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An inductive content analysis of the role of governance as a sustainability dimension in South Africa's energy transition

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Abstract

Governance is an integral part of achieving sustainability in an energy transition. However, there is a shortage of literature on governance as a sustainability dimension in the energy transitions of countries in Sub Saharan Africa. This study addresses this shortage by reviewing literature on South Africa's energy transition, identifying governance sustainability goals and presenting a detailed discussion on their roles and contribution in achieving sustainability. The literature review is guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses and an Inductive Content Analysis. A total of 40 goals related to embedded informal governance, governing paradigm, and governing institutions are identified. Collectively, these goals are responsible for addressing historical and contextual issues in the energy system and aligning decision making to the sustainability goals of the energy transition. Thus, making the energy transition more practical and connected to a country's context. Individually, governing institution goals form the bridge between embedded informal governance and the governing paradigm, and between governance and other sustainability dimensions. This means that governing institutions such as policies and regulations create an enabling environment for the energy system to transition and are the most important aspect of achieving sustainability.

Keywords: Literature Review; Governance; Sustainability; Energy Transition; South Africa

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1. Introduction

Energy transitions are described by Edomah et al. (2020) as processes that change, often for the better, the form (nature, appearance or character), style, state, place, or scale of an energy system. Osei-Tutu et al. (2021) add that changes in energy sources, and ownership and management of an energy system also characterise an energy transition. The current energy transition entails shifting from an energy system where fossil fuels (coal, natural gas, oil, and other carbon-intensive energy sources) are the main sources of energy to a system where renewable energy sources and storage (wind, solar, nuclear, and lithium-ion batteries) are the main energy sources (Fouquet, 2010, Fang et al., 2022). It also entails a shift to an energy system that is more sustainable in not only environmental protection (Ślosarski, 2022) but also economic development (Li et al., 2022, Nakaishi et al., 2022); societal systems (Nakaishi et al., 2022) and justice, equity, equality, and fairness (Arora and Schroeder, 2022, Bang et al., 2022). Generally, scholars agree that its outcome should be a more sustainable energy system focused on achieving defined sustainability goals (Singh et al., 2019, Obobisa et al., 2022, Olatunji et al., 2022).

Over the years various conceptual models that group sustainability goals into specific dimensions or themes have been used to explain the concept of sustainability (Wallis et al., 2011, Gunnarsdottir et al., 2020, Karlsson et al., 2007). Singh et al. (2019) write that scholars are increasingly using social, environmental, economic, and governance dimensions to represent sustainability in an energy transition. The economic dimension relates to economic performance such as competitiveness of energy prices, energy products and economic outputs; environmental dimension relates to energy and its impact on the environment, nature and biodiversity, emissions reductions, natural resources, and natural cycles; the social well-being dimension relates to issues on quality of life, energy access, employment, education, gender, collective identity, community well-being, and social issues and; the governance dimension relates to regulations, policies, political regime and international landscape (O'Connor, 2006, Cîrstea et al., 2018, Zaman and Brudermann, 2018). The governance dimension will be discussed in greater detail in later sections.

Although some studies do not explicitly identify governance as a sustainability dimension, its importance in achieving sustainability in an energy transition can still be inferred from them. For example, Lerman et al. (2021) conceptualise sustainability in three dimensions of economic, environmental, and social sustainability but criticise this representation for missing a connection to policies on the energy transition. Another example is Cantarero (2020) who presents a four-dimensional concept of sustainability with justice, democracy, energy security and environmental dimensions. The Wuppertal sustainability indicator framework (Labuschagne et al., 2005, Singh et al., 2009) or the prism of sustainability (Juwana et al., 2012) and Heinrichs and Laws (2014) place justice and democracy within the governance dimension. Abdolmaleki and Bugallo (2021) also include, among others, legal, political and corruption matters within the institutional/ governance dimension. Similarly, Spangenberg (2007) lists justice, participation, and freedom among the components of the institutional dimension.

These examples align with Sing et al.'s statement that energy transition studies are increasingly recognising governance as an integrable part of achieving sustainability (Singh et al., 2019). This is also supported by Cirstea et al.'s view that the most logical representation of sustainability in renewable energy studies is a four-dimensional conceptual model with economic, environmental, institutional/ governance and social well-being dimensions (Cîrstea et al., 2018). The same can be inferred from Khan et al. (2022) and Rizvi et al. (2022) who

imply that policies and the institutional dimension are part of energy transition sustainability discussions. Of the four sustainability dimensions, governance is often under-represented in implementing energy transition initiatives (Khan et al., 2022). This is evident in Ziemba et al.'s study which did not find any elements related governance in fourteen sustainability assessment models and indices (Ziemba et al., 2022). Likewise, in their evaluation of eleven renewable energy systems for sustainable development, Abdolmaleki and Bugallo (2021) found none that included institutional or governance dimension in their conceptualisation of sustainability.

Studies related to governance in South Africa's energy transition have not explored its role in achieving sustainability. Todd and McCauley (2021) focus on policy barriers that impede the achievement of the country's energy transition goals. Nwaiwu (2021) studied the impact of governance on South Africa's and Mozambique's energy transitions but limited the study to policies and regulations on digital technologies to achieve sustainability. Swilling (2020) advocates for a strong socio-political regime (power relations among stakeholders, policy paradigm, policies and government and institutions) to achieve the country's energy transition goals but does not give details on the roles of its elements. Similarly, Walwyn (2020) acknowledges the importance of governance (policies, strategies, transparency, monitoring and evaluation) in driving the country's energy transition but does not explore its role in the transition. Lekunze's study (Lekunze, 2024) looks at governance in South Africa's energy transition but focuses on the manifestation of post-apartheid neoliberal policies and not the contribution and role of these policies. Other studies such as Baker et al. (2014), Power et al. (2016) and Hanto et al. (2022) look at the political economy of the energy transition with emphasis on the interaction between the governance of the energy transition and the country's economy. Although these studies acknowledge the importance of governance their focus is mostly on energy transition policies which is only one component of governance (Gianelle et al., 2023).

The under-representation of governance sustainability dimensions in energy transition literature and the focus on policies in governance related studies may result in the misidentification and misplacement of other governance goals as seen in Lerman et al. (2021), Cantarero (2020), Abdolmaleki and Bugallo (2021), Wang et al. (2009) and Rizvi et al. (2022). Or other governance related goals being overlooked in the energy transition which will be detrimental to achieving sustainability. Therefore despite the documented importance of governance in achieving sustainability (Alsaleh et al., 2021, Khan et al., 2022, Stankowska, 2022), there is still a need for studying and documenting the role of governance in the energy transition of countries like South Africa.

This study addressed this need with the guiding question: what is the role of governance as a sustainability dimension in South Africa's energy transition? To answer this question, the study identifies governance sustainability goals in South Africa's energy transition and highlights their roles based on existing literature.

2. Literature review

2.1. Governance sustainability

There is no agreed definition of governance; instead several definitions that allude to regulating, leading or steering social behaviour are presented in literature (Fukuyama, 2016). In energy studies, Cîrstea et al. (2018) use the term institutions instead of governance. But other studies consider institutions together with regulations, political regime, international landscape and quality of infrastructure as components of

governance (Zaman and Brudermann, 2018). In distinguishing between institutions and governance; governance is associated with changes driven by human agency within institutions or rule structures (Kjaer, 2023). The same can be inferred from Gianelle et al. (2023) who point that governance acts as a mediator in policy intervention.

Considering this study's focus the role of governance in the energy transition which will entail a study of its various goals, the study adopts Zaman and Brudermann's (Zaman and Brudermann, 2018) view that institutions affecting the energy transition are a component of governance. Therefore, like Alsaleh et al. (2021) and Zhang et al. (2022), it adopts governance instead of institutions as a sustainability dimension.

The importance of governance in the sustainability of an energy transition is explained by Carbajo and Cabeza (2019). They distinguish between methodological and decision-making aspects of achieving sustainability. Methodological aspects such as contexts and discourses are addressed through the economic, environmental, and social well-being dimensions while decision-making aspects such as policies and responsible parties are addressed through the governance dimension (Carbajo and Cabeza, 2019). In essence, governance provides the foundation, guidance and support for making decisions that affect strategy, action and change in other sustainability dimensions (O'toole et al., 2006, Heinrichs and Laws, 2014, Karlsson et al., 2007). Alsaleh et al. (2021) list the following characteristics of good governance in energy transitions: transparency, effectiveness, accountability, legitimacy, consistency, stable policies, political trust, political cohesion, cooperation, public acceptance and legitimacy.

In their works Williamson (2000) and Andrews-Speed (2016) present three levels of governance which, according to O'toole et al. (2006) and Karlsson et al. (2007), govern, guide and support the behaviour of decision makers in achieving sustainability. The first level is embedded informal governance which represents the social factors within which the governance of energy transition is embedded. These factors include culture (for example traditions, customs, taboos) and religion (Williamson, 2000), and beliefs and ideas about life (Andrews-Speed, 2016). Although not directly linked to the energy transition these factors have a direct influence on decision makers (Liang and Plakias, 2022). According to Cantarero (2020) an energy transition requires extra effort to build people's awareness, commitment and participation and create a sense of ownership and involvement in the transition process. This establishes the people's interest, participation and trust in the energy transition process (Cantarero, 2020). Decision makers are responsible for establishing these and they do so through embedded informal governance.

By nature, embedded social factors are abstract and intangible but Czernek-Marszałek (2019) lists three key elements of embeddedness that can be observed. The first element is people's trust in decision makers (Czernek-Marszałek, 2019, Liang and Plakias, 2022). Kitt et al. (2021) present competence, shared values and integrity as factors of establishing trust in decision makers. Together with competence, Mezger et al. (2019) add responsibility, openness and authenticity. Greenberg (2014) notes expertise, knowledge, honesty, openness, care, fairness, objectivity, adequate representation of stakeholders and lack of bias as other factors of trust.

The second observable element is information and resources sharing and transfer (Czernek-Marszałek, 2019) or social connections (Liang and Plakias, 2022). Social connections are a product of building trust throughout the energy transition process (Greenberg, 2014, Czernek-Marszałek, 2019). They leverage the established trust to build social capital among the people. Social capital is broadly defined by Kim and Aldrich (2005) and Kenton (2022) as sharing resources amongst people through their social connections in order to

work together to achieve a common goal. Social capital allows people to be agents of change within the energy transition rather than limiting them to mere recipients/ consumers of the transitioned energy system (Biely et al., 2022). This resonates with Ebel et al. (2022) who write that social capital empowers people to be part of social changes through access to institutions or resources. Therefore, the main roles of social connections are to establishes people's interest and participation in the energy transition.

Joint problem-solving or mutual exchange is the third observable element of embedded informal governance (Czernek-Marszałek, 2019, Liang and Plakias, 2022). People's ability to jointly identify and solve problems and articulate the process of solving these problems in the energy transition is crucial to achieving the desired sustainability goals (Loorbach and Rotmans, 2010, Du et al., 2022). In addition to solving common problems, joint problem-solving also creates an opportunity for stakeholders to exchange knowledge and learn from each other's experiences and expectations (Ning and Li, 2016). It also inspires innovation and creativity (Loorbach and Rotmans, 2010). Kim and Aldrich's and Kenton's description of social capital implies a situation where people work together to achieve a common goal (Kim and Aldrich, 2005, Kenton, 2022). Further, Pomegbe et al. (2020) and Hariram et al. (2023) credit social interactions with successful joint problem-solving, learning and innovation. Thus, making mutual exchange a product of social interactions.

The second level of governance is the governing environment or paradigm which represents the formal rules and structures that govern the energy transition such as political, economic, legal and government structures (Williamson, 2000). Andrews-Speed (2016) includes policy paradigm as part of the governing environment. Policy paradigm is a theoretical tool to specify and understand the guiding principles and ideas for creating policy; the specific strategies being implemented in the transition and; the involvement of specific stakeholders in the transition (Hogan and Howlett, 2015). Instead of policy paradigm, Torfing et al. (2020) use the term governance paradigm which inspires administrative reforms and shapes and reshapes the daily and general functioning and operations of an organisation. In the context of this study, the governing environment relates to the governing paradigm of the energy transition and it encompasses the policy paradigm. It reflects the guiding principles and ideas of the energy transition; gives an understanding of the ideas that support the structures and strategies being implemented to govern South Africa's energy transition and the stakeholders involved in the energy transition process. Torfing et al. (2020) caution that, in practice, the boundaries of the governing paradigm and by extension its sustainability goals, are hard to define but at a theoretical level they provide a clear and distinct approach on how an energy transition is governed.

The last level of governance represents the formal institutions that govern and facilitate the energy transition such as policies, laws, regulations and other instruments (Andrews-Speed, 2016). Whilst the governing paradigm relates to the principles and ideas on how the energy transition is governed; governing institutions align the governing paradigm with the reality and practicality of the energy transition (Williamson, 2000). Basically, institutions translate the paradigm into actual, on ground governance of the energy transition through the governing instruments.

2.2. South Africa's energy transition

In defining South Africa's energy transition, the country's Presidential Climate Commission (PCC) (Presidential Climate Commission (PCC), 2022b) presents broad definitions related to achieving quality life for all South

Africans in four contexts: climate change, the triple challenges of unemployment, inequality and poverty, economic and environmental sustainability, and addressing energy transition risks.

In the context of climate change, South Africa's energy transition is defined as a just transition aimed at achieving quality of life for all South Africans by increasing the country's ability to adapt to climate change impacts, fostering its climate resilience and reaching net-zero greenhouse gas (GHG) emissions by 2050, in line with best available science (Presidential Climate Commission (PCC), 2022b). In the context of the triple challenges, the transition is aimed at contributing to the goals of social inclusion, decent work for all, and the eradication of poverty (Presidential Climate Commission (PCC), 2022b). The third context is economic and environmental sustainability in which the energy transition builds the resilience of the economy and people through: affordable, decentralised and diversly owned resources and energy systems, conservation of natural resources, equitable access to water resources, an environment that is not harmful to one's health and well-being, and sustainable, equitable, inclusive land-use for all (Presidential Climate Commission (PCC), 2022b). Lastly, in addressing the risks associated with the energy transition, the PCC describes South Africa's energy transition as a just transition that puts people at the centre of decision-making particularly those most impacted by the transition, the poor, women, people with disabilities and the youth; and empowering and equipping people to take advantage of opportunities created by the transition (Presidential Climate Commission (PCC), 2022b).

Other studies on South Africa's energy transition also reflect these four contexts. Mthembi (n.d) describes the transition as the country's formal strategy to address climate change, unemployment, inequality and poverty through the principles of justice, redress and shared prosperity. Baker et al. (2014) write that South Africa's transition entails moving away from an era of energy opulence to an era of energy restraint whilst protecting jobs, assisting in socio-economic development and addressing economic disadvantages of historically marginalised people.

South Africa stands out as an ideal example of an energy transition in Sub Saharan Africa (SSA). Particularly in facilitating renewable energy development projects through its Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) (Eberhard and Naude, 2016). According to Davies and Wlokas (2022) South Africa's energy transition is one of its kind in Africa; its renewable energy development efforts can inform the transition process and energy policy across the continent as well as the global South. Because of this, South Africa was chosen as a basis for studying the role of governance as a sustainability dimension. By basing this study on South Africa, the study provides an example to other SSA countries on how they can transition their energy systems. It also provides an opportunity for the countries to learn how to focus on governance as a sustainability dimension to meet their energy transition sustainability goals.

3. Research methodology

The study design was a qualitative literature review which used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021) to guide the selection of primary data sources (documents to be reviewed) and Inductive Content Analysis (ICA) to collect and analyse the text data. PRISMA has been commended by Albhirat et al. (2024) for promoting consistency and transparency, and for generating high quality reports. ICA is commonly used to analyse and interpret text data by reducing it into categories,

concepts (including conceptual maps and systems) or models that describe a research phenomenon (Elo et al., 2014). Its inductive nature reflects the inductive reasoning behind the data analysis and interpretation (Kyngäs, 2020). The purpose of inductive reasoning is to generate knowledge, uncover meanings and explain phenomena (Newman, 2000). Because of its inductive reasoning, ICA allows a researcher to use the collected data to describe a research phenomenon without relying on pre-existing categories, theories or analysis (Elo et al., 2014, Graneheim et al., 2017, Horani, 2023). For this reason, ICA is often used when there is paucity of literature related to a research phenomenon (Armat et al., 2018). The shortage of literature on the role of governance as a sustainability dimension in South Africa's energy transition was demonstrated in earlier sections. This shortage supports the use of ICA to answer the research question. Other scholars like Horani (2023) have used ICA to study a research topic with limited prior literature. The ICA conducted in this study follows the steps presented by Vears and Gillam (2022).

The primary data sources for the study were academic and grey literature on South Africa's energy transition. The decision to include grey literature is based on a study by Winkler et al. (2023) who included grey literature in their content analysis related to South Africa's energy transition. Their study highlighted the presence of relevant grey literature from think tanks and non-governmental organisations (NGOs) (Winkler et al., 2023). The inclusion of grey literature is also supported by Haddaway et al.'s assertion that, "The inclusion of grey literature is a central tenet of systematic review methodology which aims to include all available documented evidence and reduce susceptibility to bias." (Haddaway et al., 2015).

As the study intended to use both academic and grey literature, using a database or search engine that contains both types of literature was the practical source for potential primary data sources. Mahood et al. (2014) identifies Google (www.google.com) as viable source of grey literature. From the authors' experience, Google can also be used to find relevant academic literature. Like Breen et al. (2020) a Boolean search string with the search chain "energy transition" or "decarbonization" or "net-zero" or "zero carbon" and "South Africa" or "Africa" was used on Google to search potential primary data sources. A total of 2,720 document results were obtained from this search. The results were reduced to 581 after applying Google's inbuilt filters.

This was followed by screening the titles of the 581 document results against the eligibility criteria. The criteria is presented in Table 1. This reduced the document results to ten. The ten documents were retrieved and checked for duplicates. No duplicates were identified. The full texts of the ten documents were then screened against the eligibility criteria. Five documents met the study's inclusion criterion and were set aside as potential primary data sources.

Another method that was used to identify and select potential primary data sources, was checking the citations of the five potential primary data sources. Citation search or reference search is recognised by the PRISM as a valid method of identifying potential primary sources (Page et al., 2021). A total of 253 documents were identified in the initial citation perusal against the eligibility criteria in Table 1. Out of these, 12 documents could not be retrieved for further screening. The titles of the 241 documents that were successfully retrieved were screened against the eligibility criteria and 138 were excluded from the review. The abstracts or introductions of remaining 103 documents were checked against the eligibility criteria, and 32 documents were excluded. The remaining documents were checked for duplicates, and 27 duplicates were removed. Of the 44 remaining documents, one document was an edited book with 23 sections: each section with a different

author. Due to this, the total number of documents that were set aside for further scrutiny was 66 documents (43 documents plus 23 sections of the edited book). The full texts of the 66 documents were further scrutinised against the eligibility criteria. 58 documents met the study's inclusion criterion and were set aside as potential primary data sources.

Table 1. Eligibility criteria for selecting potential primary data sources

Criteria	Inclusion	Exclusion
Database	Google	Other than Google
Type of document	Academic literature (journal articles, books and book chapters, postgraduate research, conference papers) and grey literature (publications from government, industry, non-governmental organisations, community organisations, worker organisations or think tanks)	Review articles, newspapers, personal correspondences
Publication status	Publish articles and articles in press	Unpublished articles
Year of publication	Articles published from 2000 onwards	Articles published before 2000
Access level	Access to full text	Access to full text is restricted
Language	English	Languages other than English
Content	Energy transition in South Africa	Other than energy transition in South Africa
Study area	South Africa's energy transition plans, goals, objectives or targets.	Other than South Africa's energy transition plans, goals, objectives or targets.

According to Moser and Korstjens (2018) a sample of between 15 to 20 documents is enough to reach data saturation in content analysis. Considering this sample size, a total of 31 documents were purposively selected out of the 63 identified potential primary data sources as samples. The selection was based on their year of publication with priority given to the most recently published documents from 2021 to 2023. This was done to firstly, ensure that the study does not include outdated literature and secondly, assuming continuity in literature, to ensure comprehensive literature sources are included in the study. The full details on how the identification and selection of primary data sources was conducted are provided in Appendix A.

Table 2 lists the 31 documents selected for the inductive content analysis (primary data sources) and Fig. 1 is a flowchart showing how the 31 documents were selected.

Table 2. Documents selected for the inductive content analysis (primary data sources).

S/No.	Selected Primary Data Sources
1	South Africa's Just Energy Transition Investment Plan (The Presidency of the Republic of South Africa, 2022).
2	5 Lessons from South Africa's Just Transition Journey (Connolly, 2022).
3	The South African Green Hydrogen TVET Ecosystem Just Transition Strategic Framework (Republic of South Africa Department of Higher Education and Training (RSA DHET), 2022).
4	Green Hydrogen Commercialisation Strategy for South Africa (Republic of South Africa Department of Trade Industry and Competition (RSA DTIC), 2022).
5	Just transition transaction in South Africa: an innovative way to finance accelerated phase out of coal and fund social justice (Winkler et al., 2023).
6	Electric vehicles white paper (Republic of South Africa Department of Trade Industry and Competition (RSA DTIC), 2023).
7	South African Renewable Energy Masterplan (SAREM) (Republic of South Africa Department of Mineral Resources and Energy and Department of Science and Innovation and Department of Trade Industry and Competition, 2023)
8	A Framework for a Just Transition in South Africa (Presidential Climate Commission (PCC), 2022b).
9	Just Transition Blueprint for Workers: Summary Document (The Congress of South African Trade Unions (COSATU), 2022).
10	Just Transition Open Agenda (Life After Coal, 2022).
11	Climate Change Bill (Republic of South Africa, 2021).
12	Energy impoverishment and burns: The case for an expedited, safe and inclusive energy transition in South Africa (Van Niekerk et al., 2022).
13	Understanding South African Urban Transitions: Goals, Challenges and Responses for Transforming Local Electricity Systems (Hermanus et al., 2022).
14	South Africa's Contested Transition to Energy Democracy? A collection of insights emerging from the national large-scale renewable energy programme (Swilling et al., 2022).
15	Towards a social licence to operate through benefits sharing based upon good developmental practices (Wlokas and Simpson, 2022).
16	Institutional practices in community benefit delivery in the REIPPPP (Wlokas, 2022).
17	The participation of black women-owned businesses in the REIPPPP (Stuurman, 2022).
18	Socio-economic impacts of renewable energy deployment on marginalised communities in South Africa (Dane and Mabaso, 2022)
19	Empowering local communities through utility-scale renewable energy: A case study of Hopefield Wind Farm (Swartz, 2022).
20	A Corolla or a Porsche? The case of renewable in local economic development in De Aar (Marais and Westoby, 2022).
21	Towards just transitions? Emerging insights from the REIPPPP (Davies, 2022b).
22	Jobs and the just transition (Cruywagen et al., 2022).

S/No.	Selected Primary Data Sources
23	At the CORE of the (democratic)(energy) transition: A township-based renewable energy project (Cherry, 2022).
24	Realising energy democracy through re-municipalisation in South Africa (Davies, 2022a).
25	Industry associations and South Africa's energy transition (Martin, 2022).
26	It is the grass that suffers: Knowledge injustices in the energy transition (Mthembi, 2022).
27	Experimenting with mini-grids at the neighbourhood level: A case study of Lynedoch EcoVillage (Bloem, 2022a).
28	The shift to decarbonised energy sources in buildings: Promising insights from Solar Decathlon Africa (Bloem, 2022b).
29	Supporting a Just and Climate-Resilient Transition in South Africa (Presidential Climate Commission (PCC), 2022c).
30	Community and Stakeholder Engagement on a Just Transition in South Africa (Presidential Climate Commission (PCC), 2022a).
31	South Africa's National Infrastructure Plan 2050 (Republic of South Africa Department of Public Works and Infrastructure (RSA DPWI), 2022).

To guide the identification and selection of relevant texts in the primary data sources (data collection), the study posed the leading question: What are the goals, objectives or targets in South Africa's just energy transition? To find the answers to this question, chunks of text were used as the unit of analysis. Their interpretation was based on manifest content analysis where the apparent/ common meaning of words is used to interpret the unit of analysis and there is no inference of meaning of words in the units of analysis (Republic of South Africa Department of Public Works and Infrastructure (RSA DPWI), 2022, Vears and Gillam, 2022).

Thereafter the primary data sources were read in detail to get a better understanding for their content (Elo and Kyngäs, 2008). This was followed by a second reading where chunks of text (the unit of analysis) related to an energy transition goal/objective/target were identified (by highlighting them) and selected (by copying and pasting them in a separate Microsoft Excel sheet) for analysis. The identification of these goals/ objectives/ targets was guided by the earlier descriptions of economic, environmental, governance and governance sustainability dimension. Only those that conformed to these descriptions were identified and selected for analysis. Vears and Gillam (2022) call this activity chunking or big picture coding or first-round coding. The chunks of texts in the Excel sheet were the collected data and they formed the first coding tree in which data is categorised in units of analysis (Vears and Gillam, 2022). The results of the first-round coding are presented in Appendix B.

The text data in the first coding tree was then read thoroughly and categorised based on similarities in their content (the manifest meaning of the goal/objective/target) (Vears and Gillam, 2022, Vears et al., 2016). The categories were further analysed to identify duplicate or synonymous goals, objectives and targets. Duplicates and synonyms were combined into one specific energy transition goal. Then each category was assigned an overarching theme to represent the common underlying meaning is reflected across the specific goals in that category (Kleinheksel et al., 2020). Thus, forming the second coding tree made up of 46 themes and over 7500

specific goals. The results of this analysis for each primary data source and their combined results which Vears and Gillam (2022) call fine-grained codes or second-round codes are presented in Appendix B.

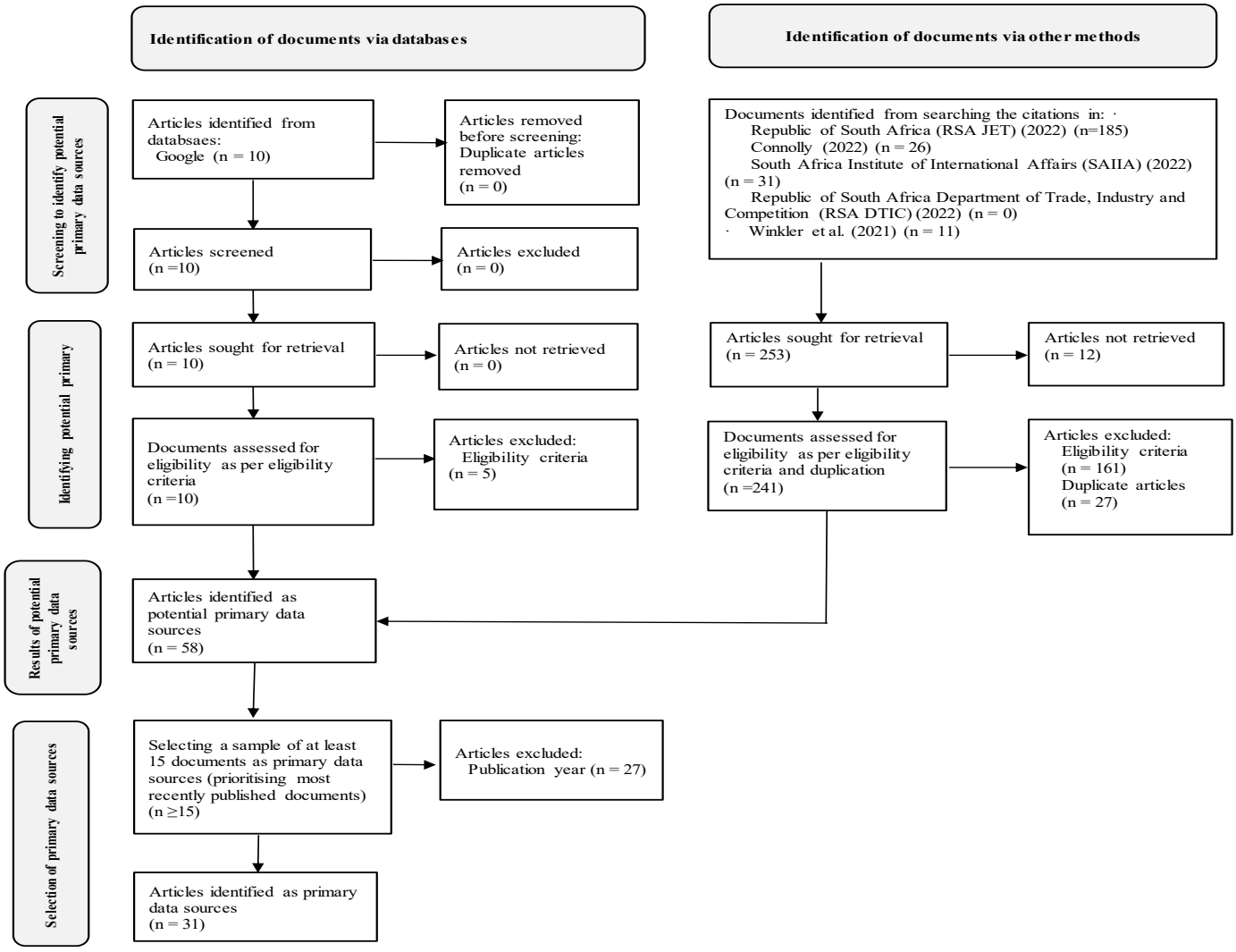


Figure 1. Flow chart on how the primary data sources were selected (adopted from Page et al., 2021)

The second coding tree was further analysed with the aim of further refining the themes. The themes were refined by combining the ones that have similar specific goals (fine-grained codes), breaking up the themes based on differences in their specific goals or changing the name of a theme to more concisely represent its specific goals. The result was a refined coding tree with 21 themes and almost 7000 specific goals. These themes are: tourism; land, land use and settlements including housing; food and agriculture including fisheries; environment; climate change; society and quality of life; gender and vulnerable groups (women, youth, children, elders and disabled); public services (water supply, sanitation, waste collection, electricity supply,

public transport and public ICT); health and safety; employment; capacity and capacity building (skills development, training, education and capacity support); research; technology and innovation; industrial development; transport; mining and minerals; energy; green hydrogen and grey hydrogen; economy; financing the transition and good governance. The refined coding tree including specific goals under each theme is presented in Appendix B.

The focus of this review is governance sustainability. Therefore, governance sustainability goals had to be extracted from the identified specific goals in each theme. This involved separating the 7000 specific goals under each theme into the four sustainability dimensions. Because of the large number of specific goals under each dimension, the goals were further synthesised to reduce their number. Kleinheksel et al. (2020) writes that codes that are related in context can be combined to form a new representative code. At this stage there were no duplicate or synonymous goals. But there were goals that are closely related in the context. These goals were combined. This reduced the number of specific sustainability goals from 7000 to 812. Therefore, the final coding tree consisted of 21 themes and total of 812 specific sustainability goals separated into economic, environmental, governance and social well-being dimensions. 40 goals were related to governance. The details of the separation into economic, environmental, governance and social well-being sustainability goals and the synthesis to reduce the number of goals from 7000 to 812 is presented in Appendix B.

4. Findings

4.1. Governance sustainability goals

The literature review identified 40 governance sustainability goals which are spread out across the 21 themes. Figure 2 lists these goals and shows the most common goals across the themes The full details of the goals in each theme are presented under Appendix B.



Figure 2. Governance sustainability goals identified from the primary data sources

When the goals are classified according to the three levels of governance presented by Williamson (2000) and Andrews-Speed (2016) that is, embedded informal governance, governing paradigm and governing institutions the results are as presented in Table 4.

Table 3. Classification of governance sustainability goals according to the three levels of governance

S/No.	Governance sustainability goals	Embedded governance			Governing paradigm	Governing institutions
		Building people's trust	Social connections	Joint problem-solving		
1	Access to information	✓	✓			
2	Accountability	✓				
3	Address corruption	✓				
4	Alignment in the transition			✓		
5	Clarity in the transition	✓				
6	Coherence in the transition	✓				
7	Communication	✓	✓			
8	Compliance to best practices					✓
9	Compliance to rights					✓
10	Compliance to standards					✓
11	Consensus in the transition			✓		
12	Consistency in the transition		✓			
13	Create an enabling environment					✓
14	Democracy in the transition		✓			
15	Dispute resolution mechanisms					✓
16	Effective state				✓	
17	Environment, social and governance (ESG) principles				✓	

S/No.	Governance sustainability goals	Embedded governance			Governing paradigm	Governing institutions
		Building people's trust	Social connections	Joint problem-solving		
18	Financing JET research			✓		
19	Good governance				✓	
20	Inclusive participation			✓		
21	Justice				✓	
22	Laws					✓
23	Leadership					✓
24	Legislation					✓
25	Monitoring and evaluation					✓
26	People-centred decision-making	✓				
27	Policies					✓
28	Procurement					✓
29	Public awareness	✓				
30	Public understanding	✓				
31	Reforms				✓	
32	Regulations					✓
33	Skills governance				✓	
34	Stakeholder collaboration			✓		
35	Stakeholder coordination		✓			
36	Stakeholder engagement			✓		
37	Stakeholder involvement			✓		
38	Stakeholder partnerships			✓		
39	Transparency	✓				
40	Trust	✓				

The results show that embedded informal governance goals are the most popular in South Africa's energy transition themes, followed by governing institution, and lastly governing environment (Figure 3).

4.2. Sustainability goals related to embedded informal governance

Sustainability goals related to embedded informal governance were identified based on its three observable elements: building people's trust, social connections and joint problem-solving or mutual exchange. Goals related to building people's trust and joint problem-solving were present in 19 themes and those related to social connections were present in 14 themes (Figure 4). In building people's trust, the popular goals are communication, accountability, transparency, people-centred decision-making and addressing corruption (Figure 5). In social connections, the popular goals are communication, stakeholder coordination and democracy in the transition (Figure 6). Joint problem-solving or mutual exchange is emphasised through inclusive participation, stakeholder collaboration, stakeholder partnerships and stakeholder engagement (Figure 7).

4.3. Sustainability goals related to the governing paradigm

At the second level of governance (governing paradigm or governing environment) the prominent sustainability goals were justice, reforms and good governance as shown in Figure 8.

4.4. Sustainability goals related to governing institutions

At the governing institution level, the prominent goals were creating an enabling environment, policies, regulations, monitoring and evaluation, procurement, compliance to rights, leadership and legislation as shown in Figure 9.

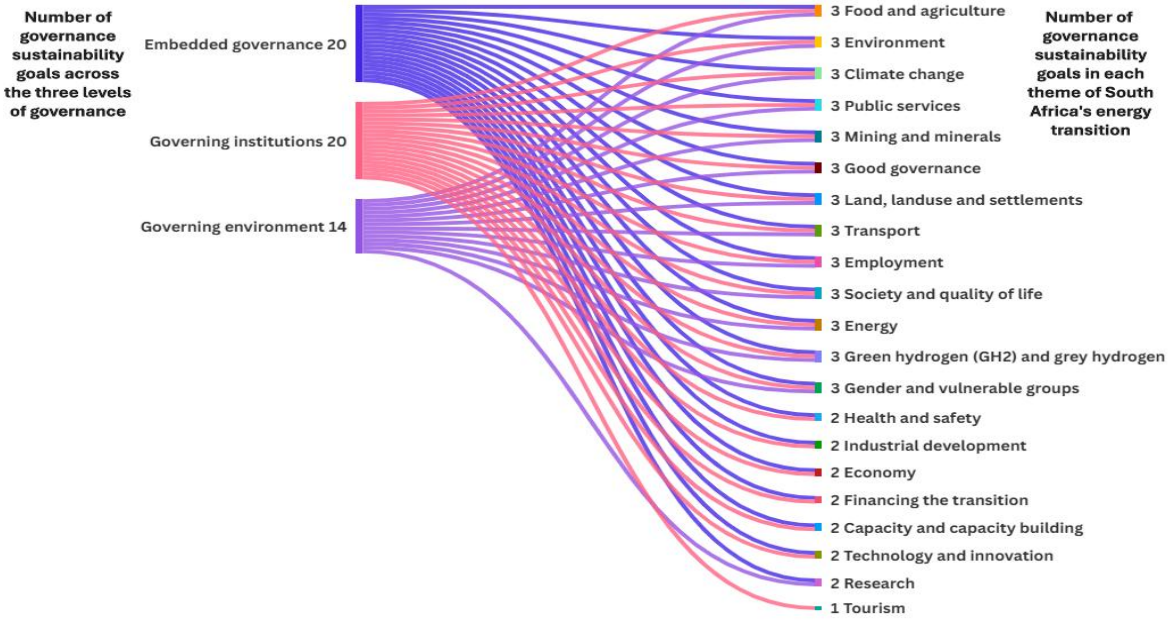


Figure 3. Number of governance sustainability goals in each level of governance and their numbers in each theme of South Africa's energy transition themes.

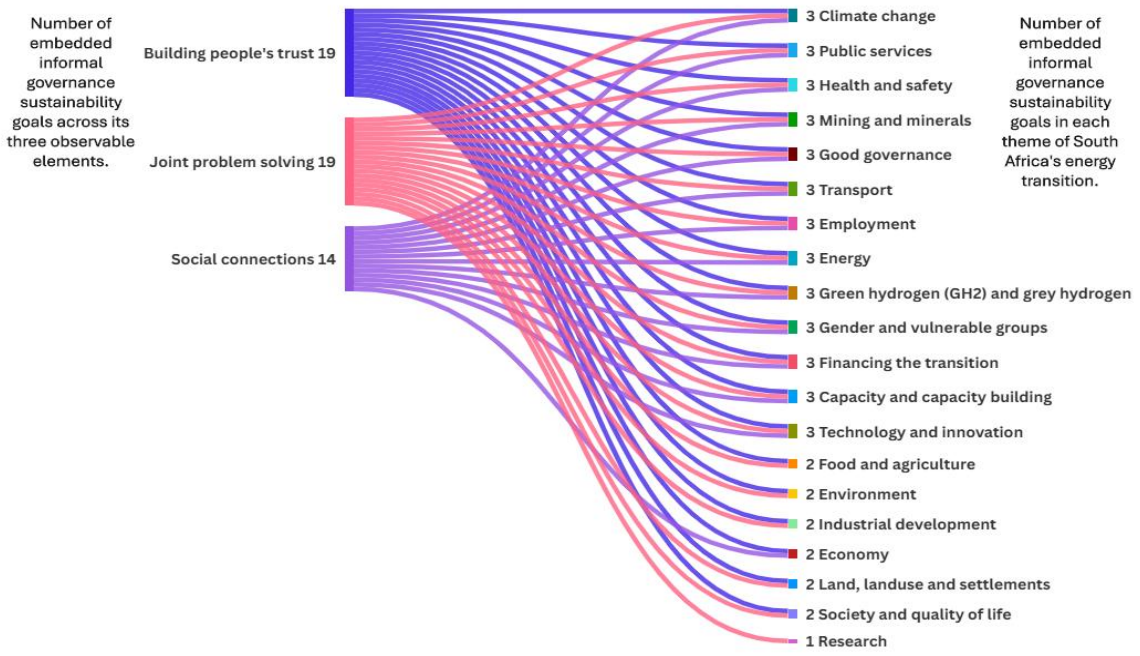


Figure 4. Number of governance sustainability goals in each observable element of embedded informal governance and their numbers in each theme of South Africa's energy transition themes.

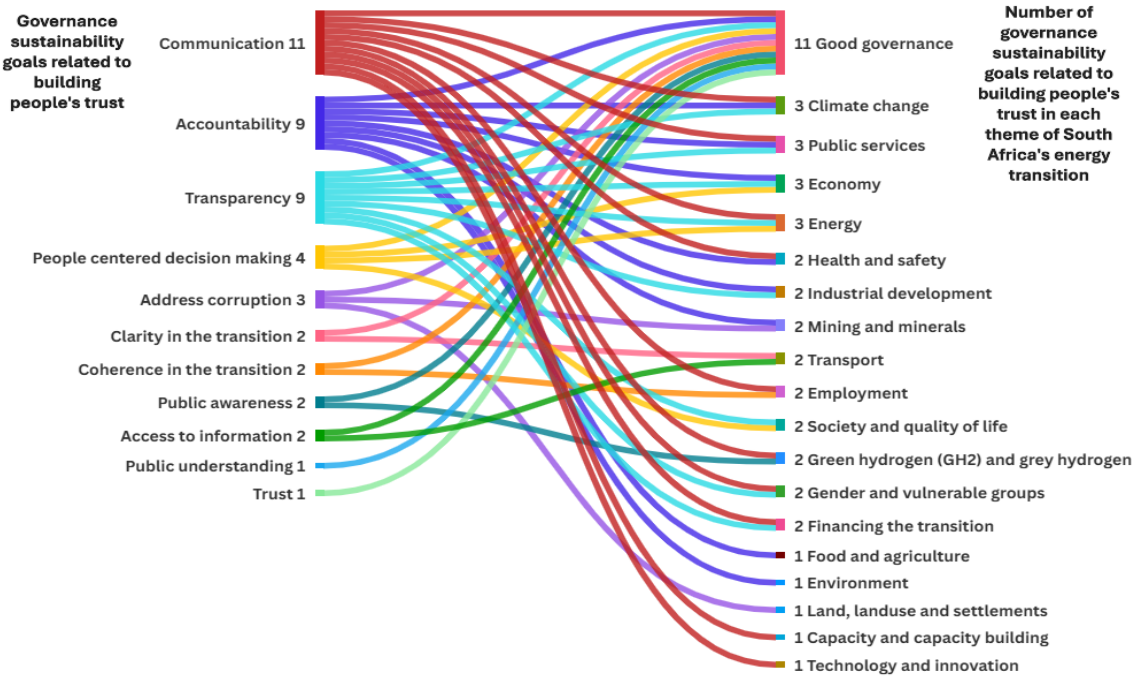


Figure 5. Governance sustainability goals related to building people's trust (the first observable element of embedded informal governance) and their numbers in each theme of South Africa's energy transition.

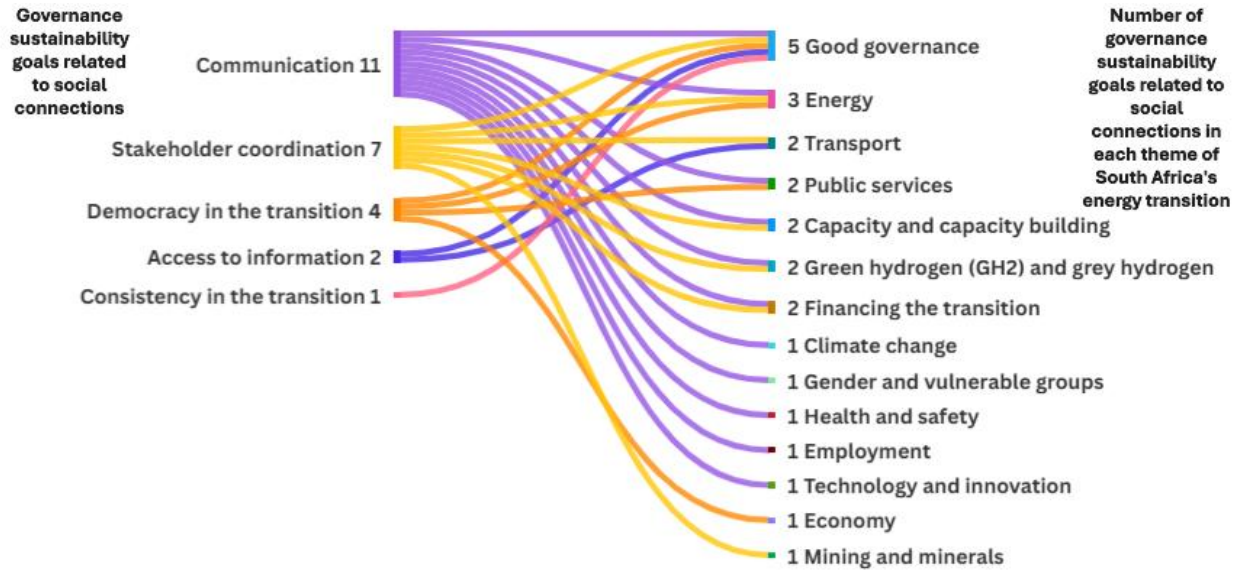


Figure 6. Governance sustainability goals related to social connections (the second observable element of embedded informal governance) and their numbers in each theme of South Africa's energy transition

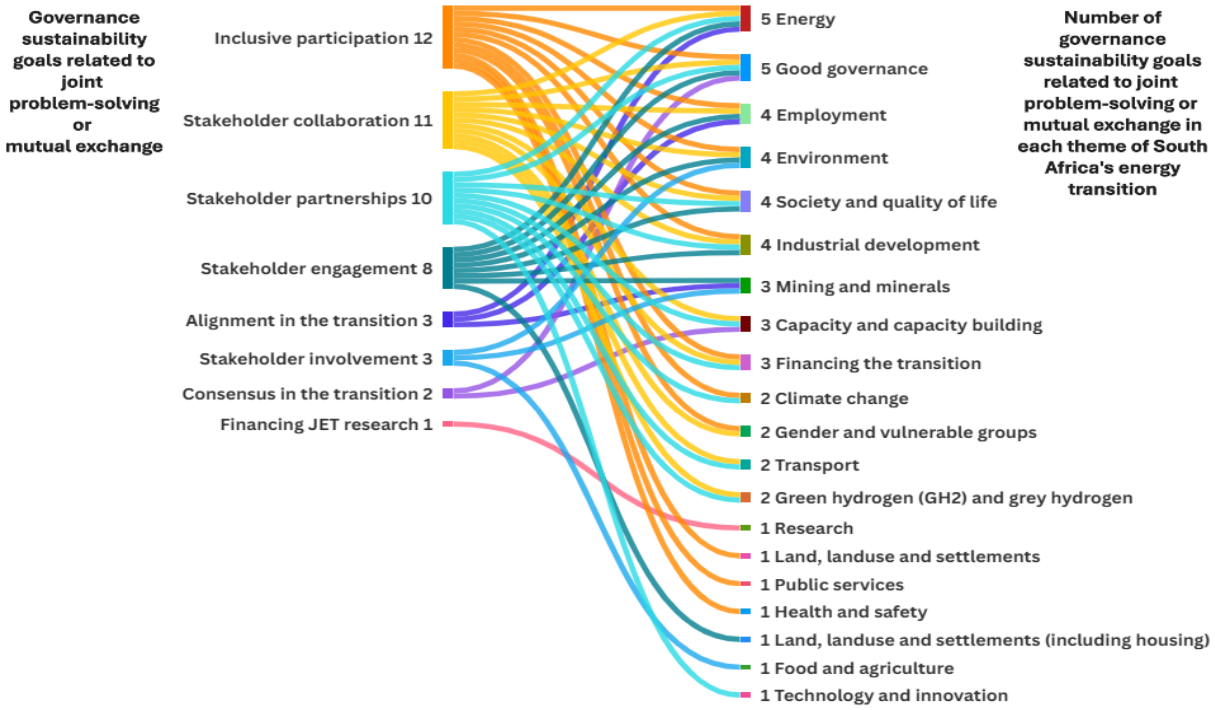


Figure 7. Governance sustainability goals related to joint problem-solving or mutual exchange (the third observable element of embedded informal governance) and their numbers in each theme of South Africa's energy transition.



Figure 8. Governance sustainability goals related to the governing paradigm and their numbers in each theme of South Africa's energy transition.

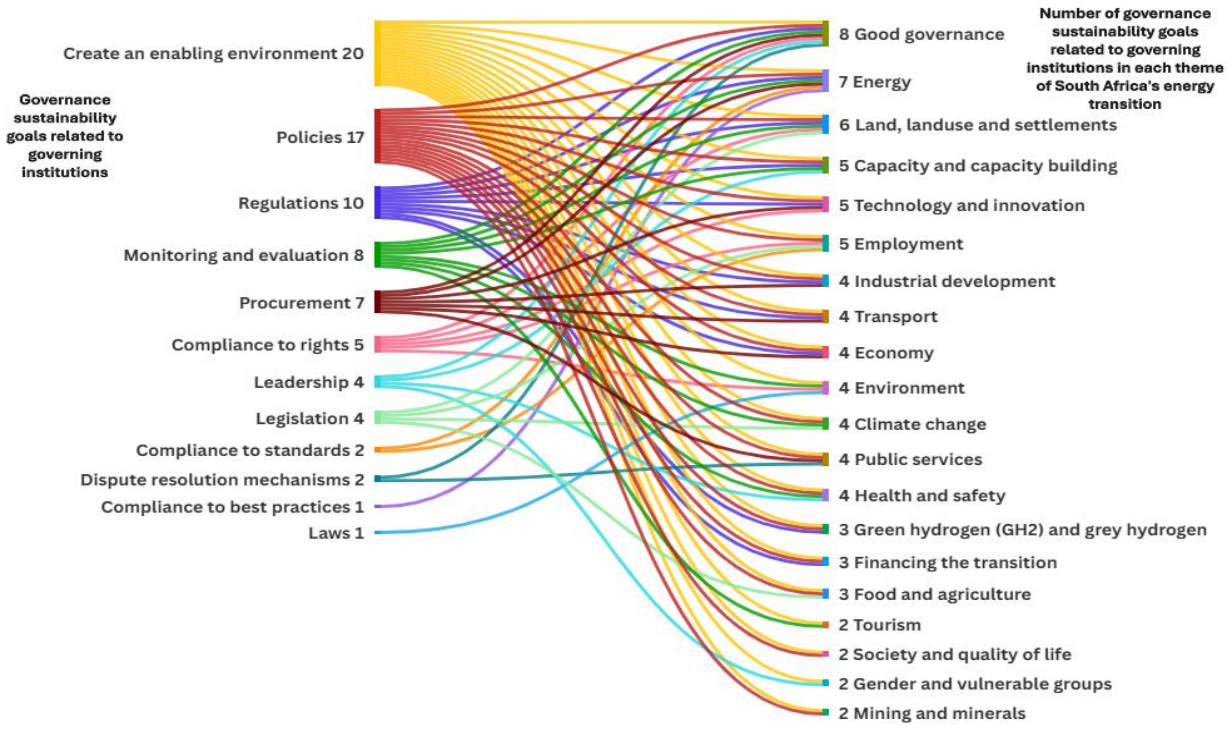


Figure 9. Governance sustainability goals related to governing institutions and their numbers in each theme of South Africa's energy transition.

5. Discussion

The results showed that the sustainability goals related to embedded informal governance are present in 20 out of 21 themes of South Africa's energy transition (Figure 3). This shows that the country prioritises social factors that are not directly related to its energy transition. But are important to its people and can influence the decisions being made in the energy transition. The wide coverage of these goals across the themes proves that the social factors are prioritised in all areas impacted by the transition. These results put the necessity of an energy transition to address social issues in our community that are tied to the energy system. This is accomplished through embedded informal governance sustainability goals.

Of the three observable elements of embedded governance, the goals related to building people's trust in their decision makers are present in 19 out of 21 themes (Figures 4 and 5). Thus, making building trust a crucial social issue in South Africa's energy transition. This aligns with Steg et al. (2015) and Dubose and Mayo (2020) who note that the consequence of lack of trust in decision makers is people's resistance to the energy transition. Further, if there is no trust between decision makers and the people it will be impossible to achieve economic, environmental and social well-being sustainability goals (Dirksmeier and Tuitjer, 2022). Without trust, people will resist the transition process and eventually reject the transitioned energy system. Paraphrasing Devine et al. (2020) in the context of energy transitions, the role of trust as a component of governance is to lubricate the process of transitioning towards a shared vision of the energy system. It can therefore be concluded that the starting point of an energy transition is building people's trust in decision makers. For South Africa, this was mainly achieved through addressing corruption, accountability, transparency, people-centred decision-making and communication.

Communication together with democracy and stakeholder coordination are largely responsible for building social connections and ultimately social capital. Social capital allows stakeholders to work together towards a common goal (Mahato and Jha, 2024). Although the goals related to social connections are present in only 14 themes (Figure 6), this does not mean there is no social capital necessary to bring stakeholders together for a common purpose. Gao et al. (2025) list the following core elements of social capital: social networks, social participation, trust, reciprocity and shared norms. From this list, social capital is also generated through goals related to building people's trust such as trust and communication, and goals related to joint problem-solving such as inclusive participation. Pomegbe et al. (2020) and Hariram et al. (2023) also credit stakeholder interactions with successful joint problem-solving, learning and innovation. Meaning that the social capital that was necessary to transpire to the notable presence of joint problem-solving goals (Figure 7) was not solely due to social connections. It was the result of a combination of social connections, building people's trust and joint problem-solving. This shows that the observable elements of embedded informal governance are interconnected and their respective goals can play multiple-roles.

The governance goals related to joint problem-solving or mutual exchange are present in 19 themes (Figure 7). The prominent goals are stakeholder involvement, stakeholder engagement, stakeholder participation, stakeholder collaboration, stakeholder partnerships and alignment in the transition. We infer from Kim and Aldrich (2005) and Kenton (2022) that joint problem-solving is a product of social capital. Joint problem-solving goals leverage social capital to bring stakeholders together to agree on what the transition should

address, how it should address it, what it should achieve and how it should achieve it (Mahato and Jha, 2024, Loorbach and Rotmans, 2010, Du et al., 2022). The wide presence of these goals across the themes demonstrates that joint problem-solving is prioritised in all areas impacted by the transition. Thus, making joint problem-solving a crucial factor in South Africa's energy transition.

Overall, the sustainability goals related to embedded informal governance are closely linked and even overlap in some cases. Because of this, various activities carried out as part of South Africa's energy transition achieved more than one goal. Such activities include community and stakeholder engagement meetings on just energy transition which aimed to, "Consolidate the views and concerns of affected communities and stakeholders regarding what constitutes a just transition; build trust and understanding between stakeholders; and establish a consensus regarding the elements of a just transition, to be incorporated in the nation Just Transition Framework." (Presidential Climate Commission (PCC), 2022a). Another example is open invitation consultations with stakeholders (faith community, local governments, youth, civil society, businesses and organised labour) on the country's 2035 Nationally Determined Contribution targets to "Gather insights and ensure the ensure the revised NDC reflects a just, inclusive and ambitious climate agenda." (Presidential Climate Commission (PCC), 2022a). The PCC also invited a series of essays from young South Africans (ages 18-35) in which they shared their perspective on the energy transition (Presidential Climate Commission (PCC), 2024). Other activities involved a series of public energy transition dialogues that were live streamed on social media platforms like YouTube. To quote, "These dialogues will bring together subject experts and social partners for open discussions about different aspects of the transition, including gender and social inclusion, the political economy, social support mechanisms, and industrial development strategies." (Presidential Climate Commission (PCC), 2023). In all these examples the activities addressed more than one embedded informal governance goal. In so doing addressing the necessity of building people's trust, interest and participation in the energy transition and establishing joint problem-solving and social connections in the energy transition process.

The prominent goals at the governing paradigm (the second level of governance) are justice, reforms and good governance. Justice is present in 13 themes, reforms is present in 5 themes and good governance is present in 3 themes (Figure 8). The prominence of these goals and their roles in the transition can be traced to the history of South Africa's energy system. The country's history ties its energy system to the colonial period, and apartheid regime through the mineral energy complex (MEC) (Davies et al., 2018). The links between the MEC, the colonial period and apartheid regime, the energy system, and the energy transition are well discussed in literature (Baker, 2015, Davies et al., 2018, Sharife and Bond, 2012, Baker et al., 2014). Literature emphasises the need for the energy transition to address colonial and apartheid legacies in the energy system and remedy the harm they caused to the people and environment (Baker et al., 2014, Presidential Climate Commission (PCC), 2022b). According to Heffron and McCauley (2018) and Cabre and Vega-Araujo (2022) respect for human rights, reduced inequalities and reduced injustices in the transitioned energy system are achieved by putting justice at the centre of the transition process. Thus, establishing justice as the governing paradigm in South Africa's energy transition. Presidential Climate Commission (PCC) (2022b) notes distributive, restorative and procedural justice as the guiding principles of justice in South Africa's energy transition. Distributive justice is justice in the distribution of energy transition risks, benefits and burdens (Cabre and Vega-Araujo, 2022, Republic of South Africa Department of Trade Industry and Competition (RSA DTIC), 2023). Restorative justice is justice to the people most affected by the transitioning energy system which

is achieved by addressing and remedying the harm and damage it caused to both society and environment (Republic of South Africa Department of Trade Industry and Competition (RSA DTIC), 2023, Cabre and Vega-Araujo, 2022). Procedural justice is achieved by upholding of good governance, rule of law and due process in the energy transition (Cahill and Allen, 2020, Cabre and Vega-Araujo, 2022, Republic of South Africa Department of Trade Industry and Competition (RSA DTIC), 2023). These three principles encapsulate the roles of justice and, by extension, reforms and good governance as sustainability goals.

The sustainability goals related to governing institutions (the third level of governance) have the widest presence across the energy transition themes. For instance, creating an enabling environment touches 20 themes, policies touch 17 themes, regulations touch 10 themes, monitoring and evaluation touches 8 themes, procurement touches 7 themes and compliance to rights touches 5 themes (Figure 9). This substantial presence shows the importance of establishing formal institutions to govern all areas impacted by an energy transition. It also highlights the importance of making the transition as practical as possible in line with the reality and context in the impacted areas. This connects embedded informal governance to governing institutions because building people's trust, social connections and joint problem-solving directly address people's experiences, concerns and perceptions of the energy system and its transition. This resonates with King et al.'s view that the role of governing intuitions is to explicitly capture the norms, reality and conditions surrounding the energy transition and detect violations (King et al., 2015). Bussu et al. (2022) also link embeddedness and institutionalisation by viewing embeddedness as a function of institutions.

Therefore, in addition to translating the governing paradigm goals and making them practical and achievable in an energy transition (Williamson, 2000), governing institutions also ensure that embedded informal governance goals are mandated in and achieved through various institutions. An example of this is provided by Ramasamy (2021) who demonstrates that the guarantee of the right to access information (an embedded informal governance goal) by an Act (a governing institution goal) leads to transparency, accountability, addressing corruption and democracy (embedded informal governance goals). The institutions governing an energy transition (example policies, regulations and laws) translate and inject the transition's paradigms (example justice, reforms and good governance) into embedded informal governance goals (example communication, decision making, addressing corruption, democracy and inclusive participation) and into economic, environmental and social well-being sustainability goals.

Examples of South Africa's energy transition governing institutions are presented in Figure 10. They include policies, bills and strategies established between 2011 and 2022 that created an enabling environment for energy transition.

A connection that stands out in the preceding discussion is the strong influence of an energy system's history and context to embedded informal governance and the governing paradigm. In their study on the role of the context in decision-making, Runhaar and Driessen (2007) found that context defines the areas of interest of different decision-makers. This means that the identified embedded informal governance goals are tied to the social factors surrounding South Africa energy system and its transition thus influenced by context. The identified governing paradigm goals (justice, reforms and good governance) are tied to the country's colonial and apartheid legacy in the energy system thus influenced by South Africa's history. Therefore, in addition to governing institutions, history and context also connect embedded informal governance and the governing paradigm, and define the roles played by their respective goals.

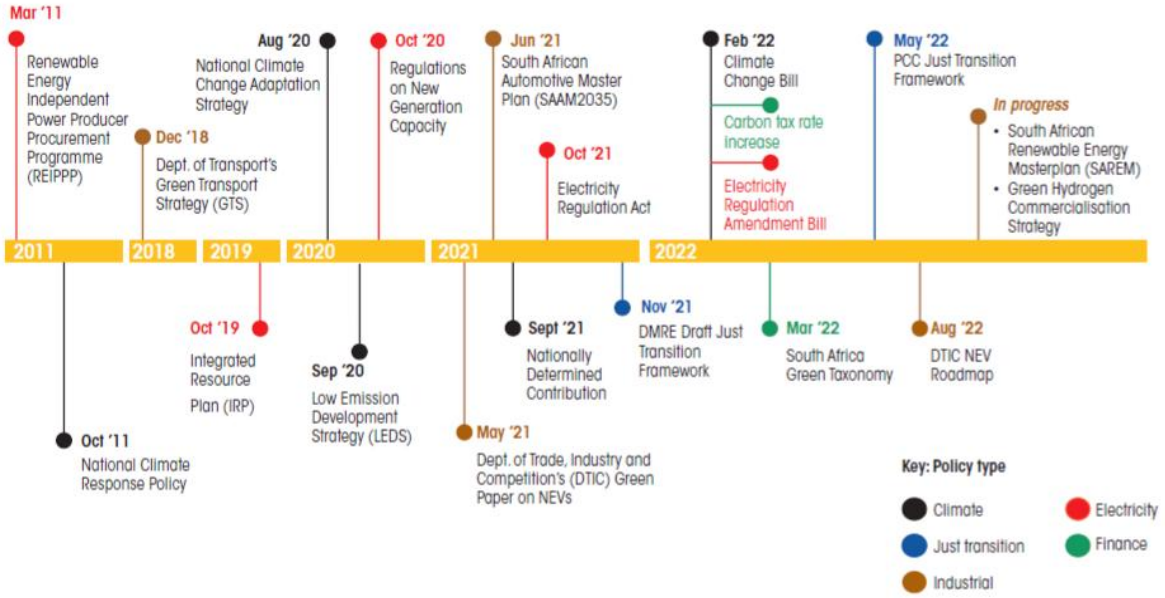


Figure 10. Example of institutions governing South Africa's energy transition established between 2011 and 2022 (adopted from The Presidency of the Republic of South Africa, (2022)

6. Limitations

This review met its aim of highlighting the role of governance sustainability goals in South Africa's energy transition. The discussions of the results noted a limitation that is tied to the influence of South Africa's history and context on its energy system and the transition. Particularly on the sustainability goals related to embedded informal governance and governing paradigm. This limitation is consistent with literature on sustainability. A society's view on sustainability and its related goals depends on, among other things, the context of the society which includes its culture, beliefs and ideas about life (Waas et al., 2014, Gasso et al., 2015). Therefore, depending on their context, other countries may prioritise different governance goals to build people's trust, make social connections and to foster joint problem-solving in their energy transitions. Further, depending on a country's history, their energy transition may be governed by different paradigms. The adoption of this study's results in other countries should bear in the mind the history of the country's energy system and the context of its energy transition.

Another limitation to the review is the number of the documents that were reviewed (31 documents). Although the number of documents met the minimum sample size of between 15 to 20 documents for a content analysis (Moser and Korstjens, 2018), limiting the publication years between 2021 and 2023 excluded earlier documents from the study. As seen in Figure 10, the institutions governing South Africa's energy transition date back to 2011. We recommend future studies to cover a wider range of publication years.

The inclusion of grey literature in the review poses another limitation. The reviewed grey literature included organisation reports and government reports which were not peer reviewed before publication. Despite Haddaway et al.'s (Haddaway et al., 2015) assertion that, grey literature is as relevant as academic literature to evidence reviews like systematic literature reviews, the lack of a peer review process limits the

reliability of the information in grey literature. Because the study included both academic and grey literature, this limitation has been addressed to some extent. The authors acknowledge that although the inclusion of grey literature widened the scope of the review, this inclusion exposed the review to the risk of non-reliability of the information drawn from grey literature.

7. Conclusion

The aim of the review was to showcase the role of governance in an energy transition by answering the question: what is the role of governance as a sustainability dimension in South Africa's energy transition? This question was answered by identifying 40 sustainability goals related to governance and discussing their roles in the energy transition. The roles of these goals were discussed based on the three levels of governance: embedded informal governance, governing paradigm and governing institutions. Governing institution goals such as policies, laws and regulations form the connection between embedded informal governance goals and governing paradigm goals. Governing institutions also connect governance sustainability dimension with other sustainability dimensions (economy, environment and social well-being).

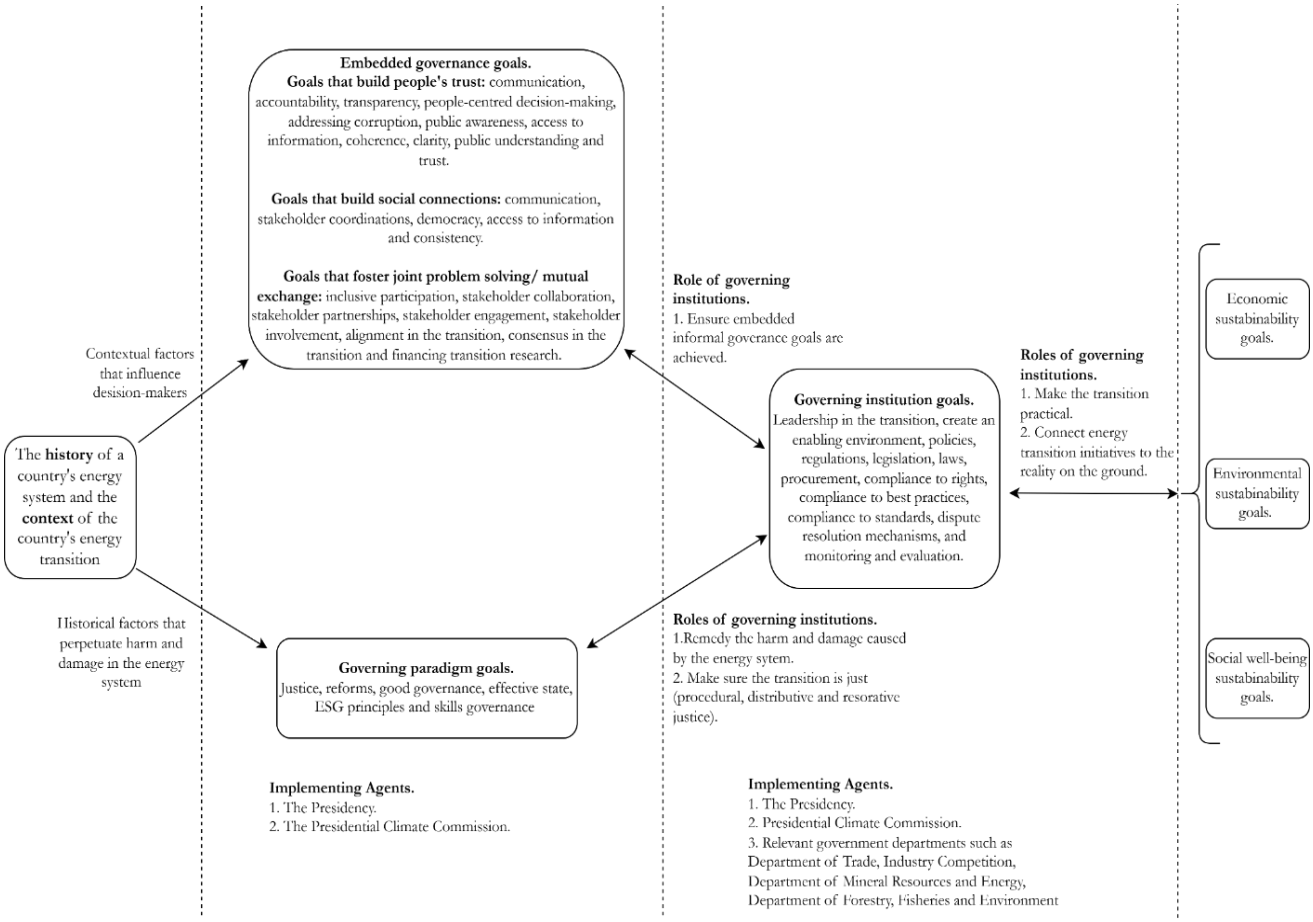


Figure 11. A summary of the connections, roles and implementing agents of governance sustainability goals in an energy transition.

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Data Availability Statement

The data supporting the findings of this study, including materials related to the search strategy, study selection, and analysis process, are available from the corresponding author upon reasonable request.

List of abbreviations

CARINBE - Centre of Applied Research and Innovation in the Built Environment.

COSATU - The Congress of South African Trade Unions

CST - Centre for Sustainability Transitions

ESG – Environment, social and governance

GH2 - Green hydrogen

IAEA - International Atomic Energy Agency

ICA - Inductive Content Analysis.

ICT – Information and Communication Technologies

JET – Just Energy Transition

MEC – Mineral Energy Complex

NGOs - Non-governmental Organisations

NIP 2050 - National Infrastructure Plan 2050

P RSA - The Presidency, Republic of South Africa

PCC - Presidential Climate Commission

PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses

REIPPPP - Renewable Energy Independent Power Producer Procurement Programme ()

RSA DFFE - Republic of South Africa Ministry of Forestry, Fisheries and the Environment

RSA DMRE, DSI, DTIC - Republic of South Africa Department of Mineral Resources and Energy, Department of Science and Innovation and Department of Trade, Industry and Competition

RSA DPWI - Republic of South Africa Department of Public Works and Infrastructure

RSA DTIC - Republic of South Africa Department of Trade, Industry and Competition

SAIIA - South Africa Institute of International Affairs

SAREM - South African Renewable Energy Masterplan

SSA – Sub Saharan Africa

TBL - Triple bottom line

TVET – Technical and Vocational Education and Training

WCED - World Commission on Environment and Development

References

Abdolmaleki, S.F. and Bugallo, P.M.B. (2021), "Evaluation of Renewable Energy System For Sustainable Development", *Renewable and Environmental Sustainability*, Vol. 6, pp. 1-11. https://doi.org/10.1051/rees/2021045

Albhirat, M.M., Rashid, A., Rasheed, R., Rasool, S., Zulkiffli, S.N.A., Zia-Ul-Haq, H.M. and Mohammad, A.M. (2024), "The PRISMA statement in enviropreneurship study: A systematic literature and a research agenda", *Cleaner Engineering and Technology,* Vol. 18, pp. 1-12. https://doi.org/10.1016/j.clet.2024.100721

Alsaleh, M., Abdul-Rahim, A.S. and Abdulwakil, M.M. (2021), "The importance of worldwide governance indicators for transitions toward sustainable bioenergy industry", *Journal of Environmental Management,* Vol. 294, pp. 1-13. https://doi.org/10.1016/j.jenvman.2021.112960

Andrews-Speed, P. (2016), "Applying institutional theory to the low-carbon energy transition", *Energy Research & Social Science,* Vo. 13, pp. 216-225. https://doi.org/10.1016/j.erss.2015.12.011

Armat, M.R., Assarroudi, A., Rad, M., Sharifi, H. and Heydari, A. (2018), "Indictive and Deductive: Ambigous Labels in Qualitative Content Analysis", *The Qualitative Report,* Vol 23, pp. 219-221. https://doi.org/10.46743/2160-3715/2018.2872

Arora, A. and Schroeder, H. (2022), "How to avoid unjust energy transitions: insights from the Ruhr region", *Energy, Sustainability and Society,* Vol. 12, pp. 1-13. https://doi.org/10.1186/s13705-022-00345-5

Baker, L. (2015), "Renewable energy in South Africa's minerals-energy complex: a 'low carbon' transition?", *Review of African Political Economy,* Vol. 42, pp. 245-261. https://doi.org/10.1080/03056244.2014.953471

Baker, L., Newell, P. and Phillips, J. (2014), "The Political Economy of Energy Transitions: the Case of South Africa", *New Political Economy,* Vol. 19, pp. 791-818. https://doi.org/10.1080/13563467.2013.849674

Bang, G., Rosendahl, K.E. and Böhringer, C. (2022), "Balancing cost and justice concerns in the energy transition: comparing coal phase-out policies in Germany and the UK", *Climate Policy,* Vol. 22, pp. 1000-1015. https://doi.org/10.1080/14693062.2022.2052788

Biely, K., Chappin, E., De Vries, G., Sareen, S. and Bauwens, T. (2022), "Understanding the embeddedness of individuals within the larger system to support the energy transition", *Sustainability Science,* Vol. 17, pp. 2173-2175. https://doi.org/10.1007/s11625-022-01230-y

Bloem, S. (2022a), "Experimenting with mini-grids at the neighbourhood level: a case study of Lynedoch EcoVillage", in: Megan, D., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Sustainability Transitions, Stellenbosch, pp. 314-330.

Bloem, S. (2022b), "The shift to decarbonised energy sources in buildings: promising insights from Solar Decathlon Africa.", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s.), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Sustainability Transitions, Stellenbosch, pp. 344-364.

Breen, A., Giannotti, E., Flores Molina, M. and Vásquez, A. (2020), "From "Government to Governance"? A Systematic Literature Review of Research for Urban Green Infrastructure Management in Latin America", *Frontiers in Sustainable Cities,* Vol. 2, pp. 1-16. https://doi.org/10.3389/frsc.2020.572360

Bussu, S., Bua, A., Dean, R. and Smith, G. (2022), "Introduction: Embedding participatory governance", *Critical Policy Studies,* Vol. 16, pp. 133-145. https://doi.org/10.1080/19460171.2022.2053179

Cabre, M.M. and Vega-Araujo, J. (2022), "Considerations for a just and equitable energy transition", available at: https://www.sei.org/publications/just-equitable-energy-transition/ (accessed 5 November 2024).

Cahill, B. and Allen, M.M. (2020), "Just Transition Concepts and Relevance for Climate Action: a Preliminary Framework", available at: https://www.csis.org/analysis/just-transition-concepts-and-relevance-climate-action (accessed 26 November 2024).

Cantarero, M.M.V. (2020), "Of renewable energy, energy democracy, and sustainable development: a roadmap to accelerate the energy transition in developing countries", *Energy Research & Social Science,* Vol. 70, pp. 1-15. https://doi.org/10.1016/j.erss.2020.101716

Carbajo, R. and Cabeza, L.F. (2019), "Sustainability and social justice dimension indicators for applied renewable energy research: a responsible approach proposal", *Applied Energy,* Vol. 252, pp. 1-26. https://doi.org/10.1016/j.apenergy.2019.113429

Cherry, J. (2022), "At the CORE of the (democratic)(energy) transition: a township-based renewable energy project", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Sustainability Transitions, Stellenbosch, pp. 230-244.

Cîrstea, S., Moldovan-Teselios, C., Cîrstea, A., Turcu, A. C. and Darab, C.P. (2018), "Evaluating Renewable Energy Sustainability by Composite Index", *Sustainability,* Vol. 10, pp. 1-21. https://doi.org/10.3390/su10030811

Connolly, K. (2022), "5 Lessons from South Africa's Just Transition Journey", available at: https://www.wri.org/technical-perspectives/5-lessons-south-africas-just-transition-journey (accessed 30 December 2023).

Cruywagen, M., Davies, M. and Swilling, M. (2022), "Jobs and the just transition", in*:* Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection*

of insights emerging from the national large-scale renewable energy programmes, Centre for Sustainability Transitions, Stellenbosch, pp. 200-215.

Czernek-Marszałek, K (2019), "Social embeddedness and its benefits for cooperation in a tourism destination", *Journal of Destination Marketing & Management,* Vol. 15, pp 1-17. https://doi.org/10.1016/j.jdmm.2019.100401

Dane, A. and Mabaso, M. (2022), "Socio-economic impacts of renewable energy deployment on marginalised communities in South Africa", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes*, Centre for Sustainability Transitions, Stellenbosch, pp. 111-127.

Davies, M. (2022a), "Realising energy democracy through re-municipalisation in South Africa", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Stellenbosch, pp. 246-263.

Davies, M. (2022b), "Which just transition? Lessons from the REIPPPP why a deep shift is paramount", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Stellenbosch, pp. 180-199.

Davies, M., Swilling, M. and Wlokas, H.L. (2018), "Towards new configurations of urban energy governance in South Africa's Renewable Energy Procurement Programme", *Energy Research & Social Science,* Vol. 36, pp. 61-69. https://doi.org/10.1016/j.erss.2017.11.010

Davies, M. and Wlokas, H. (2022), "A guidebook to the REIPPPP: Introduction", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's Contenested Transition to Energy Democracy? A collection of insights emerging from the national large-scale renewable energy programme*, Centre for Sustainability Transitions, Stellenbosch, pp. 44-63

Devine, D., Gaskell, J., Jennings, W. and Stoker, G.A. (2020), "Exploring trust, mistrust and distrust", working paper, University of Southampton, Southampton, 20April.

Dirksmeier, P. and Tuitjer, L. (2022), "Do trust and renewable energy use enhance perceived climate change efficacy in Europe?" *Environment, Development and Sustainability,* Vol. 25, pp. 8753-8776. https://doi.org/10.1007/s10668-022-02421-4

Du, X., Dai, M., Tang, H., Hung, J.-L., Li, H. and Zheng, J. (2022), "A multimodal analysis of college students' collaborative problem solving in virtual experimentation activities: a perspective of cognitive load", *Journal of Computing in Higher Education,* Vol. 35, pp. 272-295. https://doi.org/10.1007/s12528-022-09311-8

Dubose, B.M. and Mayo, A.M. (2020), "Resistance to change: a concept analysis". *Nursing Forum,* Vol. 55, pp. 631-636. https://doi.org/10.1111/nuf.12479

Ebel, S.A., Burnham, M. and Reynolds, J. (2022), "Examining the conditions that activate linking social capital to transition environmental governance: empirical insights from Chile's coast", *Regional Environmental Change,* Vol. 23, pp. 1-15. https://doi.org/10.1007/s10113-022-01992-2

Eberhard, A. and Naude, R. (2016), "The South African Renewable Energy Independent Power Producer Procurement Programme: a review and lessons learned", *Journal of Energy in Southern Africa,* Vol. 27, pp. 1-14. https://doi.org/10.17159/2413-3051/2016/v27i4a1483

Edomah, N., Bazilian, M. and Sovacool, B.K. (2020), "Sociotechnical typologies for national energy transitions", *Environmental Research Letters*, Vol. 15 No. 11, pp 1-7. https://doi.org/10.1088/1748-9326/abba54

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K. and Kyngäs, H. (2014), "Qualitative Content Analysis: a focus on trustworthiness. *SAGE Open,* Vol. 4, pp. 1-10. https://doi.org/10.1177/2158244014522633

Elo, S. and Kyngäs, H. (2008), "The qualitative content analysis process", *Journal of Advanced Nursing,* Vol. 62, pp. 107-115. https://doi.org/10.1111/j.1365-2648.2007.04569.x

Fang, G., Wang, L., Gao, Z., Chen, J. and Tian, L. (2022), "How to advance China's carbon emission peak? - a comparative analysis of energy transition in China and the USA", *Environmental Science and Pollution Research*, Vol. 29, pp. 71487-71501. https://doi.org/10.1007/s11356-022-20958-9

Fouquet, R. (2010), "The slow search for solutions: lessons from historical energy transitions by sector and service", *Energy Policy,* Vol. 38, pp. 6586-6596. https://doi.org/10.1016/j.enpol.2010.06.029

Fukuyama, F. (2016), "Governance: what do we know, and how do we know it?", *Annual Review of Political Science,* Vol. 19, pp. 89-105. https://doi.org/10.1146/annurev-polisci-042214-044240

Gao, Z., Chee, C.S., Omar Dev, R.D., Liu, Y., Gao, J., Li, R., Li, F., Liu, X. and Wang, T. (2025), "Social capital and physical activity: a literature review up to March 2024", *Frontiers in Public Health,* Vol. 13, pp. 1-14. https://doi.org/10.3389/fpubh.2025.1467571

Gasso, V., Oudshoorn, F. W., De Olde, E. and Sørensen, C.A.G. (2015), "Generic sustainability assessment themes and the role of context: the case of Danish maize for German biogas", *Ecological Indicators,* Vol. 49, pp. 143-153. https://doi.org/10.1016/j.ecolind.2014.10.008

Gianelle, C., Guzzo, F., Barbero, J. and Salotti, S. (2023), "The governance of regional innovation policy and its economic implications", *The Annals of Regional Science,* Vol. 72, pp. 1231-1254. https://doi.org/10.1007/s00168-023-01241-2

Graneheim, U.H., Lindgren, B.M. and Lundman, B. (2017), "Methodological challenges in qualitative content analysis: a discussion paper", *Nurse Education Today,* Vol. 56, pp. 29-34. https://doi.org/10.1016/j.nedt.2017.06.002

Greenberg, M.R. (2014), "Energy policy and research: the underappreciation of trust", *Energy Research & Social Science,* Vol. 1, pp. 152-160. https://doi.org/10.1016/j.erss.2014.02.004

H.I., Davidsdottir, B., Worrell, E. and Sigurgeirsdottir, S. (2020), "Review of indicators for sustainable energy development", *Renewable and Sustainable Energy Reviews,* Vo. 133, pp. 1-22. https://doi.org/10.1016/j.rser.2020.110294

Haddaway, N.R., Collins, A.M., Coughlin, D. and Kirk, S. (2015), "The role of google scholar in evidence reviews and its applicability to grey literature searching. *PLoS One,* Vol 10, pp. 1-17. https://doi.org/10.1371/journal.pone.0138237

Hanto, J., Schroth, A., Krawielicki, L., Oei, P.Y. and Burton, J. (2022), "South Africa's energy transition – unraveling its political economy", *Energy for Sustainable Development,* Vo. 69, pp. 164-178. https://doi.org/10.1016/j.esd.2022.06.006

Hariram, N.P., Mekha, K.B., Suganthan, V. and Sudhakar, K. (2023), "Sustainalism: an integrated socio-economic-environmental model to address sustainable development and sustainability. *Sustainability,* Vol. 15, pp. 1-37. https://doi.org/10.3390/su151310682

Heffron, R.J. and Mccauley, D. (2018). "What is the 'just transition'?", *Geoforum,* Vo. 88, pp. 74-77. https://doi.org/10.1016/j.geoforum.2017.11.016

Heinrichs, H. and Laws, N. (2014). ""Sustainability state" in the making? institutionalization of sustainability in German federal policy making", *Sustainability,* Vol. 6, pp. 2623-2641. https://doi.org/10.3390/su6052623

Hermanus, L., Scholtz, L. and Kritzinger, K. (2022), *Understanding South African just urban transition: goals, challenges and responses for transforming local electricity systems*, Just Urban Transition Project, Cape Town.

Hogan, J. and Howlett, M. (2015), "Reflections on our understanding of policy paradigms and policy change", in*:* Hogan, J. and Howlett, M. (Ed.s), *Policy Paradigms in Theory and Practice. Studies in the Political Economy of Public Policy,* London, pp. 3-18. https://doi.org/10.1057/9781137434043_1

Horani, L.F. (2023), "Sustainable design concepts and their definitions: an inductive content-analysis-based literature review", *Technological Sustainability,* Vol. 2, pp. 225-243. https://doi.org/10.1108/TECHS-10-2022-0041

Juwana, I., Muttil, N. and Perera, B.J.C. (2012), "Indicator-based water sustainability assessment — a review", *Science of the Total Environment,* Vol. 438, pp. 357-371. https://doi.org/10.1016/j.scitotenv.2012.08.093

Karlsson, S., Dahl, A.L., Biggs, R.O., Ten Brink, B.J.E., Gutiérrez-Espeleta, E., Hasan, M.N.H., Laumann, G., Moldan, B., Singh, A., Spangenberg, J. and Stanners, D. (2007), "Meeting conceptual challenges", in: Hak, T., Moldan, B. and Dahl, A.L. (Ed.s), *Sustainability Indicators. A Scientific Assessment.* Washington, pp. 27-48.

Kenton, W. (2022), "What is social capital? definition, types and examples", available at https://www.investopedia.com/terms/s/socialcapital.asp#:~:text=Social (accessed 7 June 2024).

Khan, I., Zakari, A., Zhang, J., Dagar, V. and Singh, S. (2022), "A study of trilemma energy balance, clean energy transitions, and economic expansion in the midst of environmental sustainability: new insights from three trilemma leadership", *Energy,* Vol. 248, 1-11. https://doi.org/10.1016/j.energy.2022.123619

Kim, P.H. and Aldrich, H.E. (2005), "Social capital and entrepreneurship", *Foundations and Trends in Entrepreneurship,* Vol. 1 No. 2, pp. 55-104. https://doi.org/10.1561/0300000002

King, T.C., Li, T., De Vos, M., Dignum, V., Jonker, C.M., Padget, J. and Van Riemsdijk, M.B. (2015), "A framework for institutions governing institutions" in: Bordini, Elkind, Weiss and Yolum (Ed.s), *14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015)*, May 4-8, 2015*,* Istanbul. Turkey.

Kitt, S., Axsen, J., Long, Z. and Rhodes, E. (2021), "The role of trust in citizen acceptance of climate policy: comparing perceptions of government competence, integrity and value similarity", *Ecological Economics,* Vol. 183, pp. 1-12. https://doi.org/10.1016/j.ecolecon.2021.106958

Kjaer, A.M. (2023), "Governance", available at: https://books.google.co.za/books?id=Ht-tEAAAQBAJ (accessed 26 February 2025).

Kleinheksel, A.J., Rockich-Winston, N., Tawfik, H. and Wyatt, T.R. (2020), "Demystifying content analysis", *American Journal of Pharmaceutical Eduction,* Vol 84 No. 1, pp. 127-137. https://doi.org/10.5688/ajpe7113

Kyngäs, H. (2020), "Inductive content analysis", in: Kyngäs, H., Mikkonen, K. and Kääriäinen, M. (Ed.s.), *The Application of Content Anaysis in Nursing Research.* Cham, pp. 13-21. https://doi.org/10.1007/978-3-030-30199-6_2

Labuschagne, C., Brent, A.C. and Van Erck, R.P.G. (2005), "Assessing the sustainability performances of industries", *Journal of Cleaner Production,* Vol. 13, pp. 373-385. https://doi.org/10.1016/j.jclepro.2003.10.007

Lekunze, A.R. (2024), "Rethinking the (un)just transition: a review of the impact of neoliberal approaches to energy governance in South Africa", *Journal of Law, Society and Development,* Vol. 11, pp. 1-18. https://doi.org/10.25159/2520-9515/15301

Lerman, L.V., Benitez, G.B., Gerstlberger, W., Rodrigues, V.P. and Frank, A.G. (2021), "Sustainable conditions for the development of renewable energy systems: ä triple bottom line perspective", *Sustainable cities and society,* Vol. 75, pp. 1-11. https://doi.org/10.1016/j.scs.2021.103362

Li, F., Zhang, J. and Li, X. (2022), "Research on supporting developing countries to achieve green development transition: based on the perspective of renewable energy and foreign direct investment", *Journal of Cleaner Production,* Vol. 372, pp. 1-17. https://doi.org/10.1016/j.jclepro.2022.133726

Liang, C.L. and Plakias, Z.T. (2022), "Interdisciplinary system and network perspectives in food and agricultural economics", *Handbook of Agricultural Economics,* Vol. 6, pp. 4705-4779. https://doi.org/10.1016/bs.hesagr.2022.03.002

Life After Coal (2022), "Just transition open agenda", available at: https://lifeaftercoal.org.za/wp-content/uploads/2022/04/Life-After-Coal-Just-Transition-Open-Agenda-Book-May-2022.pdf (accessed 14 March 2024).

Loorbach, D. and Rotmans, J. (2010), "The practice of transition management: examples and lessons from four distinct cases", *Futures,* Vol. 42, pp. 237-246. https://doi.org/10.1016/j.futures.2009.11.009

Mahato, J. and Jha, M.K. (2024), "Does social capital promote sustainable livelihood? Mediating effect of women entrepreneurship", *International Journal of Sociology and Social Policy,* Vol. 44, pp. 448-461. https://doi.org/10.1108/IJSSP-09-2023-0234

Mahood, Q., Van Eerd, D. and Irvin, E. (2014), "Searching for grey literature for systematic reviews: challenges and benefits", *Research Synthesis Methods,* Vol. 5, pp. 221-34. https://doi.org/10.1002/jrsm.1106

Marais, L. and Westoby, P. (2022), "A corolla or a porsche? The case of renewable in local economic development in De Aar", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Sustainability Transitions, Stellenbosch, pp. 164-177.

Martin, B. (2022), "Industry associations and South Africa's energy transition", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Sustainability Transitions, Stellenbosch, pp. 280-288.

Mezger, A., Cabanelas, P., Cabiddu, F. and Rüdiger, K. (2019), "What does it matter for trust of green consumers? An application to German electricity market", *Journal of cleaner production,* Vol. 242, pp. 1-11. https://doi.org/10.1016/j.jclepro.2019.118484

Moser, A. and Korstjens, I. (2018). "Series: practical guidance to qualitative research. Part 3: sampling, data collection and analysis", *European Journal of General Practice,* Vol. 24 No. 1, pp. 9-18. https://doi.org/10.1080/13814788.2017.1375091

Mthembi, F. (2022), "It is the grass that suffers: knowledge injustices in the energy transition", in: Megan, D., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s) *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Systainability Transitions, Stellenbosch, pp. 289-299.

Mthembi, F. (n.d), "Scaling the just transition for community-based and community-placed projects" available at: https://inspire-excellence.net/resource/scaling-the-just-transition-for-community-based-and-community-placed-projects/ (accessed 10 July 2024)

Nakaishi, T., Chapman, A. and Kagawa, S. (2022), "Shedding light on the energy-related social equity of nations toward a just transition", *Socio-Economic Planning Sciences,* Vol. 83, pp. 1-14. https://doi.org/10.1016/j.seps.2022.101350

Newman, I. (2000), "A conceptualization of mixed methods: a need for inductive/ deductive approach to conducting research", in: *Annual Meeting of the American Educational Research Association*, *April 24-25, New Orleans, Los Angeles*, pp. 1-16

Ning, L. and Li, J. (2016), "Joint problem solving and organizational learning capacity in new product innovation", *R & D Management,* Vol. 48, pp. 519-533. https://doi.org/10.1111/radm.12245

Nwaiwu, F. (2021), "Digitalisation and sustainable energy transitions in Africa: assessing the impact of policy and regulatory environments on the energy sector in Nigeria and South Africa", *Energy, Sustainability and Society,* Vol. 11, pp. 1-16. https://doi.org/10.1186/s13705-021-00325-1

O'connor, M. (2006), "The "Four Spheres" framework for sustainability", *Ecological Complexity,* Vol. 3, pp. 285-292. https://doi.org/10.1016/j.ecocom.2007.02.002

O'toole, K., Wallis, A. and Mitchell, B. (2006), "Local perceptions of sustainability indicators: issues of scale and implications for management", *Rural Society,* Vol. 16, pp. 25-46. https://doi.org/10.5172/rsj.351.16.1.25

Obobisa, E.S., Chen, H. and Mensah, I.A. (2022), "Transitions to sustainable development: the role of green innovation and institutional quality", *Environment, Development and Sustainability,* Vol. 25, pp. 6751-6780. https://doi.org/10.1007/s10668-022-02328-0

Olatunji, O.O., Adedeji, P.A., Madushele, N., Akinlabi, S.A., Ishola, F. and Kalu, I.E. (2022), "Reimagine renewable energy exploration in post-COVID-19 Africa", *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects,* Vol. 44, pp. 4275-4295. https://doi.org/10.1080/15567036.2022.2074173

Osei-Tutu, P., Boadi, S. and Kusi-Kyei, V. (2021), "Electrical energy transition in the context of Ghana", *Energy, Sustainability and Society,* Vol. 11, pp. 1-8. https://doi.org/10.1186/s13705-021-00322-4

Page, M.J., Mckenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E., Chou, R., Glanville, J., Grimshaw, J.M., Hróbjartsson, A., Lalu, M.M., Li, T., Loder, E.W., Mayo-Wilson, E., Mcdonald, S., Mcguinness, L.A., Stewart, L.A., Thomas, J., Tricco, A.C., Welch, V.A., Whiting, P. and Moher, D. (2021), "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews", *Research Methods and Reporting,* Vol. 372, pp. 1-9. https://doi.org/10.31222/osf.io/v7gm2

Pomegbe, W.W. K., Li, W., Dogbe, C.S.K. and Otoo, C.O.A. (2020), "Enhancing the innovation performance of small and medium-sized enterprises through network embeddedness, *Journal of Copetitiveness,* Vol. 12, pp. 156-171. https://doi.org/10.7441/joc.2020.03.09

Power, M., Newell, P., Baker, L., Bulkeley, H., Kirshner, J. and Smith, A. (2016). The political economy of energy transitions in Mozambique and South Africa: the role of the rising powers, *Energy Research & Social Science,* Vol. 17, pp. 10-19. https://doi.org/10.1016/j.erss.2016.03.007

Presidential Climate Commission (PCC) (2022a), "Community and stakeholder engagement on a just transition in South Africa", available at: https://pccommissionflow.imgix.net/uploads/images/Community-Consultations-on-a-Just-Transition-May-2022.pdf (accessd 3 March 2025).

Presidential Climate Commission (PCC) (2022b), "A framework for a just transition in South Africa", available at: https://www.climatecommission.org.za/just-transition-framework (accessed 25 November 2024).

Presidential Climate Commission (PCC) (2022c), "Supporting a Just and climate-resilient transition in South Africa", avialble at: https://pccommissionflow.imgix.net/uploads/images/PCC-Expert-Essay-Book.pdf (accessed 26 November 2026).

Presidential Climate Commission (PCC) (2023), "Public dialogue on implementing the just transition: gender and social inclusion", available at: https://www.youtube.com/watch?v=S34VH4D-mBg (accessed 26 November 2024).

Presidential Climate Commission (PCC) (2024), "Youth perspectives series", available at: https://www.climatecommission.org.za/publications/youth-perspectives-series-2024-booklet (accessed 30 March 2025).

Ramasamy, R. (2021), "Impacts of freedom of information act on accountability and corruption", in: Farazmand, A. (Ed.), Global Encyclopedia of Public Administration, Public Policy and Governance, Springer Nature, Cham, pp. 1-8. https://doi.org/10.1007/978-3-319-31816-5_4241-1

Republic of South Africa (2021), "Climate change bill", available at: /https://www.parliament.gov.za/storage/app/media/Bills/2022/B9_2022_Climate_Change_Bill/B9_2022_Climate_Change_Bill.pdf (accessed 22 July 2024).

Republic of South Africa Department of Higher Education and Training (RSA DHET) (2022), "The South African green hydrogen TVET ecosystem just transition strategic framework", available at: https://saiia.org.za/wp-content/uploads/2022/06/SAIIA_SR_GreenHydrogenTVet.pdf (accessed 26 November 2024).

Republic of South Africa Department of Mineral Resources And Energy and Department of Science and Innovation and Department of Trade Industry and Competition (2023), "South African renewable energy masterplan (SAREM): an industrial and inclusive development plan for renewable energy and storage value chains by 2030", available at: https://www.dmr.gov.za/Portals/0/Resources/Renewable%20Energy%20Masterplan%20(SAREM)/South%20African%20Renewable%20Energy%20Masterplan%20(SAREM)%20Draft%20III.pdf (accessed 27 November 2024).

Republic of South Africa Department of Public Works and Infrastructure (RSA DPWI) (2022), "National infrastructure plan 2050 (NIP 2050) phase I", available at: https://www.gov.za/sites/default/files/gcis_document/202203/46033gon1874.pdf (accessed 28 November 2024).

Republic of South Africa Department of Trade Industry and Competition (RSA DTIC) (2022), "Green hydrogen commercialisation strategy for South Africa", available at: https://www.thedtic.gov.za/wp-content/uploads/Powerpoint-Summary-Green-Hydrogen-Commercialisation-Strategy.pdf (accessed 26 November 2024).

Republic of South Africa Department of Trade Industry and Competition (RSA DTIC) (2023), "electric vehicles white paper", available at: https://www.thedtic.gov.za/wp-content/uploads/EV-White-Paper.pdf (accessed 26 November 2024).

Rizvi, S.M.A.H., Bastas, A. and Liyanage, K (2022), "Sustainability assessment of electricity generation technologies: a transition pathway for Pakistan", *International Journal of Sustainable Energy,* Vol. 41, pp. 1215-1236. https://doi.org/10.1080/14786451.2022.2039141

Runhaar, H. and Driessen, P.P.J. (2007), "What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making", *Impact Assessment and Project Appraisal,* Vol. 25, pp. 2-14. https://doi.org/10.3152/146155107X190613

Sharife, K. and Bond, P. (2012), "Above and beyond South Africa's minerals-energy complex" in: Daniel, J., Naidoo, P., Pillay, D. and Southall, R. (Ed.s), *New South African Review 2: New Paths, Old Compromises?* , Wits University Press, Johannesburg, pp. 279-299. https://doi.org/10.18772/22011105416.21

Singh, H.V., Bocca, R., Gomez, P., Dahlke, S. and Bazilian, M. (2019), "The energy transitions index: an analytic framework for understanding the evolving global energy system", *Energy Strategy Reviews,* Vol. 26, pp. 1-10. https://doi.org/10.1016/j.esr.2019.100382

Singh, R.K., Murty, H.R., Gupta, S.K. and Dikshit, A.K. (2009), "An overview of sustainability assessment methodologies", *Ecological Indicators,* Vol. 9, pp. 189-212. https://doi.org/10.1016/j.ecolind.2008.05.011

Ślosarski, R. (2022), "Clean energy in the European Union: transition or evolution?", *Energy & Environment,* Vo. 34, pp. 1-23. https://doi.org/10.1177/0958305X221100530

Spangenberg, J.H. (2007), "The institutional dimension of sustainable development.", in: Hak, T., Moldan, B. and Dahl, A.L. (Ed.s), *Sustainability Indicators: A Scientific Assessment,* Island Press, Washington, pp. 107-124.

Stankowska, A. (2022), "Sustainability development: assessment of selected indicators of sustainable energy development in Poland and in selected EU member states prior to COVID-19 and following the third wave of COVID-19", *Energies,* Vol. 15, pp. 1-23. https://doi.org/10.3390/en15062135

Steg, L., Perlaviciute, G. and Van Der Werff, E. (2015), "Understanding the human dimensions of a sustainable energy transition", *Frontiers in Psychology,* Vol. 6, pp. 1-17. https://doi.org/10.3389/fpsyg.2015.00805

Stuurman, F. (2022), "The participation of black women-owned businesses in the REIPPPP" in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes,* Centre for Sustainability Transitions, Stellenbosch, pp. 99-110.

Swartz, K. (2022), "Empowering local communities through utility-scale renewable energy: a case study of Hopefield wind farm", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programmes*, Centre for Sustainability Transitions. Stellenbosch, pp. 130-143.

Swilling, M. (2020), *The Age of Sustainability. Just Transitions in a Complex World,* Routledge, Oxon and New York. https://doi.org/10.4324/9780429057823

Swilling, M., Davies, M. and Wlokas, H. (2022), "Framing theory and concepts: introduction", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), "South Africa's contested transition to energy democracy? A collection of insights emerging from the national large-scale renewable energy programme, Centre for Sustainability Transitions, Stellenbosch, pp. 6-26.

The Congress of South African Trade Unions (COSATU) (2022), "Just transition blueprint for workers: summary document", available at: https://mediadon.co.za/wp-content/uploads/2022/03/Cosatu-JT-Blueprint-Summary-Document.pdf (accessed 22 July 2024).

The Presidency of the Republic of South Africa (2022), "South Africa's just energy transition investment plan (JET IP) for the initial period 2023-2027", available at: https://www.climatecommission.org.za/publications/sa-jet-ip (accessed 31 March 2025).

Todd, I. and Mccauley, D. (2021), "Assessing policy barriers to the energy transition in South Africa", *Energy Policy,* Vol. 158, pp. 1-8. https://doi.org/10.1016/j.enpol.2021.112529

Torfing, J., Andersen, L.B., Greve, C. and Klausen, K.K (2020), *Public Governance Paradigms: Competing and Co-Existing,* Edward Elgar Publishing Limited, Cheltenham. https://doi.org/10.4337/9781788971225

Van Niekerk, A., Kimemia, D., Seedat, M. and Annegarn, H. (2022), "Energy impoverishment and burns: the case for an expedited, safe and inclusive energy transition in South Africa", *South African Journal of Science,* Vol. 118, pp. 1-4. https://doi.org/10.17159/sajs.2022/13148

Vears, D.F., Delany, C., Massie, J. and Gillam, L. (2016). "Why do parents want to know their child's carrier status? A qualitative study", *Journal of Genetic Counseling,* Vol. 25, pp. 1257-1266. https://doi.org/10.1007/s10897-016-9964-7

Vears, D.F. and Gillam, L. (2022), "Inductive content analysis: a guide for beginning qualitative researchers", *Focus on Health Professional Education: A Multi-Professional Journal,* Vol. 23, pp. 111-124. https://doi.org/10.11157/fohpe.v23i1.544

Waas, T., Hugé, J., Block, T., Wright, T., Benitez-Capistros, F. and Verbruggen, A. (2014), "Sustainability assessment and indicators: tools in a decision-making strategy for sustainable development", *Sustainability,* Vol. 6, pp. 5512-5534. https://doi.org/10.3390/su6095512

Wallis, A.M., Graymore, M.L.M. and Richards, A.J. (2011), "Significance of environment in the assessment of sustainable development: the case for south west Victoria", *Ecological Economics,* Vol. 70, pp. 595-605. https://doi.org/10.1016/j.ecolecon.2010.11.010

Walwyn, D.R. (2020), "Turning points for sustainability transitions: institutional destabilization, public finance and the techno-economic dynamics of decarbonization in South Africa", *Energy Research & Social Science*, Vol 70, pp. 1-10. https://doi.org/10.1016/j.erss.2020.101784

Wang, J.J., Jing, Y.Y., Zhang, C.F. and Zhao, J.H. (2009), "Review on multi-criteria decision analysis aid in sustainable energy decision-making", *Renewable and Sustainable Energy Reviews,* Vol. 13, pp. 2263-2278. https://doi.org/10.1016/j.rser.2009.06.021

Williamson, O.E. (2000), "The new institutional economics: taking stock, looking ahead", *Journal of Economic Literature,* Vol. 38, pp. 595-613. https://doi.org/10.1257/jel.38.3.595

Winkler, H., Tyler, E., Keen, S.L. and Marquard, A. (2023), "Just transition transaction in South Africa: an innovative way to finance accelerated phase out of coal and fund social justice", *Journal of Sustainable Finance & Investment,* Vol. 13, pp. 1228-1251. https://doi.org/10.1080/20430795.2021.1972678

Wlokas, H. (2022), "Institutional practices in community benefit delivery in the REIPPPP", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's Contested Transition to Energy Democracy? A collection of insights emerging from the national large-scale renewable energy programme,* Centre for Sustainability Transitions, Stellenbosch, pp. 80-98.

Wlokas, H. and Simpson, J. (2022), "Towards a social licence to operate through benefits sharing based upon good developmental practices", in: Davies, M., Wlokas, H., Callaghan, N. and Swilling, M. (Ed.s), *South Africa's Contested Transition to Energy Democracy? A collection of insights emerging from the national large-scale renewable energy programme,* Centre for Sustainability Transitions, Stellenbosch, pp. 64-79.

Zaman, R. and Brudermann, T. (2018), "Energy governance in the context of energy service security: a qualitative assessment of the electricity system in Bangladesh", *Applied Energy,* Vol 223, pp. 443-456. https://doi.org/10.1016/j.apenergy.2018.04.081

Zhang, J., Wang, S., Pradhan, P., Zhao, W. and Fu, B. (2022), "Untangling the interactions among the sustainable development goals in China", *Science Bulletin,* Vol. 67, pp. 977-984. https://doi.org/10.1016/j.scib.2022.01.006

Ziemba, P., Becker, A. and Becker, J. (2022), "Models and indices of sustainability assessment in the energy context", *Energies,* Vol. 15, pp. 1-22. https://doi.org/10.3390/en15249465