, because I see mines all over the show.''* (E4).

When looking at the future of coal, respondents are worried. They fear that the plans of the government to close coal mines and coal plants around South Africa will negatively impact Ermelo and the communities. This worry is shared by the counselor of Wesselton township, who lives in the community himself (C13). He states that most of the people living in the community are dependent on the coal mines and power plants in terms of business and employment opportunities. Another community member highlights the impact of the closures on Ermelo's economic state. He is afraid that with the lack of business opportunities, people will leave the town in search of employment, resulting in Ermelo becoming a *''ghost town''* (C16).

The concerns of the communities are based on their own experiences. Over the past few years, partially due to the effects of Covid-19, permanent jobs in the coal mines have been converted into short-term contracts. Additionally, decommissioning practices at the Camden power station have led to more job losses. This process has significantly increased unemployment in Ermelo. As a result, some community members believe it is unfair to completely close the mines, as this would impose an additional burden on those who are already struggling (C11).

Another worry forms around artisanal mining. Because of the high unemployment in the legal mining sector, many are driven to seek opportunities in the illegal mining sector. These artisanal miners, also known as Zama Zamas, primarily extract coal from mines abandoned by large mining companies and sell it back to the community. According to a member of an activist organization (C10), the decision to become an artisanal miner is driven purely by necessity, as it is often the only means for many community members to make ends meet. However, because of the illegality of artisanal mining, local police forces often arrest the miners. Following many community members, this is unfair. They feel like the mining companies who leave the mines abandoned should be criminalized and that artisanal mining, firstly, is of benefit for the communities and, secondly, happens because of a lack of alternatives:

"*They either make use of the abandoned mine, or they end up in the streets''* (C10).

Because of this, community members plead for artisanal mining to become legal. In section 4.2 and 4.3, I will elaborate further on how this can be achieved.

5.1.2 Lack of opportunities

In the context of benefitting from an possible energy transition, it is important to understand that awareness levels for what the term exactly means lay relatively low within the communities. Although I will discuss awareness more thoroughly in the context of recognition justice (see chapter 4.2), it also plays a role for distributive justice. The lack of awareness already starts from early on. A community member who teaches kids in Wesselton Township (C10) mentioned that there is much inequality in education. While upper- and middle-class youth follow education within the well-organized private system, the lower-class youth have to follow education within the poorly organized public system. Moreover, as a consequence from the apartheid legacy, education is also often racially segregated. Meaning that predominantly dark skin-coloured often lack access to libraries, technology or sufficient educational tools. As a consequence of this disadvantaged position, dropout rates are high, literacy is low and many young people don't have a degree.

Another problem, as mentioned by a community member (C16), is that in some cases, children don't feel motivated to go to school. Rather, they want to make money and take care of their family. Moreover, it can also explain the appeal to working in the coal sector. He clarifies as follows:

''And in order for them to waste their time in going to school, while their family is suffering. The family is hungry. And if they come back from school they still have to wait with their certificate. For their kind of job. You see, that is the problem. That is why people say, no, let's go to the mines and start our own thing'' (C16).

This quote also touches upon another problem. As explained already, there is a high rate of unemployment in Ermelo, especially for young adults. Whereas this unemployment is partially due to jobs in the coal sector disappearing, it also has to do with a lack of alternatives. Simultaneously to the national context of South Africa, there are very few job opportunities in Ermelo. The only concrete opportunities for making money are the coal mines or the power plant, a former coal worker who is living in Babilani village explains (C4). The problem lies with the lack of qualification. For the few alternatives that are there in Ermelo, a degree is needed. However, even for community members who are in possession of a degree, finding a job is hard. A community member from Wesselton, who previously worked at Camden coal power station explains that for every available job, dozens of

applicants will submit an application, making it feel like searching for a job is wasting your time (C15).

Community members are worried. As a result of increased poverty community members fear that crime rates and alcohol or drug abuse will increase, leading to social unrest within the communities. They feel like the government should do something to increase their opportunities, as they feel like they are currently being forgotten.

In the context of an energy transition, a new emerging opportunity of employment could be the renewable energy sector. At least, on paper, a community member active in a local environmental organization emphasizes (C6). In reality, he is worried that people don't have the right qualifications for a job in renewable energy. Another community member shares this worry, as he believes that only highly educated people from outside the communities will profit from renewable energy (C9).

In general, it stood out that community members were not necessarily worried about renewable energy itself, they were worried about what it will mean for, and how they are going to participate meaningfully within this industry. When talking about the transition from coal to renewable energy, a representative of Msukaligwa local municipality said the following about this:

''So there are these people who are saying: okay we are taking coal away. But they should have something that will replace this [coal], that will be on par with what they are taking away''

A representative from MACUA adds that many communities are already grappling with unemployment, inequality, and poverty. Removing the one source of income without providing a viable alternative exacerbates these issues and makes communities feel they are being treated unfairly.

5.1.3 Energy poverty and access to services

Another aspect that limits the opportunities of communities is the poor access to energy. Many neighborhoods in Ermelo, especially informal settlements like Nomzamo agricultural village and Babilani village, experience the lack of electricity on a daily basis. Due to loadshedding, or even a lack of connection to the electricity grid at all, many community members cannot cook, warm their houses or perform other daily tasks. Moreover, according to an elderly community member (C3), electricity prices are escalating resulting in tariffs becoming so high that many community members cannot even pay for the electricity that is available. Talking about this problem, many respondents talked about the importance of coal on South Africa's electricity production. For them, it feels unfair that while places like Ermelo keep the country running, communities within Ermelo do not profit from this. The elderly community member made the following remark about this:

''The coal is being extracted right here on our doorstep… What worries me is because we are supposed to get something or a share out of this coal. It was supposed to benefit or supply to the communities. So that is my surprise''. (C3)

As a necessary solution, many community members use coal as their primary source of energy. They use the coal to cook food and warm themselves during the cold winter months (C13). Because of this, next to being economically dependent on coal, people's likelihood also become dependent on coal. The coal people use comes from artisanal miners. A community member who is the owner of a coal-yard in Wesselton (C7) explains that he buys coal from artisanal miners and then sells it to members of the community. He started the business to help the community, as he saw that many people were struggling with the high prices of electricity. What is striking for him, and for many others, is that the government is currently prohibiting artisanal mining. Community members are dependent on artisanal mining for basic needs, taking that away feels like an extra burden is being placed on them (C1 & C2).

The lack of energy and services also impacts how communities view a possible energy transition. A community member who is active at a local environmental organization explains that with many

people already struggling to pay the current electricity bills, renewable energy will be even something that is more out of reach. However, as showcased by vignette 2, local bottom-up renewable projects can help with making renewable more accessible to communities.

Renewable project Nomzamo agricultural Village

In Nomzamo Agricultural Village, Khuthala, with support from the New Zealand High Commission and the electrical company Peco, has established a small-scale renewable energy project. This initiative enables community members to own their own solar panels. These solar panels are connected to an electricity generator (called a 'brick'), which supplies power. Community members need to pay a small monthly fee of 99 rand (approximately 5 euros) for one year. After this period, they become the owners of both the solar panel and the electricity brick. The community leader of Nomzamo is positive about the project:

''It helps us a lot. I can say, it helps us for the community. Our children, when they go to school, they have light. We can charge our phone. So, we are thankful. For this company, to help us'' (C11).

Figure 3: Nomzamo agricultrual village.

Figure 4: Solarpanel from the project.

Figure 5: Electricity generator 'brick'.

Vignette 1: Renewable project Nomzamo agricultural village

As I will elaborate upon later, this also has to do with a lack of awareness on why renewable energy is being proposed. Other community members also looked at the bigger context. They did not understand why there was so much pressure on South Africa to stop with coal mining, while other countries are also still using coal. Coal is currently the only form of energy, and taking that away would marginalize their opportunities of surviving.

Energy is not the only service that is lacking. In, especially, the informal settlements, communities also have to deal with a lack of water and infrastructure. If an energy transition comes, community members also emphasize the need to include these kinds of services and not only look at energy. One community member from Babilani village (C15) states that having access to basic services should be the absolute basic. He wonders how Ermelo can be part of an energy transition as a big part of its inhabitants don't even have access to most basic services.

5.2 Recognition justice

The second section will discuss how local communities in Ermelo perceive recognition justice within the context of an energy transition. Subsequently, this section will try to answer the second sub-research question:

''How do local communities perceive their representation and position within the process of an energy transition?

Within this section, three themes will be discussed that have originated from coding. First, the role of awareness will be discussed, secondly, the role of the coal sector on communities' ability to transition will be discussed and lastly, the need to incorporate local needs and interests will be discussed.

5.2.1 Role of awareness

An important factor for including local communities in the energy transition process is their level of awareness (see chapter 2.3). In Ermelo, it became clear that most community members understood the personal consequences of an energy transition but were less informed about the larger processes, such as climate change and renewable energy. Additionally, awareness levels varied across different communities. For instance, many people in Wesselton were aware of the reasons behind the plans to shut down the coal sector, while those in Babilani village and Nomzamo village were less informed. This disparity in awareness can be attributed to the presence of the local environmental organization Khuthala in Wesselton. Khuthala works to inform local communities around Ermelo about the energy transition. Since the members of Khuthala are from the Wesselton community themselves, they have a deep understanding of the concerns and needs of the community members. While I will elaborate on their role further in section 4.3, it is important to note that their efforts have ensured that many community members at least have a basic understanding of what an energy transition means for them:

''And it's our duty to help. Where we know maybe there is not much information about the subject. We must bring that information to the community. So that they can understand it.'' (A representative of Khuthala, C15).

Community members often struggle with understanding the technical terms associated with an energy transition, such as 'renewables,' 'green hydrogen,' and 'transition.' One community member noted that this lack of understanding diminishes their confidence to discuss energy transition issues, even with the knowledge they possess (C9). Additionally, the rapid development of language and information outside their communities exacerbates the problem, making them feel unable to keep up with the available information. During a group discussion with representatives from the Gert Sibande district, which includes Ermelo, a community supervisor highlighted this issue:

''The audience [community] is aware, but is not aware to their level [the government]. You must talk to me in the level that I am. I've been using the coal. I have the stove in my house. When you come with this English and technology, you must come to me in my language'' (FDG 1).

Another factor is the lack of awareness about the global impact of fossil fuels on climate change. Many community members perceive climate change only through the lens of Ermelo, recognizing the negative effects of coal on the local environment but not its contribution to global climate change. As a result, when the government announces plans to close the coal sector to address global climate change, communities feel confused and marginalized (C9).

According to a representative from the Msukaligwa local municipality (E3), raising awareness is crucial for ensuring a level playing field in the energy transition process. Without awareness, communities struggle to understand how they can meaningfully participate (C6) and recognize if they are being treated unfairly. A community member adds that awareness empowers communities to collectively identify injustices and raise their voices against those implementing the plans (C15).

5.2.2 Dependency on coal

An important factor for including local communities in the energy transition process is recognizing their deep dependency on coal. In Ermelo, it became evident that coal is not just an economic lifeline but a fundamental part of daily life. Most community members rely on coal for essential activities such as cooking, heating, and even building homes. This dependency shapes their perceptions and priorities, making the transition to renewable energy a complex issue that requires careful consideration. In this context, it is important that the identities of coal-dependent communities are recognized. This involves understanding the socio-economic and cultural significance of coal to these communities and ensuring that their voices are heard in the transition process.

Besides the impact on the local environment, health impacts from coal use are well recognized among community members. Despite being aware of the adverse effects, such as respiratory diseases and deaths from indoor coal burning, the necessity of coal for survival outweighs these concerns (C9). As one community member pointed out:

"People are aware this thing is not good, it's killing them. But it's a survival" (C9).

This highlights the dilemma often faced by these communities, where immediate survival needs take precedence over long-term health risks.

The financial burden on families further complicates the transition process. In the Nomzamo informal village, consumptions on coal, food, and other essentials are substantial, yet indispensable. A community leader explained it as follows:

"A day is costing 200 rand [around €10] and something, including candles, including coal, including food. For us, it makes a difference" (C11).

Coal mining also holds cultural significance, particularly for older generations who view it as a legacy and a primary source of employment. Transitioning away from coal, therefore, threatens not only their economic stability but also their cultural identity. Next to the lack of awareness, resistance to renewable energy is partly rooted in the perceived lack of ownership and control. Renewable energy solutions often feel imposed from the outside, lacking the sense of community ownership that coal provides. Or, as one interviewee expressed:

"People will be more skeptical in terms of renewable because it's something that they don't own" (C6).

For acceptance and a sense of ownership to grow, it is thus important to include communities in the planning and implementation phases of the renewable energy projects.

Another factor that plays a role in communities' dependence on coal is the sense of pride they feel in being active in this sector. For many of them coal is something that they own and holds value for them, as opposed to many other things over which they have less control (e.g. electricity). This feeling mainly stems from artisanal miners, who mine the coal themselves and then provide for their communities. Their contributions are crucial for the communities in terms of energy supply and livelihood. The criminalization of artisanal miners is therefore seen as unjust. Communities fear that with an energy transition this criminalizations only worsens, therefore they plead for a better understanding on artisanal mining and their importance for the communities.

5.2.3 Needs, interests & local knowledge

In the context of an possible energy transition in Ermelo, an important factor is recognizing the needs and interests of local communities. According to a community member who works with Khuthala (C9), recognizing local communities' needs and interests during the energy transition is important for

several reasons. Firstly, the communities are directly impacted by the changes. For example, in interviews conducted with Ermelo residents, many expressed that the government is often out of touch with their realities. He notes that this disconnect often results in policies and projects that do not adequately address the actual needs of the people.

Another challenge in Ermelo is the perceived contextual gap between the government's plans and the community's needs. Some community members feel that the government's approach is more aligned with international expectations than with local realities. Such an approach denies the specific needs, and socio-economic context of Ermelo, or as one community member explained it:

"They are trying to copy and paste international plans to make them work in South Africa" (C9).

A third problem is the lack of cooperation between decision-making institutions and the communities. While this is also a matter of procedural justice, community members emphasized the need to recognize the importance of open dialogue between them and the government. Currently, many community members feel like decisions are being made for them:

‘’There should be means by whoever is implementing an energy transition to go and make sure local communities are engaged. They participate and they are here. And those issues that are risen are taken into consideration. And they come back to the people and say, is this what you want? And then the people say yes, but include this and this and this. And then, so that’s open democracy.’’ (C10)

This ‘’open democracy’’ is also important in terms of income and daily needs. Communities in Ermelo perceive a significant gap between their employment desires and the government's actions, feeling that decision-makers overlook their struggles and fail to address their specific needs. A community member (C9) explains that their daily struggle to survive and their urgent need for employment that will earn them money are not sufficiently recognized. He names the criminalization of artisanal miners as an important example. While artisanal miners are crucial for community members by supplying coal, their contributions are not recognized as beneficial for the communities. Instead, their actions are being treated as a burden on the government. Many community members feel that this marginalizes their opportunities for livelihood:

‘’Because unfortunately those people who take decisions don’t live where they take decisions at. They live in Pretoria, in Cape Town. We live here, we know the pain, we feel the pain. It’s our children that die. So it’s like, if you give me an opportunity to tell you what i want, you should be able to assist me in that.’’ (C10).

The dialogue can also be beneficial to decision-makers, another community member states (C16). He is referring to the process of using local knowledge within the process of decision-making. Following another community member, local knowledge can help overcome potential pitfalls and challenges that decision-makers might overlook. He explains it as follows:

"What we need is not for the government to tell us how we do it; it's for them to give us the resources, expertise, support, and funds" (C10)

By including local knowledge, the counselor of Wesselton remarks (C13), communities are more likely to accept and understand proposed policies and projects, making them more effective and sustainable.

5.3 Procedural Justice

The third section of this chapter will discuss how local communities in Ermelo perceive procedural justice within the context of an energy transition. In line with the structure of this thesis, this section will try to answer the third sub-research question:

''How do local communities assess their opportunities for meaningful participation and inclusion in the decision-making processes related to an energy transition?''

This section will discuss the perspectives of communities in Ermelo on decision-making processes surrounding an energy transition. In light of procedural justice, two decision-making structures will be discussed: first, the lack of consultation and secondly, the lack of transparency.

5.3.1 Lack of consultation and participation

As established from literature (see chapter 2.2.), an important aspect of procedural justice is the fair and inclusive process of consultation and participation.

For many community members, the lack of consultation has been a significant concern. Within communities there is a strong feeling that the conversation about an energy transition has started, but that they, as of yet, are not included in this conversation. Following one community member (C3), the lack of consultation is a structural problem for communities in Ermelo. Firstly, decision-makers are not approaching the communities. They don't inform the communities in person. Because of this, people have to find out for themselves. However, as many community members (especially in the informal settlements of Nomzamo agricultural village and Babilani village) don't have internet connection, they are excluded from this process. Something which is illustrative for the attitude of the government, according to one community member (C5), is that the only time decision-makers visit the communities is during election periods:

''You see, if you are the government, but you don't care about the people, you just only want a vote. You care if you want a vote, but after you get that vote, you don't care about us, the people. That thing is not right.''

In Ermelo, the lack of consultation became evident in the proposed plans to build a green hydrogen plant 500 meters from Babilani village. Preparations for these plans have already begun, yet the inhabitants of Babilani village were never consulted. Eventually, they were consulted by the local environmental care group Khuthala. A representative from the organization (C10) explained that the inhabitants of Babilani were confused, having no idea what green hydrogen is, how to deal with it, or how it would benefit them. The representative felt like the inhabitants were being wronged, as they have no chance to meaningfully participate or benefit from the green hydrogen plant, and because they have a constitutional right to be informed.

The lack of consultation from governmental institutions has caused Khuthala to take over the responsibilities of the governmental institutions within Ermelo (see vignette 1). Members of Khuthala try to educate themselves as much as possible to pass on this information to the community members. Furthermore, they educate the youth about climate change, organize local projects surrounding the energy transition, and form the first point of contact for many community members.

The lack of consultation from governmental institutions has caused Khuthala to take over the responsibilities of the governmental institutions within Ermelo (see vignette 1). Members of Khuthala try to educate themselves as much as possible to pass on this information to the community members. Furthermore, they educate the youth about climate change, organize local projects surrounding the energy transition, and form the first point of contact for many community members.

Community consultation Bambinani village

In Bambinani village, the Khuthala environmental care group held consultations with community members about the repurposing of the nearby Camden power station. Although the national government and Eskom, the national electrical utility company, planned to construct a green-hydrogen plant at this site, located just 500 meters from the village, they had not informed the local residents about these developments. Recognizing this oversight, Khuthala took the initiative to engage with the community. It became clear during these consultations that the villagers were unaware of what green hydrogen is or how they could benefit from the development.

Vignette 2: Community consultation in Bambinani village

What also became evident from the discussions about Khuthala, is that community members do not feel like local governmental institutions are performing their tasks of consulting and including communities in the process of an energy transition well. When talking about this with a representative from Msukaligwa local municipality (E3), she mentioned the following:

''Because we are all new to this thing, we have no idea on how to go about. Even us, in this office, we still need information. We still need to be capacitated around this thing. So it is a bit about showing that gap. Between the higher level and the ground…. Because if I don't have enough information myself, how am I then supposed to cascade it to the communities? (E3)

A representative of Gert Sibrande regional municipality built upon this by stating that next to information, there is also almost no money available to spend on consultation. And even if they get a grant, she continued, the municipality has to spend this grant on the topic or project it was meant for. From this it becomes evident that while communities expect more from local governmental institutions, these institutions don't have the resources to achieve this. The same goes for Khuthala, a representative explains. Although they put in substantial effort, without funding their opportunities to educate and inform the communities are limited.

5.3.2 Lack of transparency

Within Ermelo, there is much dissatisfaction with the governmental institutions. They feel like the reason for their poverty and suffering is because of the poor decision-making of the government. This dissatisfaction has produced a substantial mistrust about the government's intentions. Many community members indicated that initiatives and projects proposed to help them are faced with a certain level of skepticism. To be sure, this skepticism exited already before there were talks about an energy transition.

Because of this pre-existing skepticism towards the government, a representative of Khuthala explains (C9), many community members already lack a sense of trust for initiatives surrounding an energy transition. He continues that this mistrust and skepticism forms a barrier towards the integration of plans that can actually contribute to the communities.

The source of this mistrust is the lack of transparency within governmental institutions. Communities have often been promised that they will be taken seriously, but times again, it feels like the government has failed them. One community member of Babilani village (C4) mentioned the following about this:

''When it comes to the government, we lost trust. We lost trust, really. They keep promising, promising, promising: ''it will change'', instead of that it is cold now [referring to the lack of coal in his house], worse, worse, worse.'' (C4).

Following the counselor of Wesselton (C13), community members have concerns about the transparency of the government on the motives behind an energy transition. A few of the community members who are interviewed have heard of the JET-P funds that South Africa has received (see chapter 2). However, they wonder where that money has gone to, as it was supposed to be of the benefit for the communities affected by the closure of coal mines and coal power plants. The counselor of Wesselton also says that a big part of the community members have never heard of the JET-P funds, meaning that they do not even have a fair chance to raise a voice against possible wrongs within the implementation process.

An expert from MACUA (E4), underscores this worry as she explains that there is very little transparency about where the money of JET-P has gone to. Next to money, a lack of transparency between the different government levels is also limiting the possibility of a holistic approach to the energy transition. An approach which she deems crucial in including communities in the energy transition in a fair way.

During a focus group discussion (FGD) with representatives from the Gert Sibrande regional municipality, it was made clear that between the layers of government a lack of transparency exists as well. When asked why this happens, one of the representatives answered as follows:

''In this country? Yeah… somewhere information goes through the cracks. Maybe we [the regional governmental layer] are too low…. You're supposed to move it to one direction. Yeah infiltration of information must go like that.'' (FGD)

A representative of Khuthala is concerned about the lack of transparency from the government, as it leads to communities receiving less information.

6. Discussion

This thesis has set out to explore the perceptions of coal-dependent communities in Ermelo, South Africa on an energy transition through the lens of energy justice. Through interviews with experts and community members, data has been gathered, which resulted in the findings presented in chapter 5. This chapter aims to connect the perspectives of coal-dependent communities in Ermelo on distributive, recognition and procedural justice, place them in a broader societal and theoretical context and reflect on the implications for a just energy transition.

6.1 Interplay of the three tenets of energy justice

The perspectives of community-members in Ermelo show that there is fear among communities that an energy transition will either create new injustices or exacerbate existing injustices. Injustices have been identified in all three tenets of justice. There were for example distributive concerns about the loss of employment and income because of the phase out of coal, recognition concerns about the lack of awareness for the meaning of energy-transition related processes and procedural concerns about the lack of transparency from governmental institutions. What became evident from these concerns is that existing or expected injustices are often overlapping in, or, influenced by different tenets.

Artisanal mining formed as a prime example of this interplay of energy justice tenets in Ermelo. Community members rely on artisanal mining for daily life needs, as it provides essential incomes and resources. They emphasize the need for governmental institutions to recognize these contributions and acknowledge their importance for the communities. Furthermore, artisanal mining is rooted in the cultural legacy of the communities. Due to years of mining, it has become something that belongs to them. Looking at procedural justice, community therefore argue that it is unfair that artisanal mining is criminalized. Instead, the companies leaving the mines unrehabilitated, where artisanal miners operate, should be arrested. The example of artisanal miners shows that a just energy transition requires a nuanced understanding of local dependencies and the economic realities faced by communities. It underscores the importance of addressing systemic issues, such as the abandonment of mines by larger companies, and ensuring that voices of the communities are heard and respected in the transition process.

Looking at literature, Valesco-Herrejon & Bauwens (2020) stated that the inclusion of indigenous knowledge positively influences the communities' acceptance of renewable energy projects. The findings in this thesis confirmed this argument and expanded upon it by demonstrating that local knowledge can significantly contribute to efficient (preventing pit-falls) and fair decision-making (including communities), thereby enabling the process of procedural justice. Findings suggest that distributive injustices also form as a driver for other injustices. This got evident when asking community-members about renewable energy. Many of them addressed doubts about the communities' meaningful participation in renewable energy projects. As also pointed out by Burton et al. (2019) and Motau (2023), many communities lack sufficient education or awareness because of their marginalized position, making them vulnerable for the exclusion of renewable energy benefits and, in turn, driving distributive inequalities. This also applies to recognition justice.

The interplay of tenets emphasizes the notion that reaching energy justice should not be seen as a static process, but rather as a process that is influenced by social, economic, environmental and political factors. In more practical terms, the findings in this thesis suggest that there is not one way to achieve a just energy transition. In Ermelo, for example, the deep-dependency on coal influences how energy justice is perceived. This is evident in what Cock (2019, p.865) refers to as a ''contradictory relation'': despite the bad effects of coal on their personal health and the unjust practices of the coal sector, communities still resist the phase out of coal and view it as an unjust process.

6.2 Addressing the gap between the government and the communities

The prospects for an energy transition in Ermelo have highlighted a significant gap between the needs of local communities dependent on coal and the government's objective to phase out coal. This gap stems from decades of marginalization, which caused the communities in Ermelo to lose trust in the government. As a result, the process of achieving a just energy transition is hindered.

Community members highlight several key issues that define the gap. Firstly, there is a significant lack of meaningful consultation and participation in the decision-making process. They feel that decisions are often made without their input, and when consultations do occur, they are insufficient or ineffective. This has led to a profound mistrust of the government. Additionally, there is a need for greater awareness and education about the energy transition. Many community members lack a clear understanding of what renewable energy entails and how it can benefit them. This gap in knowledge makes them skeptical and resistant to change (Steg & Hoekstra, 2018; Velasco-Herrejon & Bauwens, 2020).

Findings in this thesis indicate three main implications for closing the gap between the government and communities. First and foremost, the non-recognition of social impacts of an energy transition can be seen as an important driver of the gap. Communities in Ermelo indicated that they are unprepared for the anticipated impacts of an energy transition. As also observed by Berger et al. (2020) and Lewin (2017) in Western contexts, coal is integral to the cultural heritage of these communities. Possessing coal is strongly linked to a sense of ownership and pride. This entails that taking away coal is equivalent to taking away a part of the community's identity, which according Grossman and Trubina (2021) should also be seen as a form of distributive injustice. In light of an energy transition, the social transition that communities have to undergo in order to accept and to be able to participate in a life after coal should be carefully considered. Moreover, since this involves educating people and raising awareness about the goals and benefits of renewable energy, a just energy transition is not a short-term process. Instead, community members speak about a long-term process that requires focused attention on the human aspects of the transition in order to ensure justice. Secondly, the procedural structure to close the gap is perceived as insufficient and unjust by communities in Ermelo. As stated by Marais (2017), public access to information is a problem in South Africa. Respondents of this thesis held similar perspectives. A solution that this study offered is the collaboration of governmental layers with community-based organizations. In Ermelo, the local organization Khuthala has, in many instances, taken over the procedural tasks of consulting and raising awareness about an energy transition. By taking a bottom-up approach and involving such community-led organizations in decision-making, governmental institutions would put a first step toward bridging the gap and re-gaining trust of the communities (as for example showcased by Nel et al., 2023). This is important, both community members and experts indicated, as a just energy transition cannot be achieved without the involvement of the communities. Thirdly, findings point to a lack of collaboration between the local municipalities and the national government. In Ermelo, communities perceived the local municipality to be failing their duties of providing services and information. While Nel et al. (2023) found that communities often lack financial resources, this thesis found that local municipalities also frequently lack consultation from the national government. Experts interviewed in this thesis indicated that the local municipalities should function as the connecting factor between the communities and the national government. In Ermelo, the local municipality was unable to fulfill this role, thereby widening the gap between the communities and the national government. Moreover, the lack of cooperation between the national and local layers of government indicates the lack of coherent planning on how to achieve a just energy transition, as also stated by Marzania et al. (2023).

6.3 A ‘just’ just energy transition

In Ermelo, the narratives surrounding an energy transition and the proposed renewable energy projects are met with confusion and anger. Findings indicate that most respondents do not understand what an energy transition entails, how they can utilize it, or how it will benefit them. Conversely, coal is a resource that people are familiar with, need, and can own and use. This dichotomy reflects the community's perspective on what constitutes a just energy transition. For many of them, the reality of poverty and unemployment does not offer the chance of looking this far ahead. Rather, they view justice as something that has to happen now, as there is fear that an energy transition will only worsen the existing problems: *’’For me, a Just Transition is, I think there will be a transition when the time comes. At the moment, it’s only a just ……..*[stressing the necessity of justice for people before an energy transition can take place]*’’* (C15).

In Ermelo, similar to the national context of South Africa (Monyai et al., 2023), communities face significant socio-economic problems from unequal power-relations stemming from the apartheid period. Findings in this thesis suggest that community members are aware of these power-relations and feel like they are being treated unfairly. Resulting from the MEC (see chapter 2.4.1), mining companies have accumulated a great amount of power and influence over decision-making processes (Baker & Burton, 2024; Marzania et al., 2023). This has resulted in local communities being excluded from decision-making processes. Community members feel like it is unfair that coal is extracted on their doorstep, but they don’t see any benefits from it, rather they carry the burdens in terms of health issues and a lack of water and energy (Cock, 2019). Moreover, communities point that the historical context of land dispossession and the un-rehabilitation of mines is another factor that enhances their marginalization. They see the lack of usable land as an important factor for their perceived lack of opportunities, and, thus, communities perceive any transition that does not address and remediate these problems as unjust. A lack of awareness also plays an important role in the structural exclusion of communities. Many respondents stated that they did not understand why coal had to phase out in Ermelo and that because of this they felt it was unfair. Additionally, people who had heard of climate change and of the JET-P partnership funds (see chapter 2.3) were skeptical about the equitable allocation and use of these funds, fearing that the benefits would be reserved for the wealthy, leaving them excluded.

While the theoretical lens of the framework used in this study did not explicitly include an analysis of restorative justice (Heffron, 2018), the underlying perspectives on distributive, recognition, and procedural justice suggest the importance of incorporating restorative justice as a fundamental aspect of energy justice. Community members argue that for an just energy to be truly just, it must first recognize and remediate the deep-rooted socio-economic inequalities. In light of an energy transition in Ermelo, this entails the remediation of the socio-economic inequalities resulting from the coal sector and the rehabilitation of land and mines degraded by the practices of coal mining companies. Communities highlight the implementation of social ownership on renewable energy projects, the rehabilitation of mines, the fair distribution of land and access to energy produced by renewable energy sources as implications for a just energy transition.

Looking at the broader theoretical context, researching energy justice in the global south reveals unique challenges and needs. In regions like Ermelo, deep-rooted socio-economic disparities and historical injustices, such as those from the apartheid era and the coal-sector, continuously impact communities. This requires energy justice not only to look at injustices resulting from energy systems, but also at deeper existing inequalities that are at the basis of these inequalities. This also entails that a just energy transition cannot be seen as an isolated process. Global and national processes influencing the local context should also carefully be considered in order to make sure that for those who will be most impacted, the "just" in a just energy transition is a lived reality rather than just a rhetorical device.

7. Conclusion

This thesis has set out to explore the perspectives of coal-dependent communities in Ermelo on justice within an energy transition in South Africa. In doing so, it has used the following research question:

How do coal-dependent communities in South Africa perceive justice within an energy transition?

To answer these questions and to structure this thesis, three sub-questions have been formulated:

Distributive: *How do coal-dependent communities in Ermelo perceive the distribution of benefits and burdens associated with an energy transition?*

Recognition: *How do local communities perceive their representation and position within the process of an energy transition?*

Procedural: *How do local communities assess their opportunities for meaningful participation and inclusion in the decision-making processes related to an energy transition?*

The findings in this research initiate that communities are afraid that an energy transition will exacerbate existing inequalities and worsen their socio-economic position. Coal is deeply ingrained in the lives of community members, creating a dependency for income, employment, and livelihood through its role as an energy source. A phase out of coal because of an energy transition is expected to put extra burdens on communities, as a loss of jobs, livelihood and energy poverty will cause extra unemployment, poverty and further marginalize the position of the communities. Proposed alternatives in the form of employment and access to renewable energy projects are not perceived as benefits by community members. They fear that the lack of education will cause them to be excluded, while people in advantaged positions will profit. Community members call for social ownership, financial support and access to energy in order to make the distribution of burdens and benefits just.

Communities indicate worries for recognition justice in light of an energy transition. Findings indicated that community members fear that their lack of awareness is not recognized by governmental institutions. As a consequence, communities feel like they will be excluded from benefiting from renewable energy and decision-making, highlighting both the distributive and procedural consequences. The dependency on coal should also be recognized in order for communities to be included in the process of an energy transition as a coal phase out would not only have economic consequences, but also threatens their cultural heritage and identity. Findings furthermore suggest that communities worry that their needs and interests are not sufficiently represented in decision-making processes. In light of recognition justice, they feel like decisions are being on their behalf by people who do not have their best interests at heart. To not further marginalize their position, communities strive for open dialogue between them and governmental institutions, the inclusion of local knowledge in decision-making and the stimulation of awareness programs for communities, and especially the youth.

In Ermelo, there is much mistrust regarding the intentions of the government. This has resulted in skeptical feelings towards any initiatives put forward by governmental institutions. The mistrust originates from the injustices experienced within the decision-making structures of governmental institutions. Communities point towards a lack of consultation. In light of an energy transition community members argue that they have a right to be consulted about policies that directly affect them. Moreover, a lack of transparency is experienced in decision-making. There is no clarity about the integration of plans and communities are being left in the dark. Local municipalities also suffer from a lack of resources and information. Even further hindering the meaningful participation of local communities. Findings suggest the important role community-based organizations can play in educating and consulting the communities about an energy transition. By taking a bottom-up approach

these organizations can contribute to procedural justice by forming the link between the communities and the government.

These findings reveal two significant insights for energy justice in countries dealing with significant inequalities. The justice part of an energy transition is a valued concept for policy-makers, but not a lived reality for communities on the ground. The possible benefits of an energy transition are not relevant for these groups who struggle to make ends meet every day. For them, justice means securing the basic needs to survive. This thesis emphasizes the need for energy justice scholarship in the global south to take into account historical injustices that need to be restored before an energy transition can take place. Findings have shown that communities only perceive an energy transition as just when historical injustices are remediated before the energy transition is implemented. A second insight of this thesis points to a structural gap between governmental institutions and the communities. Communities are at the forefront of the energy transition and not including them in this process negates a possibility for a just energy transition before it has even started. This reflects a broader challenge in the Global South, where inclusive, participatory approaches are essential for successful and equitable energy transitions. Bridging this gap ensures that the benefits and burdens of the transition are fairly shared and that the voices of communities are heard.

7.1 Implications for future research

This thesis has some implications for future researchers that will dedicate their research to this topic. First, there is a need for a more comprehensive analysis on the role of mining companies in reaching a just energy transition. Following the dependency on the Mineral-Energy Complex, mining companies have accumulated substantial power and form a barrier towards the implementation of an energy transition. Future research could explore ways in how this forms a barrier towards achieving a just energy transition and how this exactly influences communities. Secondly, while the respondents in this thesis were primarily male, it is crucial to investigate whether injustices experienced by communities are perceived differently by different genders. Examining the perspectives of women, a historically suppressed group in many African countries, and their unique experiences can provide a more comprehensive understanding of the impacts of an energy transition. Thirdly, this thesis has shown the potential of local organizations to involve community members in the process of an energy transition. Future research can explore whether similar results are found in the form of other case-studies.

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Appendices

Appendix A: Interview guide community members Ermelo

Interview guide

You are invited to take part in a study conducted for Utrecht University in the Netherlands. Below, you will find a questionnaire asking you questions about the development of a just (energy) transition in Mpumalanga and especially Ermelo, and the consequences for local workers and communities.

As you might know, coal contributes to climate change. Because of this, the South African government has announced its plans to gradually close coal mines and coal processing plants. This closure could have big impacts on the jobs connected to the coal sector. The goal of this research is to understand your perspectives on these plans.

The below questions are designed to hear your opinions and experiences of different aspects of the matter. The answers you give will then be used to understand these aspects and draw conclusions.

Your answers will remain anonymous and will only be seen by the researcher. When the research is done, the collected data will be deleted. Your participation is voluntary, meaning that you can decide whether you participate or not. This also means that you can refuse to answer a question or leave a questions open. Please note that by participating in this interview, you give permission for your answers to be analysed and used by the researcher and by the researcher only.

If you have any questions or remarks, you can contact the researcher at: d.y.eisen@students.uu.nl or at 0799246424 (South African cell-phone number) or +310642590433 (Dutch cell-phone number)

I want to thank you in advance for your participation!

First, I want to ask you some background questions:

1: What is your age?

2: Do you live in Ermelo? If not, where do you live?

3: Do you have a job or do you fulfil another role within the community? If so, what job or what role/function?

Main questions

- Regarding to the function/position/job of the interviewee: can you tell me a bit more about activities you are doing?
    - If applicable: what is the relation of your function/position/job to the just energy transition or the coal industry (in Ermelo)?

- In Ermelo, a lot of people work in the coal industry. How important is this coal industry for Ermelo according to you?
    - What would happen to Ermelo if the coal industry would be closed you think?
    - And what would the impact be on the people and the communities living in Ermelo?

- What do you know about a just transition?
    - If he/she knows about it: do you think there are already signs of a just transition within Mpumalanga/Ermelo? Are there for example already certain projects that you know of?
    - If he/she knows: do you think a just energy transition is achievable in Ermelo/Mpumalanga? If not, why not? What could be barriers?

- Do you think the people and communities in Ermelo (or Mpumalanga) are aware of the prospects of such a just transition?
    - What do you think is the importance of awareness?

- What is your personal opinion about the national government (don't ask this question if the interview is with an official from the government)? And what about the district/local municipality?
    - Do you think the national government does enough for the people and communities (in Ermelo)?
    - Do you think the local government does enough for the people and communities (in Ermelo)?

- What is your opinion about the role of the government in the implementation of a just energy transition in Ermelo (or Mpumalanga when the person is not from Ermelo)?
    - Should they create more awareness?
    - Should they help financially?

- Do you think there are many alternatives for job-opportunities in Ermelo besides the coal industry?
    - The government is planning to create many jobs in the renewable/green sector during the just energy transition. Do you think this could be a realistic opportunity for people and communities in Ermelo?

- Last question: If you could write the script of the implementation and creation of a just energy transition in Ermelo (or Mpumalanga, in case the person does not know much about Ermelo), what points would you write in this script to make the just energy transition achievable?

I want to thank you for participating in the interview! It is of great contribution to the quality of my research.

Appendix B: Interview guide Experts

Interview guide

You are invited to take part in a study conducted for Utrecht University in the Netherlands. Below, you will find a questionnaire asking you questions about the perspectives of coal workers on the implications of a Just Energy Transition and which role awareness plays in achieving a just energy transition for these same coal workers.

The below questions are designed to hear your opinions and experiences of different aspects of the matter. The answers you give will then be used to understand these aspects and draw conclusions.

Your answers will remain anonymous and will only be seen by the researcher. When the research is done, the collected data will be deleted. Your participation is voluntary, meaning that you can decide whether you participate or not. This also means that you can refuse to answer a question or leave a questions open. You can also always withdraw your participation before, during or after the research.

If you have any questions or remarks, you can contact the researcher at: d.y.eisen@students.uu.nl or at +310642590433 (Dutch telephone number).

I want to thank you in advance for your participation!

1. Background questions

- Could you shortly introduce yourself and elaborate on the topics you are working on regarding the coal sector in South Africa and/or a Just Energy Transition?
- What is your personal take on achieving a just energy transition in South Africa? And, more specifically, in the coal sector?

2. Adaptation and awareness of a Just Energy Transition

- What direct impact(s) will the closure of coal mines and coal plants have on coal workers?

- Will certain coal workers be impacted harder than others? If so, what factors play a role in this?

- Is there awareness amongst coal workers what a just energy transition means? Do you think this awareness is important for the achievement of a just energy transition?

- How do you think awareness among coal workers could be raised? Which actors do you think should organize this?

- I have read some stories about coal workers being sceptical and resistant against the introduction of renewable energy sources. Why is this you think?

- Do you think this scepticism and resistance can form a blockade against the achievement of just energy transition?

- What do you think are important factors that determine whether a coal worker is able to transition or not?

3. Policy making and policy implementation

- Does the government make workers aware of their plans to gradually shut coal mines and coal plants? If so, do they reach everyone?

- According to you, do policymakers engage with workers when formulating policy? Do you feel workers are included in this process? Is the voice of the workers heard?

- Do you think policymakers differentiate between different kind of workers? Do you think this is important?

- In many academic papers, I have read that coal workers in Mpumalanga are not confident in the ability of the government to put their needs and rights at the forefront. Why is this according to you?

- Do you think this mistrust influence the possibility of achieving a just energy transition for coal workers?

- What kind of role do companies and trade unions play in the process making workers aware of a just energy transition? And do you think these companies and trade unions put the needs and rights of workers at the forefront?

- What role do local organizations play in making local workers and communities aware of a just energy transition?

4. Job alternatives when the coal sector is phased out

- The government often talks about the possibility of 'renewable jobs' replacing coal jobs. Do you think all coal workers are willing and able to do such kind of work? Could the proposed transition to renewable energy sources also form opportunities for Mpumalanga and its residents?

- Do you think financially compensating coal workers would be an effective way to reduce the impacts of job losses on workers? Would financial compensation work better for some workers than others?

- How do you think the government should support workers who lose their jobs because of coal phase out? Do you think there is one ‘golden way’ to do this? And what about employers and trade unions?

- How do you think differences between workers (e.g. education, family, skills etc.) influence their ability and willingness to find a job when most of the coal sector is closed?

- Do you think early awareness and guidance by different actors could improve the chances of workers to find a different job?

- Do you think investments in local infrastructure, amenities and governments could result in local job opportunities?

Appendix C: Informed consent form interviews

INFORMED CONSENT FORM

Agreement to participate in research project:

''Local perspectives of Just Energy Transition in South Africa's coal sector''.

Thank you for taking the time to consider participating in my research project. This research project is part of a master thesis written at Utrecht University, the Netherlands. I am happy to address any questions you may have about this research.

Purpose of the Study
The purpose of this study is to gather data on the perspectives of people active in the coal sector on policies and plans surrounding the Just Energy Transition and the impacts it has on the coal sector in Africa. The main use of the information provided will be to gather results and make conclusions about the local understanding and support for Just Energy Transition policies.

Methods
As a participant in this study, you will be asked to participate in a semi-structured interview. This entails that the researcher will ask some guiding questions, but that there also is enough space for open discussion and conversation. The interviews will be audio-recorded by means of a recording device. The study will take approximately 30-40 minutes to complete.

Risks, discomforts and Benefits
There are no known risks or discomforts associated with participating in this study. If you feel any discomfort before, during or after the interview, the interview can be cancelled or continued in a form that is comfortable for you. The benefits of participating in this study include the potential for contributing to the understanding of the impacts Just Energy Transitions.

Confidentiality
Your participation in this study will be kept strictly confidential. Your name will not be associated with any data collected, and any data collected will be kept confidential. Gathered data and interviews will solely be used for academic purposes and will be deleted when the research is done.

Participation and Withdrawal
Your participation in this study is completely voluntary. You may choose not to participate or you may withdraw from the study at any time.

Contact Information
If you have any questions or concerns about the research privacy, the treatment of research participants or this study project, please contact Dax Eisen (researcher) at d.y.eisen@students.uu.nl or at +27 0799246424. If you have any complaints regarding the research or the researcher, you may contact the supervisor of this research Eric Cezne at e.m.cezne@uu.nl.

I can confirm that (please tick box):

- ☐ I have read and understand the information sheet and consent form of this research project.
- ☐ I have had the opportunity to discuss this study. I am satisfied with the answers I have been given.
- ☐ I agree that my participation in this research project is voluntary and that I have the right to withdraw from the study until the moment that the study has been published, and to decline to answer any individual questions in the study without needing to say why.
- ☐ I understand I will not be paid for my participation.
- ☐ I understand I can ask questions at any point during, before or after the activity about any aspect of the research.
- ☐ I understand that I can request any [texts/photos/etc.] with identifiable features to be blurred, made non-identifiable or removed from the research.
- ☐ I understand that the data collected for this study will be kept confidentially either in a locked facility or as a password-protected encrypted file on a password-protected computer of the researcher. [If applicable: Audio files or transcripts will be removed after the completion of the research].
- ☐ I understand that the information collected for this study will be used only for research purposes only, such as a MSc thesis, articles, book chapters, published and unpublished work and presentations (if relevant).
- ☐ I consent to my [interview/focus group discussion] being audio-recorded [if relevant], and understand I have the right to ask for the audio-recorder to be turned off at any time.
- ☐ I understand that my name will not be used on any documents, presentations or other output of the research.
- ☐ [A pseudonym of my own choosing can be used in this research:_____]

"I agree to participate in this individual research project and acknowledge receipt of a copy of this consent form and the research project information sheet."

Signature of participant:_____ Date:_____

"I agree to abide by the conditions set out in the information sheet and I ensure to minimalise harm done to any participant during this research."

Signature of researcher:_____ Date: _____

Please fill in the following information. It will only be used in case you want to be sent a copy of interview notes and/or transcripts [so that you have the opportunity to make corrections; if relevant].

Address:_____

Email:_____

Appendix D: Positionality of researcher

Positionality of the researcher

As a white Western-European male conducting interviews in a South-African community, particularly in the context of the country's history of apartheid, I have been acutely aware of the sensitive power dynamics and historical injustices that could influence my interactions with community members. The legacy of apartheid has left deep social and economic inequalities, and my own background and privileges contrast sharply with the experiences of those I am interviewing. With these differing backgrounds, cultures and privileges, I have recognized the potential for bias. However, by showing genuine interest, transparency and willingness to learn about the daily lives of the interviewees and the communities in general, I have tried to narrow this gap. My goal is and has been to ensure that the voices and perspectives of the community are accurately represented and respected throughout the research process, being particularly mindful of the painful history and ongoing impact of apartheid.