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Constitutional Energy Mandates and Local Governance in Post-Apartheid Spatial Planning

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1 ABSTRACT

South Africa's post apartheid positions municipalities as key actors in the provision of basic services, including electricity. Section 156 and Schedule 4B of the Constitution empower local governments to govern electricity reticulation within their jurisdictions, granting them original authority independent of national or provincial delegation. This legal empowerment has significant implications for spatial planning, especially in historically marginalised regions like De Aar in the Northern Cape. However, the energy governance landscape is populated by multiple institutions with overlapping mandates. The Department of Mineral Resources and Energy (DMRE), though not constitutionally empowered, plays a central role in policy formulation and regulation through the Electricity Regulation Act. Eskom, a state-owned enterprise, dominates generation and transmission, operating under executive mandate and regulatory oversight. These institutional arrangements create tensions between constitutional decentralisation and centralised energy control. This article investigates how constitutional energy mandates are interpreted and operationalised at the municipal level, and how these dynamics shape spatial planning outcomes. Using De Aar as a case study, the research draws on spatial theory, energy justice, and systems theory to analyze the feedback loops between law, infrastructure, and governance. A qualitative methodology is employed, including document analysis of legal frameworks, municipal Integrated Development Plans (IDPs), and interviews with local officials.Findings reveal that while municipalities are legally empowered to provide electricity, their capacity to do so is constrained by technical limitations, fiscal dependency, and regulatory ambiguity. The recent amendments to the Electricity Regulation Act, which allows municipalities to procure power from independent producers, have opened new opportunities but also intensified institutional friction. Municipalities often lack grid access, planning tools, and intergovernmental support needed to translate legal mandates into spatial energy outcomes. The case of De Aar illustrates how constitutional ideals of decentralisation are challenged by systemic bottlenecks and institutional fragmentation. Spatially, this results in uneven infrastructure deployment, limited integration of renewable energy into local development plans, and a disconnect between national energy priorities and local realities. The article argues for a more coherent, capacitated, and collaborative approach to energy governance, one that aligns constitutional mandates with spatial planning and climate adaptation strategies.

Keywords: Constitutional Mandate, Energy Justice, Institutional Tensions, Renewable Energy Transitions, Post Apartheid South Africa

2 INTRODUCTION

South Africa's post-apartheid Constitution, adopted in 1996, enshrines a developmental vision for local government that includes the provision of basic services, promotion of socio-economic development, and facilitation of sustainable human settlements. Section 152 outlines the objectives of local government, while Section 156 and Schedule 4B explicitly empower municipalities to govern electricity reticulation within their jurisdictions (Republic of South Africa, 1996). These provisions grant municipalities original authority, meaning they do not require delegation from national or provincial governments to plan, manage, and deliver electricity services. This constitutional empowerment is particularly significant in the context of South Africa's energy transition, where decentralisation and renewable energy integration are increasingly prioritised. However, the practical realisation of these mandates is shaped by a complex institutional landscape. The Department of Mineral Resources and Energy (DMRE), though not constitutionally empowered, plays a central role in national energy policy and regulation through instruments such as the Integrated Resource Plan (IRP) and the Electricity Regulation Act (2006). Eskom, a state-owned enterprise, retains control over most generation and transmission infrastructure, creating a vertically integrated monopoly that often limits municipal autonomy. The National Energy Regulator of South Africa (NERSA) oversees licensing and tariff regulation, further complicating the governance terrain. These overlapping

mandates produce tensions between constitutional decentralization and centralized energy control, particularly in municipalities with limited technical and financial capacity (Ngcobo, 2024; Tyler & Hochstetler, 2021) Spatial governance, the coordination of land use, infrastructure, and development across space is a critical lens through which to examine these dynamics. In South Africa, spatial planning has historically been used as a tool of exclusion, with apartheid-era policies producing fragmented urban forms and unequal access to services (Harrison et al., 2008). Post-apartheid reforms have sought to redress these legacies through integrated development planning, yet energy infrastructure remains unevenly distributed, especially in arid and rural regions. The integration of renewable energy into municipal spatial plans presents both an opportunity and a challenge: it requires alignment between constitutional mandates, planning instruments, and infrastructure systems. This article investigates how constitutional energy mandates are interpreted and operationalised at the local level, and how these processes shape spatial planning outcomes in the context of South Africa's energy transition. Using De Aar, a small town in the Northern Cape Province as a case study, the research explores the intersection of legal empowerment, institutional coordination, and spatial governance. De Aar is emblematic of many secondary towns in South Africa: it faces infrastructural constraints, socio-economic marginalization, and increasing pressure to participate in climate adaptation and renewable energy initiatives. The central research question guiding this inquiry is: How does the Constitution empower local governments to provide electricity, and how does this shape spatial outcomes in the context of South Africa's energy transition? By integrating spatial theory, energy justice, and systems theory, the article aims to illuminate the feedback loops between law, infrastructure, and governance, and to contribute to a more nuanced understanding of post-apartheid energy planning.

3 LITERATURE REVIEW

3.1 Theoretical Frameworks in Energy and Spatial governance

(a) Spatial Theory: Production and Relationality of Space

Henri Lefebvre's The Production of Space (1991) remains foundational in understanding how space is socially produced through political, economic, and ideological processes. Lefebvre argues that space is not a passive backdrop, but an active medium shaped by power relations and institutional arrangements. His triadic framework: perceived, conceived, and lived space, offers a lens to examine how energy infrastructure reflects and reproduces spatial inequalities (Lefebvre, 1991; Molotch, 1993). In the South African context, energy infrastructure such as grid networks and renewable installations are often deployed in ways that reinforce historical spatial marginalisation, particularly in secondary towns like De Aar. Doreen Massey's relational spatiality complements Lefebvre's work by emphasizing that space is constituted through interactions across scales: local, regional, national, and global. Her concept of "power-geometry" highlights how different actors experience space differently based on their mobility, access, and agency (Massey, 2004; Taylor, 2024). In energy governance, this means that municipalities, despite constitutional empowerment, may be spatially constrained by limited grid access, planning tools, and institutional support. Massey's framework helps unpack how spatial marginality intersects with energy exclusion, reinforcing uneven development and governance asymmetries. Together, Lefebvre and Massey provide a robust theoretical foundation for analyzing how energy infrastructure both shapes and is shaped by spatial planning, governance, and socio-political dynamics.

(b) Energy Justice: Distributive, Procedural, and Recognition Dimensions

Energy justice has emerged as a critical framework for evaluating fairness in energy systems. Sovacool and Dworkin (2015) define energy justice through three core tenets:

- Distributive justice: Ensures equitable access to energy services and infrastructure. In South Africa, this is challenged by affordability barriers, unreliable supply, and geographic disparities in infrastructure deployment.
- Procedural justice: Advocates for inclusive and transparent decision-making processes. Municipalities and communities often lack meaningful participation in national energy planning, undermining democratic governance.
- Recognition justice: Calls for acknowledging the specific needs, identities, and vulnerabilities of marginalised groups. Spatially remote towns like De Aar require tailored governance approaches that

reflect their socio-economic and geographic realities (Jenkins et al., 2016; Scholz & Schuppert, 2025).

Energy justice reframes energy transitions not merely as technical or economic challenges, but as ethical and political imperatives. Applying this lens to South Africa reveals systemic gaps between legal empowerment and lived energy outcomes, particularly in historically disadvantaged regions.

(c) Systems Theory: Feedback Loops and Governance Complexity

Systems theory offers a powerful analytical tool to understand the complexity of energy governance. Donella Meadows (2008) describes systems as composed of interconnected elements that produce patterns of behavior over time. Key concepts include feedback loops, delays, leverage points, and resilience. In energy governance, systems theory helps visualize how legal mandates, planning tools, infrastructure deployment, and service delivery interact dynamically, often producing unintended consequences, for an example, a municipality's legal authority to reticulate electricity (input) may be constrained by lack of technical capacity (system bottleneck), resulting in poor service delivery (output) and reinforcing centralised control (feedback). Radtke (2025) expands this by applying systems thinking to institutional design, showing how fragmented mandates and siloed planning inhibit adaptive governance. In De Aar, systems mapping reveals how decentralisation is constrained by technical bottlenecks, fiscal dependency, and fragmented intergovernmental coordination. Systems theory thus enables a holistic understanding of governance complexity and identifies leverage points for reform such as enhancing municipal planning tools or streamlining regulatory processes

3.2 Energy Governance in South Africa: Centralisation, Reform, and Emerging Complexity

South Africa's energy governance has long been characterised by centralised control, with Eskom historically monopolising electricity generation and transmission. Established in 1923, Eskom remains the dominant actor in the energy landscape, responsible for over 90% of electricity generation and the operation of the national grid (Eberhard et al., 2017). This centralisation has contributed to systemic inefficiencies, financial instability, and persistent load shedding, prompting calls for structural reform. The Department of Mineral Resources and Energy (DMRE), though not constitutionally mandated to oversee local electricity reticulation, plays a pivotal role in national energy policy formulation. Its influence is institutionalised through the Electricity Regulation Act No. 4 of 2006, which empowers the Minister to determine new generation capacity and procurement processes (Trollip & Boulle, 2017). The National Energy Regulator of South Africa (NERSA), established under the National Energy Regulator Act of 2004, regulates tariffs, licensing, and compliance, further reinforcing centralised oversight (NERSA, 2024). Recent amendments to the Electricity Regulation Act, most notably the Electricity Regulation Amendment Act No. 38 of 2024 have introduced mechanisms for municipalities to procure electricity directly from Independent Power Producers (IPPs). This reform aims to decentralise procurement authority, enhance competition, and reduce reliance on Eskom (Esterhuizen et al., 2025). However, implementation remains uneven. Municipalities face significant barriers, including limited grid access, technical capacity constraints, and regulatory ambiguity. Eskom retains control over grid infrastructure, and municipalities must navigate complex licensing and compliance procedures through NERSA and DMRE (SALGA, 2024). This institutional arrangement creates a governance paradox: while municipalities are constitutionally empowered under Section 156(1)(a) and Schedule 4B of the Constitution of the Republic of South Africa (1996) to govern electricity reticulation, they remain structurally dependent on national actors for infrastructure, funding, and regulatory approval (De Visser, 2009). The result is a fragmented energy landscape where decentralisation is legally affirmed but practically constrained. Municipalities like De Aar, despite hosting renewable energy projects, struggle to integrate these into local development plans due to limited planning tools and intergovernmental coordination gaps (Tyler & Haysom, 2021; Borchardt, 2023).This complexity underscores the need for a more coherent and capacitated governance framework, one that aligns constitutional mandates with operational realities and supports municipalities in fulfilling their developmental role in energy transitions

3.3 Post-Apartheid Spatial Planning and the Challenge of Integration

Spatial planning in South Africa has been tasked with redressing the entrenched inequalities produced by apartheid-era urban design. Under apartheid, planning was used as a tool of exclusion, systematically segregating communities and concentrating infrastructure investment in historically white urban cores. This

resulted in fragmented urban landscapes, peripheral settlements with poor service access, and spatially embedded socio-economic disparities (Harrison et al., 2008; Todes, 2012). In response, post-apartheid reforms introduced Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) as instruments to coordinate land use, infrastructure investment, and inclusive development. These tools are mandated by the Municipal Systems Act (2000) and are intended to align municipal planning with national development priorities. However, the integration of energy infrastructure, particularly renewable energy into these instruments, remains limited. Municipalities often lack the technical capacity, financial resources, and institutional support to embed energy transitions into spatial planning processes (Van Niekerk et al., 2020; Sutherland et al., 2022).

Secondary towns like De Aar face compounded challenges. These include low revenue bases, limited professional planning staff, and fragmented land governance systems. As a result, municipalities struggle to incorporate renewable energy strategies into their IDPs and SDFs, despite growing pressure to participate in climate adaptation and energy transition initiatives (Gordon et al., 2020; Cartwright et al., 2021). Moreover, national energy priorities such as those articulated in the Integrated Resource Plan (IRP) often bypass local spatial realities. Energy infrastructure projects are typically sited based on technical criteria such as solar irradiance or grid proximity, with limited consideration of local development plans or community needs (Tyler & Hochstetler, 2021). This top-down approach results in spatial mismatches between infrastructure deployment and socio-economic imperatives, undermining the potential for energy transitions to contribute meaningfully to spatial justice. In De Aar, for example, the presence of multiple solar farms has not translated into significant local development benefits. The town continues to experience high unemployment, limited delivery, and infrastructural deficits. The disconnect between energy investment and spatial planning reflects a broader governance gap: while municipalities are constitutionally empowered to govern electricity reticulation, they are rarely included in strategic energy planning processes. This exclusion reinforces historical patterns of marginalisation and limits the transformative potential of energy transitions. Addressing these challenges requires a more integrated and participatory approach to spatial planning, one that aligns constitutional mandates with energy governance frameworks and recognizes the agency of municipalities in shaping climate-resilient futures. It also demands a rethinking of planning instruments to accommodate the complexity of energy transitions, including land use coordination, grid access negotiation, and community engagement.

3.4 Municipal Mandate and the limits of Local Empowerment

The Constitution of the Republic of South Africa (1996) grants municipalities original powers to govern electricity reticulation, positioning them as central actors in service delivery and local development. Section 156(1)(a) and Schedule 4B explicitly assign electricity reticulation to local government, affirming their authority to plan, manage, and deliver electricity services within their jurisdictions (Republic of South Africa, 1996). This legal empowerment reflects the broader post-apartheid commitment to decentralisation and developmental local government. However, the practical realisation of these mandates is often undermined by systemic constraints. Many municipalities operate with limited financial autonomy, relying heavily on national transfers and struggling to generate own revenue through tariffs and property rates (Steytler & De Visser, 2018). Technical capacity is also unevenly distributed, with smaller and rural municipalities lacking the engineering, planning, and legal expertise required to engage in complex energy procurement or infrastructure development (Mosdell, 2016; SALGA, 2021). Institutional fragmentation further complicates implementation, as municipalities must navigate overlapping responsibilities with Eskom, the Department of Mineral Resources and Energy (DMRE), and the National Energy Regulator of South Africa (NERSA). The Presidential Climate Commission's Municipal Just Energy Transition (JET) Support Programme acknowledges these challenges and aims to build municipal capacity for renewable energy integration, climate adaptation, and inclusive development. The programme provides technical assistance, policy guidance, and stakeholder engagement platforms to enable municipalities to participate meaningfully in South Africa's energy transition (Presidential Climate Commission, 2023). However, its success depends on resolving longstanding tensions between municipalities and Eskom, particularly around grid access, infrastructure control, and revenue collection. Eskom's continued dominance in generation and transmission, coupled with its control over distribution in many areas, limits the ability of municipalities to exercise their constitutional authority. Municipalities often face delays in obtaining grid connection approvals, lack visibility into infrastructure planning, and struggle to negotiate equitable power purchase

agreements with Independent Power Producers (IPPs) (Mohlakoana & Wolpe, 2023). These tensions are exacerbated by Eskom's financial instability and its reluctance to relinquish control over strategic assets.

Municipalities like De Aar exemplify the disconnect between constitutional authority and operational feasibility. Despite being legally empowered to govern electricity reticulation, De Aar faces infrastructural neglect, limited planning capacity, and exclusion from strategic energy decision-making. The town hosts several solar farms, yet local benefits remain minimal due to weak integration with spatial planning and limited municipal involvement in project design and implementation (Sutherland et al., 2022). This case illustrates how spatial marginalisation and institutional bottlenecks constrain the transformative potential of constitutional mandates. Addressing these challenges requires a multi-pronged approach: strengthening municipal capacity through targeted investment and training; clarifying intergovernmental roles and responsibilities, and reforming regulatory frameworks to enable local energy autonomy. It also demands a shift in governance culture, from top-down control to collaborative, place-based planning that recognizes municipalities as legitimate and capable actors in South Africa's energy future.

3.5 Comparative Reflections: South Africa and Global Experiences in Municipal Energy Governance

The constitutional framework of South Africa bestows municipalities with original authority over electricity reticulation, establishing them as pivotal participants in local energy transitions (Ngcobo, 2024). Nonetheless, as demonstrated by the De Aar case, this legal empowerment is frequently compromised by infrastructural limitations, inadequate planning capabilities, and intergovernmental conflicts (SALGA, 2017). These challenges are not exclusive to South Africa; however, they manifest differently in various global contexts: The European Energy Award (EEA) is a structured framework that supports interdisciplinary planning and continuous improvement in energy and climate policy, which is advantageous to municipalities in Europe. The EEA is a program in which more than 1,800 local authorities in Switzerland, Germany, Austria, and Romania participate, ensuring that local action is in accordance with the climate goals of the EU and the national government (European Energy Award, 2025; SECO, 2020). Cities such as Judenburg in Austria are prime examples of successful multilevel governance. They were able to expand district heating systems and improve spatial energy planning through coordinated planning at the local, regional, and national levels (Dobravec et al., 2021). South Africa's municipal energy landscape is largely devoid of technical advisors, certification mechanisms, and benchmarking tools, which are essential components of these systems. Brazil's 1988 Constitution similarly empowers municipalities, but implementation has been uneven due to fiscal and technical constraints (Souza, 2001). India's Panchayati Raj system decentralises rural governance, yet energy planning remains largely centralised, limiting local agency (Bhattacharyya, 2013). Germany, by contrast, exemplifies successful decentralisation through its Energiewende, where municipalities and citizen cooperatives play active roles in renewable energy deployment (Morris & Jungjohann, 2016). In the Global South, municipalities encounter comparable obstacles, limited capacity, fragmented land governance, and infrastructural deficits, but have responded by implementing adaptive governance and policy innovation. Participatory planning, digital citizen engagement, and localised renewable energy initiatives have been implemented in cities in India, Brazil, and Kenya. These initiatives are frequently supported by transnational networks such as the Global Covenant of Mayors and C40 Cities (Williamson, 2023; Blanc & Cotella, 2023). These strategies prioritise context-sensitive adaptation, community involvement, and flexibility, which are principles that are in alignment with South Africa's requirement for place-based energy governance. South Africa is characterized by the discord between its progressive legal framework and its centralized infrastructural reality. The Constitution establishes a robust basis for municipal autonomy; however, the execution of energy mandates is inconsistent. The contrast with European and Global South experiences underscores the necessity for South Africa to cultivate hybrid governance models that incorporate legal empowerment with institutional support, spatial integration, and systems thinking.

3.6 Gaps in Current Scholarship

Despite a growing body of literature on energy transitions, climate governance, and spatial planning in South Africa, several critical gaps persist particularly in relation to the constitutional role of municipalities and the spatial dynamics of energy infrastructure. These gaps limit the ability of scholars and policymakers to understand and address the uneven geography of energy transitions, especially in secondary towns like De Aar.

(a) Limited Focus on Secondary Towns

Much of the existing scholarship focuses on metropolitan municipalities such as Cape Town, Johannesburg, and eThekwini, which have greater institutional capacity, access to funding, and visibility in national policy debates (Sutherland et al., 2022; Cartwright et al., 2021). These cities have piloted renewable energy projects, developed climate adaptation strategies, and engaged with international networks. In contrast, smaller municipalities, located in arid, and economically marginalised regions, remain under-researched despite facing distinct challenges: limited grid access, fragmented land governance, and constrained planning capacity. De Aar, situated in the Northern Cape, exemplifies these dynamics. It hosts several solar farms under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), yet local development benefits remain minimal. The lack of scholarly attention to such towns obscures the spatial inequalities embedded in South Africa's energy transition and limits the development of place-based policy responses.

(b) Insufficient Integration of Legal and Spatial Analysis

While there is robust legal scholarship on constitutional mandates and municipal autonomy (Steytler & De Visser, 2018; Ngcobo, 2024), and a parallel body of work on spatial planning and infrastructure development (Harrison et al., 2008; Todes, 2012), few studies bridge these domains. This siloed approach overlooks how legal empowerment such as the constitutional authority over electricity reticulation translates into spatial planning outcomes. For instance, municipalities may be legally entitled to govern electricity services, but without integration into spatial development frameworks, these mandates remain abstract. The disconnect between law and spatial practice contributes to fragmented infrastructure deployment, poor alignment with community needs, and missed opportunities for climate adaptation.

(c) Underutilisation of Systems Theory

Systems theory offers a powerful lens for understanding the interdependencies between governance structures, infrastructure networks, and spatial outcomes. It emphasizes feedback loops, emergent properties, and adaptive capacity, concepts highly relevant to energy transitions and climate resilience (von Bertalanffy, 1968; Capra & Luisi, 2014). Yet, its application in South African energy and spatial planning literature remains limited. Most studies adopt sectoral or linear approaches, focusing on policy implementation, technical feasibility, or institutional reform in isolation. This neglects the complex, multi-scalar interactions that shape energy spatiality, such as how national policy filters through provincial structures, interacts with municipal planning tools, and is mediated by infrastructure constraints. Applying systems theory can illuminate these dynamics and support more integrated, adaptive governance models.

Contribution of this article

This article addresses these gaps by offering a place-based analysis of energy governance in De Aar. It integrates constitutional law, spatial planning, and systems theory to illuminate the constructed spatiality of energy transitions in post-apartheid South Africa. By focusing on a secondary town, it foregrounds the lived realities of decentralisation, infrastructural inequality, and institutional tension. It also demonstrates how legal mandates interact with spatial planning instruments and infrastructure systems to produce uneven energy outcomes thereby contributing to both scholarly understanding and policy innovation.

4 METHODLOGY

This study employs a qualitative case study approach to investigate how constitutional energy mandates are interpreted and operationalized at the municipal level, and how these processes shape spatial planning outcomes in the context of South Africa's energy transition. The case of De Aar, a secondary town in the Northern Cape was selected due to its strategic location within the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and its spatial marginalization within national development frameworks.

4.1 Research Design

A single-case embedded design was adopted, allowing for in-depth exploration of governance dynamics, planning instruments, and institutional interactions within De Aar (Yin, 2018). The study integrates legal analysis, spatial planning review, and stakeholder perspectives to construct a multi-scalar understanding of energy governance.

4.2 Data Collection

The study used document analysis, semi-structured interviews, and systems mapping. Documents included legal frameworks, municipal plans, and energy policy reports to triangulate mandates and institutional roles. Interviews with municipal officials, provincial coordinators, consultants, and community stakeholders explored planning, coordination, and implementation barriers. Systems mapping as shown in figure 1 below, visualized institutional relationships and feedback loops, guiding analysis of multi-scalar governance interactions and spatial outcomes in De Aar.

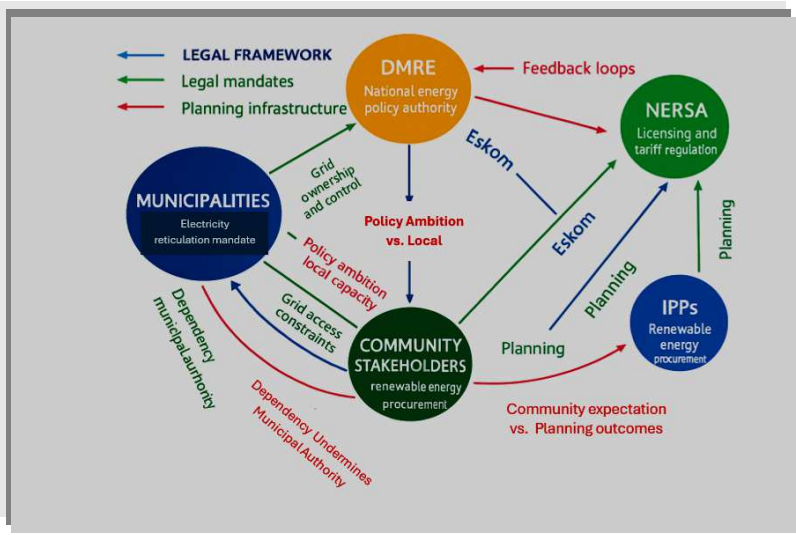

Fig 1: Interactions and feedback loops in South Africa's Local Energy Governance Seystems

Spatial mapping of energy infrastructure and planning zones was conducted using publicly available GIS data and municipal records. Figure to illustrate the spatial mapping of renewable energy around Emthanjeni Local Municipality.

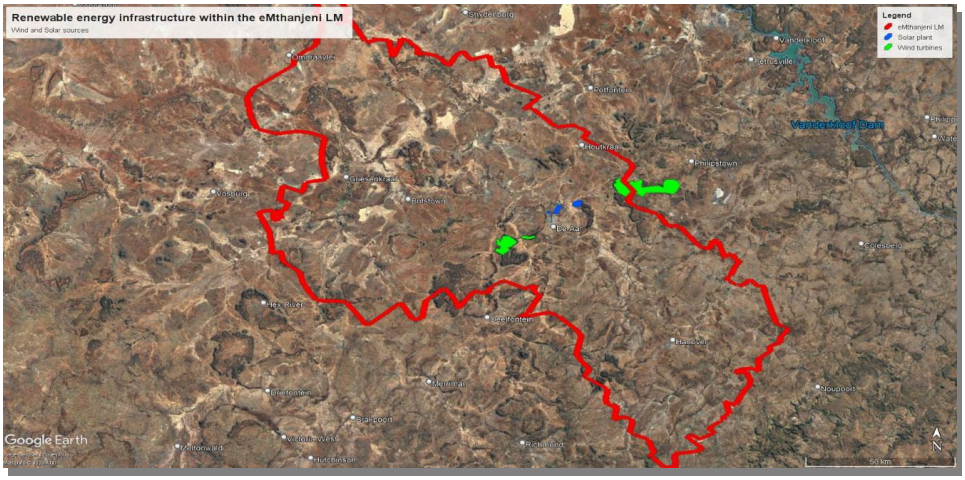

Fig 2: Renewable energy Infrastructure within the Emthanjeni Local Municipality. Source: (Emthanjeni Environmental profile, 2024)

4.3 Data Analysis

The study used thematic coding of interviews and planning documents, supported by NVivo, combining deductive and inductive analysis. Findings show a clear gap between municipal legal authority and operational capacity. Although the Constitution empowers municipalities to manage electricity reticulation, Emthanjeni Municipality lacks the technical skills, financial resources, and planning tools to fulfil this mandate. This reflects deeper institutional weaknesses in South Africa's developmental local government system. Energy governance in De Aar is further constrained by institutional fragmentation. Eskom's control of grid infrastructure and the involvement of multiple national regulators create coordination challenges, regulatory delays, and limited municipal autonomy. While recent legislation allows municipalities to procure electricity independently, practical barriers such as grid access and licensing continue to inhibit implementation. These governance failures have significant spatial and social consequences. Renewable energy projects in De Aar are poorly integrated into local planning and offer limited benefits to local

communities, reinforcing spatial inequality and undermining principles of energy justice. Residents face affordability challenges, unreliable supply, and exclusion from decision-making processes. From a systems perspective, weak alignment between legal mandates, planning instruments, and infrastructure control creates reinforcing feedback loops that entrench centralisation and municipal underperformance. Addressing these systemic bottlenecks requires targeted reforms. Recent policy changes present emerging opportunities, but real decentralisation will depend on strengthened municipal capacity, clearer regulatory roles, improved grid access, and stronger intergovernmental coordination. Without these measures, municipal energy autonomy will remain largely symbolic

5 FINDINGS AND DISCUSSIONS

This section presents the key findings from thematic coding of municipal documents, interviews with local officials, and analysis of planning instruments. It responds to the methodological approach outlined earlier, which combined qualitative document analysis with systems mapping to uncover governance dynamics in De Aar.

5.1 Legal Empowerment vs Operational Reality

The Constitution of South Africa clearly empowers municipalities to govern electricity reticulation under Section 156(1)(a) and Schedule 4B. Emthanjeni Municipality, which governs De Aar, is thus legally entitled to plan and deliver electricity services. However, this empowerment is undermined by operational constraints. Interviews with municipal officials and analysis of the Integrated Development Plan (IDP) reveal that while the municipality acknowledges its mandate, it lacks the technical capacity, financial resources, and planning tools to execute it effectively (Borchardt, 2023; Van Wyk, 2012). The disconnect between legal authority and practical capability reflects what De Visser (2009) calls “institutional fault lines” in developmental local government. Municipalities are expected to be developmental agents, yet they operate within a system that centralises infrastructure control and limits fiscal autonomy.

5.2 Institutional Friction and Fragmentation

The systems mapping of De Aar’s energy governance reveals significant institutional friction. Eskom retains control over grid infrastructure, and municipalities must seek approval from NERSA and DMRE to procure power from Independent Power Producers (IPPs). These actors operate under different mandates and timelines, creating coordination gaps and regulatory ambiguity (Trollip & Boulle, 2017; Tyler & Haysom, 2021). For example, while the Electricity Regulation Amendment Act (2024) allows municipalities to procure power independently, Emthanjeni Municipality struggles to access the grid and navigate licensing procedures. This friction delays project implementation and discourages local innovation. The result is a fragmented governance landscape where decentralisation is legally affirmed but practically constrained.

5.3 Spatial Outcomes and Energy Justice

Spatially, the consequences of this fragmentation are profound. De Aar hosts several large-scale renewable energy projects under REIPPPP, yet these are rarely integrated into local development plans. The municipality has limited influence over project siting, grid connection, or benefit-sharing mechanisms. As a result, energy infrastructure is deployed in ways that bypass local planning and perpetuate spatial inequality (Harrison et al., 2008; SACN, 2015). From an energy justice perspective, this undermines distributive, procedural, and recognition justice. Households in De Aar face affordability barriers, unreliable supply, and exclusion from decision-making. The municipality’s inability to reticulate locally generated renewable energy reflects a broader failure to align infrastructure with community needs and constitutional ideals.

5.4 Feedback Loops and Systemic Bottlenecks

Systems theory helps illuminate the feedback loops that reinforce these challenges. Legal mandates feed into planning tools (IDPs and SDFs), which should guide infrastructure deployment. However, when infrastructure is controlled by external actors, service delivery suffers, and policy feedback is weak. This loop perpetuates underperformance and centralised control. In De Aar, the lack of grid access, technical expertise, and intergovernmental support creates systemic bottlenecks. These are not isolated issues but structural features of South Africa’s energy governance system. Reforming this system requires identifying

leverage points such as enhancing municipal planning capacity, clarifying regulatory roles, and fostering collaborative platforms.

5.5 Emerging Opportunities and Reform Pathways

Despite these challenges, recent reforms offer new opportunities. The Electricity Regulation Amendment Act (2024) and growing interest in distributed generation create space for municipalities to assert their authority. Emthanjeni Municipality could leverage its constitutional mandate to develop local energy strategies, engage IPPs, and integrate energy into spatial planning. However, this requires support. National government must invest in municipal capacity-building, streamline regulatory processes, and facilitate grid access. Intergovernmental forums should be established to align energy and spatial planning across spheres. Without these reforms, decentralisation will remain a constitutional promise rather than a practical reality. Figure 3 below illustrates the systemic interactions in South Africa's local energy governance. It highlights how constitutional mandates for municipal electricity reticulation are undermined by affordability crises and household exclusion (Observed Constraints), while external infrastructure control creates bottlenecks between local planning and implementation (Mandates vs. Local Implementation). The feedback loops visually reinforce the findings in Sections 5.1–5.5, showing how legal empowerment, institutional friction, spatial inequality, and systemic bottlenecks converge to shape energy justice outcomes in De Aar.

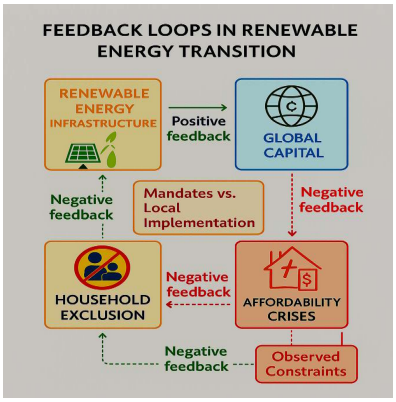

Fig 3: Feedback Loops in Renewable Energy Transition

The diagram provides a unifying visual anchor for findings. In Section 5.1 (Legal Empowerment vs Operational Reality), the annotation "Mandates vs. Local Implementation" illustrates the gap between constitutional authority and municipal capacity, showing how exclusionary feedback loops weaken the execution of electricity reticulation. In Section 5.2 (Institutional Friction and Fragmentation), the negative arrows highlight how external actors such as Eskom, NERSA, and DMRE constrain municipal autonomy, reinforcing the institutional fault lines described in the literature. In Section 5.3 (Spatial Outcomes and Energy Justice), the Household Exclusion loop visually represents distributive and recognition injustices, where affordability crises perpetuate spatial inequality and bypass local planning. In Section 5.4 (Feedback Loops and Systemic Bottlenecks), the diagram itself embodies the systemic bottlenecks: weak policy feedback, affordability barriers, and exclusion cycles that entrench underperformance. Finally, in Section 5.5 (Emerging Opportunities and Reform Pathways), the map highlights leverage points for reform, suggesting that breaking negative loops and strengthening positive ones could enable municipalities like Emthanjeni to align constitutional mandates with practical delivery. By weaving through each subsection, the diagram responds directly to the empirical findings, transforming a methodological tool into a lens for interpreting governance realities and reform pathways.

6 CONCLUSION AND RECOMMENDATIONS

This study has examined how constitutional energy mandates are interpreted and operationalised at the municipal level in post-apartheid South Africa, using De Aar as a case study. Drawing on spatial theory, energy justice, and systems thinking, the research reveals a persistent gap between legal empowerment and practical implementation. While Emthanjeni Local Municipality is constitutionally authorised to govern electricity reticulation, its capacity to do so is constrained by technical limitations, fiscal dependency, regulatory ambiguity, and fragmented intergovernmental coordination. Systems mapping of De Aar demonstrates how these constraints interact across municipal planning, regulatory processes, infrastructure

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deployment, and service delivery, reinforcing feedback loops that allow energy infrastructure to bypass local planning instruments and fail to address community needs. As a result, the transformative intent of post-apartheid spatial planning is undermined, perpetuating uneven development and spatial inequality.

In response, this study recommends a coherent, place-based model of energy governance centred on six interrelated priorities: strengthening municipal capacity, clarifying regulatory roles, enhancing intergovernmental coordination, integrating energy and land-use planning, promoting spatially just energy transitions, and applying systems thinking as an enabling governance approach. Together, these priorities emphasise that meaningful decentralisation requires more than constitutional authority; it depends on institutional capacity, regulatory alignment, and collaborative planning across spheres of government. By situating energy governance within a spatial justice and systems framework, the proposed approach seeks to align constitutional ideals with practical governance mechanisms, enabling more equitable, climate-responsive, and development-oriented energy transitions in De Aar. figure 4 below illustrates six interrelated priorities required to align municipal energy governance with constitutional mandates, spatial justice, and climate-responsive local development.

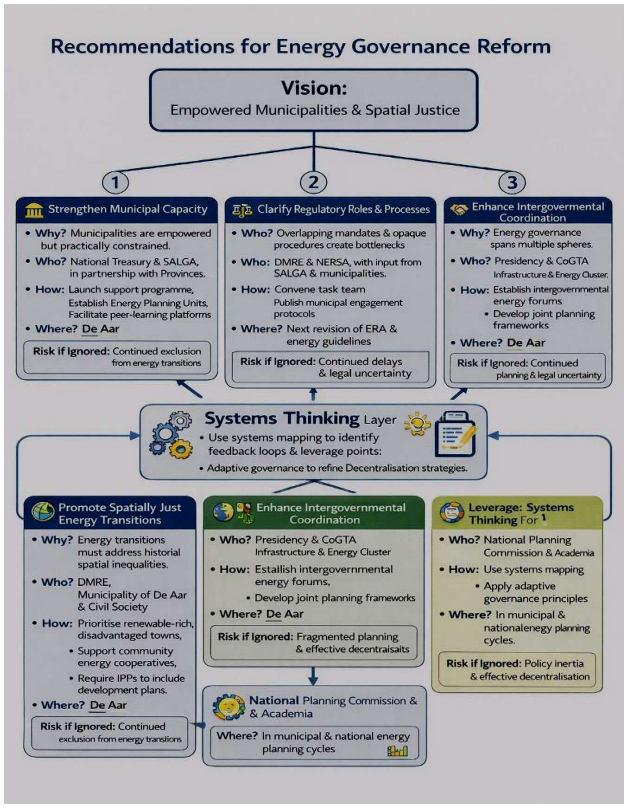

Fig 4: Integrated framework for energy governance reform in De Aar. Source: Author's own compilation based on study findings with diagrammatic assistance from generatie AI (2025)

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