African Perspectives on Transformative Leadership for Climate Change, Innovation, and the Energy Transition

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Abstract
Africa's climate, energy and innovation challenges reflect institutional fragmentation, unequal value chains and constraints on policy sovereignty. This article develops an Ubuntu-Decolonial Transformative Leadership Framework and applies it through qualitative comparative document analysis of public records issued from 2015 through May 2026. Kenya, South Africa and the Democratic Republic of the Congo offer contrasting settings of renewable electricity expansion, negotiated coal transition and upstream mineral dependence. The analysis distinguishes policy commitments, institutional arrangements and observed outcomes, using descriptive statistics to anchor comparison and counter-evidence to qualify interpretation. Kenya's generation profile illustrates the distinction between renewable deployment and inclusive electricity access. South Africa's justice and financing architecture shows the scale of coordination required to translate a negotiated transition into delivery. The Congolese case illustrates the tension between strategic mineral leverage and domestic value capture. Together, the cases suggest that ethical commitments acquire practical significance when embedded in coordinated institutions, domestic capability formation, enforceable distributive rules and public accountability. The framework specifies how these arrangements can be examined in documentary evidence and identifies policy implications for participatory planning, transition finance and regional mineral value chains.

Keywords:
transformative leadership; Ubuntu; climate governance; energy transition; institutional economics; African development.

JEL Classification:
O13, O55, Q42, Q48, Q56.

1. Introduction

Climate risk, technological change and the move towards lower-carbon energy systems confront African states with a common political question. Who will govern the transition, whose knowledge will shape it and where will value be created? Institutions distribute the costs and benefits of change through decisions on infrastructure, finance and industrial development.

The scale of the developmental challenge is substantial. In 2023, 565 million people in sub-Saharan Africa lacked access to electricity, representing 85 per cent of the global population without access (International Energy Agency et al., 2025). This deficit coexists with abundant renewable resources and a central role in the supply of minerals required for batteries and other low-carbon technologies (International Energy Agency [IEA], 2022). The resulting paradox is not explained by resource scarcity alone. It reflects weak transmission and distribution systems, high financing costs, fragmented public authority, limited domestic industrial capabilities, and international value chains in which African economies often occupy low-value extractive positions (United Nations Economic Commission for Africa [UNECA], 2024; World Bank, 2021).

Climate vulnerability reinforces these pressures. Africa has contributed a comparatively small share of cumulative and current global emissions, yet climate shocks intensify food insecurity, infrastructure loss, fiscal strain, displacement, and inequality (Intergovernmental Panel on Climate Change [IPCC], 2023). The relationship between climate change and development is therefore mediated by institutions: budgeting systems, land and mineral regimes, public utilities, local government, research systems, and mechanisms for distributing risk. Formal policy commitments can coexist with limited implementation when mandates overlap, revenue is insecure, and accountability is dispersed.

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The energy transition simultaneously creates opportunities for structural transformation. Renewable-energy deployment can improve energy security and support new industries. Critical minerals can underpin beneficiation, regional manufacturing, and technological learning. Distributed energy can extend access to communities that remain beyond reliable grids. However, none of these outcomes follows automatically from market demand or resource endowments. Institutional economics emphasises that incentives, rules, enforcement, and coordination shape economic performance (North, 1990). Developmental-state scholarship similarly shows that transformation depends on capable public institutions able to discipline rents, coordinate investment, and cultivate domestic capabilities (Mkandawire, 2001; Whitfield et al., 2015). Without such arrangements, climate finance may deepen debt exposure, renewable projects may remain weakly connected to local productive systems, and green-mineral demand may entrench enclave extraction.

This article argues that these material problems also have an ethical and epistemic dimension. Policy architectures define whose interests deserve protection, what counts as expertise, and which futures are considered legitimate. Ubuntu's relational ethic directs attention to interdependence, dignity, and reciprocal obligation (Metz, 2022; Ramose, 1999). Decolonial thought exposes how apparently universal development models can marginalise African knowledge and restrict policy agency (Mignolo & Walsh, 2018; Ndlovu-Gatsheni, 2018). Transformative leadership contributes an account of purposive agency directed towards structural change and social justice (Shields, 2018). Taken separately, however, these perspectives are insufficient. Ubuntu can become rhetorical if it is detached from institutional design; decoloniality can remain diagnostic without an implementable programme; and transformative leadership can over-personalise change if it is centred on exceptional individuals rather than durable institutions.

The study addresses this problem by integrating these traditions with institutional and development economics. It asks: **How can an Ubuntu-informed model of transformative leadership be operationalised within African climate, innovation, and energy-transition institutions, and what do contrasting country cases reveal about its economic and governance implications?** Four objectives guide the analysis:

1. to construct a unified framework linking relational ethics, epistemic agency, transformative leadership, and institutional performance;
2. to distinguish leadership as individual agency, institutional capacity, and epistemic orientation;
3. to examine how these dimensions operate across Kenya, South Africa, and the Democratic Republic of the Congo (DRC); and
4. to identify concrete policy mechanisms through which justice, capability formation, and accountability can be embedded in transition governance.

The article contributes a framework with observable indicators, relates ethical commitments to coordination, rent allocation and productive capabilities, and examines those relationships across three contrasting country cases.

Section 2 develops the framework. Section 3 explains the design, Section 4 presents the comparison and Sections 5 and 6 discuss policy implications and conclusions.

2. Literature Review and Integrated Theoretical Framework

2.1 Climate transition as an institutional and development-economics problem

Climate and energy transitions require long-horizon investment under uncertainty. They involve infrastructure with substantial sunk costs, multiple public and private actors, distributional conflict, and policy choices whose consequences extend across generations. These characteristics make institutions central to transition outcomes. North (1990) defines institutions as formal and informal constraints that structure interaction. In transition governance, they include licensing rules, procurement systems, utility mandates, fiscal regimes, community-consultation requirements, and the informal practices through which authority and resources are negotiated.

Institutional quality should not be reduced to a generic governance score. The relevant question is whether a specific configuration of rules can coordinate investment, manage conflict, and produce credible commitments. A technically sound energy plan may fail when the transmission authority, treasury, regulator, municipality, and industrial-policy institutions work to different time horizons or possess incompatible mandates. Fragmentation raises transaction costs, delays projects, disperses accountability, and makes policy reversal more likely. Conversely, coordination can reduce uncertainty and crowd in investment, provided that it does not eliminate public scrutiny.

Development economics adds a concern with structural transformation. Energy systems are not merely service-delivery sectors; they shape production costs, technological learning, industrial

location, employment, and external balances. Mkandawire (2001) challenges the claim that developmental states are culturally or institutionally impossible in Africa and directs attention to political purpose and organisational capacity. Whitfield et al. (2015) show that industrial policy depends on the relationship between ruling coalitions, productive sectors, and enforcement capacity. Applied to a green transition, these insights shift analysis from the number of projects to the domestic capabilities created by them: engineering skills, supplier networks, research capacity, mineral processing, grid management, and locally controlled innovation.

Political-economy analysis also clarifies why transition benefits are contested. Rents are generated through mineral rights, power-purchase agreements, carbon markets, concessional finance, and local-content rules. The question is not whether rents exist, but how they are allocated and whether they support learning and public value. In the absence of transparent and enforceable institutions, green investment can reproduce extractive enclaves, socialise risk, and privatise returns. The just-transition literature therefore insists that decarbonisation be assessed through distributive, procedural, and recognitional justice, rather than carbon outcomes alone (Jenkins et al., 2016; Newell & Mulvaney, 2013).

Ostrom's (2010) account of polycentric governance is also relevant. Climate action takes place across national departments, regulators, firms, cities, communities, and regional bodies. Multiple centres of decision-making can encourage experimentation and local adaptation, but only when information is shared, responsibilities are clear, and conflict-resolution mechanisms exist. Polycentricity without coordination becomes fragmentation; centralisation without participation becomes technocracy. The leadership challenge is to build institutions that combine strategic direction with local knowledge and accountability.

Three debates connect these arguments to the comparison. First, electricity access and affordability are household and enterprise outcomes. Installed generating capacity and the actual output mix answer separate questions about the supply system (International Energy Agency et al., 2025). Second, the political economy of a just transition concerns who carries financing risk as well as who gains from decarbonisation. The terms and allocation of capital shape the resources available for grid investment, municipal delivery and worker support (Newell & Mulvaney, 2013; Presidency of the Republic of South Africa, 2022). Third, rising critical-mineral demand may increase bargaining leverage while leaving domestic processing, supplier learning and public revenue accountability uneven. Beneficiation is therefore a question of productive capability and governance, including complementary energy, skills and regional market arrangements (African Union, 2025; Whitfield et al., 2015).

2.2 Ubuntu as relational ethics, not a monolithic policy formula

Ubuntu is often condensed into the proposition that a person becomes a person through other people. Its analytical value lies in the relational account of moral status that follows: individual flourishing is inseparable from social relationships, dignity, and reciprocal recognition (Metz, 2022; Ramose, 1999). In climate and energy policy, this perspective questions approaches that treat households, workers, or communities as residual beneficiaries after investment decisions have been taken. It requires decision-makers to consider how institutional choices sustain or damage the relationships on which collective life depends.

Ubuntu should not, however, be treated as a uniform tradition shared identically across a diverse continent. African societies contain different languages, histories, political economies, and moral vocabularies. Moreover, communitarian claims can be mobilised to suppress dissent or romanticise consensus (Matolino & Kwindingwi, 2013; Praeg, 2014). An Ubuntu-informed framework must therefore protect individual rights, acknowledge conflict, and create space for affected groups to refuse, contest, or revise decisions. Relationality is not unanimity.

This qualification resolves an important tension between Ubuntu and transformative leadership. Classical leadership theory often locates moral agency in an individual who mobilises followers towards a higher purpose (Burns, 1978). Ubuntu relocates that agency within relationships. The leader remains responsible for judgement and action, but legitimacy is produced through reciprocal accountability and the capacity of others to participate meaningfully. The framework developed here consequently treats leadership as distributed across persons and institutions rather than embodied in a heroic office-holder.

Operationally, Ubuntu contributes three evaluative principles. The first is **relational accountability**: decision-makers must answer to people whose livelihoods and environments are affected. The second is **shared benefit**: transition gains should expand collective capabilities rather

than accumulate exclusively to firms, central elites, or external financiers. The third is **intergenerational responsibility**: fiscal, ecological, and infrastructural decisions must not transfer avoidable burdens to future citizens.

2.3 Decolonial epistemology and policy sovereignty

Decolonial scholarship examines how colonial hierarchies persist through knowledge, institutions, and categories of development (Mignolo & Walsh, 2018; Ndlovu-Gatsheni, 2018). Within climate governance, epistemic hierarchy appears when external models define feasible technologies, bankable projects, or acceptable policy instruments without sufficient attention to local productive systems and lived conditions. Indigenous and community knowledge may be consulted symbolically while technical consultants retain agenda-setting power.

Decoloniality does not require the rejection of global science or international cooperation. Climate modelling, engineering standards, and cross-border finance are indispensable. The issue is whether African actors can interrogate, adapt, and combine these resources on terms consistent with domestic priorities. Policy sovereignty in this sense is the capability to choose and implement a development pathway, not isolation from interdependence.

Epistemic plurality also has an economic function. Local knowledge can reduce information asymmetries in adaptation, land use, project siting, and household energy demand. Universities, technical colleges, firms, and communities become parts of an innovation system rather than passive recipients of imported technologies. This links decoloniality to capability formation: knowledge becomes transformative when it is institutionalised through research funding, procurement, training, standards, and ownership.

2.4 Transformative leadership across three levels

Transformative leadership differs from managerial leadership because it seeks to alter structures that reproduce injustice, rather than improve performance within unchanged arrangements (Shields, 2018). The concept becomes analytically weak, however, when it is used simultaneously as a personal virtue, a description of good governance, and a general aspiration. This article disaggregates it into three levels.

At the **individual level**, leadership refers to moral and strategic agency: the capacity of public officials, regulators, community representatives, and organisational leaders to recognise structural injustice, convene competing interests, and accept responsibility for decisions. At the **institutional level**, leadership refers to durable capacities embedded in rules, budgets, mandates, coordination mechanisms, and accountability systems. At the **epistemic level**, leadership refers to the authority to define problems, validate knowledge, and shape development imaginaries.

These levels interact but are not interchangeable. Individual commitment without institutional authority produces symbolic advocacy. Institutional capacity without ethical orientation can deliver efficient but exclusionary outcomes. Epistemic inclusion without budgetary and regulatory power becomes consultation without consequence. Transformative outcomes require alignment across all three.

The article uses **moral imagination** in a restricted and operational sense: the capacity to assess policy from the standpoint of affected communities and future generations, to identify alternatives to inherited institutional arrangements, and to translate those alternatives into testable policy choices. Evidence of moral imagination therefore includes scenario comparison, distributional-impact assessment, participatory deliberation, and explicit attention to long-term social and ecological effects. It is not treated as an unobservable personal attribute.

2.5 The Ubuntu-Decolonial Transformative Leadership Framework

The integrated framework, termed the **Ubuntu-Decolonial Transformative Leadership Framework (UDTLF)**, connects ethical purpose to institutional and economic mechanisms. Ubuntu supplies the relational standard by which outcomes are judged. Decolonial epistemology identifies who possesses agenda-setting authority and whether knowledge systems are plural. Transformative leadership specifies the agency required to change structures. Institutional and development economics explain how these commitments are converted into incentives, capabilities, and credible implementation.

Table 2.5.1. Operational indicators of the UDTLF

Component	Principal level	Documentary test and evidence threshold	Proposed mechanism
Relational accountability	Individual and institutional	Record formal representation, decision reasons, grievance access and responses. A stakeholder list counts as recognition only. A published response or remedy provides evidence of answerability.	Reduces information asymmetry, social conflict, and project delay; strengthens legitimacy
Epistemic plurality	Epistemic and institutional	Identify whose knowledge enters an assessment, who can shape priorities and which decision or programme design it informs. Attendance alone provides no evidence of epistemic influence.	Improves contextual fit, learning, and domestic innovation capability
Transformative agency	Individual and collective	Identify the named actor or coalition, the structural barrier and the action taken to change a rule, priority or allocation. Record an announced initiative separately from action.	Overcomes coordination failures and mobilises reform coalitions
Institutional coherence	Institutional	Compare mandates, financing responsibilities, milestones and reporting across instruments. Record explicit coordination provisions, aligned delivery evidence and documented conflicts separately.	Lowers transaction costs and policy uncertainty; improves investment credibility
Distributive and recognitional justice	Institutional	Identify affected groups and who receives benefits or bears costs. Record eligibility, safeguards or allocation rules, then check for reported outcomes by group or place where available.	Broadens capabilities, protects demand, and limits regressive transition costs
Productive sovereignty	Institutional and epistemic	Record ownership, local procurement, skills transfer, research, processing or regional production arrangements. Distinguish targets and contractual provisions from reported domestic capability or value added.	Converts resource rents and investment into structural transformation and technological learning

Note: Author's synthesis of the literature in Sections 2.1–2.5.

The indicators are qualitative documentary tests. For each observation, the comparison distinguishes a stated objective, an assigned instrument or responsibility, and a reported action or outcome. Where a record is silent, evidence is recorded as unavailable. Relational accountability concerns who can question a decision and obtain a response. Epistemic plurality concerns whose knowledge shapes the decision. Transformative agency concerns action to change institutional arrangements, while coherence concerns whether those arrangements fit together. Distributive justice concerns who benefits or bears costs, while productive sovereignty concerns where durable capabilities and value are retained. A passage may support multiple codes only when it meets each code's threshold independently. The mechanisms in the last column are theoretical propositions to be examined against the documentary record.

3. Methodology

3.1 Research design and comparative logic

The study uses qualitative comparative document analysis. This design is appropriate because the research question concerns how leadership, justice, knowledge, and economic mechanisms are articulated and institutionalised in public frameworks and implementation records. Document

analysis is not treated as an informal literature review. It is a systematic procedure through which a bounded corpus is selected, coded, compared, and interpreted (Bowen, 2009; Schreier, 2012).

Cases were purposively selected on three dimensions: the electricity system and transition problem, the institutional setting through which that problem is governed, and the country's position in the low-carbon value chain. Kenya, South Africa and the DRC have different starting points on each dimension (Table 3.1.1). This most-different-case logic allows the study to ask whether similar governance problems recur when the principal transition task shifts from renewable deployment to managing coal dependence or capturing value from critical minerals. The comparison supports analytical inference about recurring mechanisms and their limits. Sub-Saharan Africa supplies regional context and benchmarks. The units of comparison are the three countries.

Table 3.1.1. Criteria for purposive case selection

Case	**Energy profile and transition task**	**Institutional setting**	**Value-chain position**
Kenya	Geothermal-led renewable expansion and extension of access	Sector ministry, regulator and long-horizon national planning	Renewable deployment and domestic technical capability
South Africa	Coal-intensive system and managed decarbonisation	Negotiated justice framework, national delivery arrangements and municipal distribution	Industrial economy adapting electricity, vehicle and hydrogen supply chains
DRC	Electricity-access constraints alongside mineral export dependence	Mining and fiscal institutions, with extractive-sector transparency oversight	Major upstream cobalt producer with constrained domestic value capture

Note: Author's synthesis of the national planning and statistical records listed in Appendix A.

3.2 Corpus, search boundaries, and selection criteria

The documentary corpus covers public records issued between 2015 and 31 May 2026. Scholarly works used to build the framework were reviewed separately. The reconstructed register contains 21 pre-cutoff records, with the Kenya IRENA profile recorded separately from the regional statistical compendium. Appendix A identifies the records used in the comparative analysis and distinguishes later statistical verification from the materials available at the cutoff. The August 2026 USGS country release is cited separately as a post-cutoff descriptive update and is excluded from coding.

Documents were located through the official repositories of the African Union, UNFCCC, national ministries and regulators, Statistics South Africa, the Presidential Climate Commission, the International Energy Agency and partner agencies, IRENA, UNECA, the World Bank, the Extractive Industries Transparency Initiative, and the United States Geological Survey. Search combinations included the country name with *energy transition*, *renewable capacity*, *NDC*, *just transition*, *cobalt*, *mining revenue*, *climate strategy*, *implementation*, and *statistics*.

A document was included when it met all four criteria:

1. it was issued or formally hosted by a public authority, intergovernmental organisation, regulator, or recognised transparency body;
2. it contained a policy commitment, implementation arrangement, or quantitative indicator relevant to climate, energy, innovation, or mineral value chains;
3. it supplied evidence for at least one UDTLF code; and
4. its provenance, date, and institutional author could be verified.

Documents were excluded when they duplicated a later version, offered commentary without primary evidence, lacked identifiable provenance, or referred to Africa only incidentally. The selection therefore prioritised authoritative and comparable evidence rather than volume.

Table 3.2.1. Composition of the documentary evidence

Group	Records	Evidence	Use
Regional and international	8	AU, IPCC, IEA, UNECA, Tracking SDG 7 and IRENA statistical compendium	Policy context and comparison benchmarks
Kenya	5	NDC, transition and investment plan, ministry draft, EPRA statistics and IRENA country profile	Planning, capacity, generation and access
South Africa	5	Justice framework, two JET plans, SDG and electricity reporting	Distribution, finance, delivery and generation
DRC	3	World Bank cobalt study, EITI validation and progress report	Value chains, disclosure and revenue governance

Note: The 21 entries are reconstructed from the sources identified in the manuscript. The 2024 USGS country profile released in August 2026 is listed separately as a post-cutoff update.

The coding unit was a discrete policy provision, programme commitment, implementation observation or statistical table entry. Appendix A identifies the source version, analytical unit and contribution of each record. Appendix B illustrates how evidence status and code boundaries were applied. Numerical observations retain the reference year, measure and units used by the source.

3.3 Coding and analytical procedure

Coding combined deductive and inductive analysis. Six deductive parent codes were derived from the UDTLF: relational accountability, epistemic plurality, transformative agency, institutional coherence, distributive justice, and productive sovereignty. During the first reading, four recurrent subcodes were added: financing dependence, implementation gap, policy fragmentation, and green extractivism.

Table 3.3.1. Analytical codebook and decision rules

Code	Inclusion rule	Exclusion rule and typical evidence
Relational accountability	Affected groups have defined roles, rights, grievance routes, or documented influence	General references to "stakeholders" without process, representation, or consequence
Epistemic plurality	Local, indigenous, community, or African research knowledge affects problem definition or programme design	Ceremonial recognition without decision authority or resources
Institutional coherence	Mandates, budgets, data, timelines, and implementation responsibilities are aligned	Co-location of policies without a coordinating or accountability mechanism
Distributive justice	Benefits, burdens, affordability, jobs, gender, or spatial effects are measured and governed	Aspirational use of "inclusive" or "just" without allocation rules
Productive sovereignty	Procurement, skills, ownership, R&D, beneficiation, or regional value chains build domestic capability	Investment or extraction without demonstrable learning or value addition
Financing dependence	Conditional, debt-heavy, externally designed, or insufficient finance constrains policy choice	International finance with domestic ownership and transparent risk allocation
Green extractivism	Low-carbon demand reproduces enclave extraction, weak local value capture, or social/ecological harm	Mineral production linked to enforceable beneficiation and community-benefit arrangements

Code	Inclusion rule	Exclusion rule and typical evidence
Transformative agency (parent)	A named actor or coalition takes an identifiable step to change an entrenched rule, allocation or governance practice.	Exclude generic leadership rhetoric, job titles and routine administration. Record commitment and reported action separately.
Implementation gap (subcode)	A specified commitment or milestone can be compared with documented delay, non-delivery, underfunding or partial delivery within its stated scope.	Exclude objectives with no due date or evidence of delivery status. A poor outcome alone does not establish failure against a specific commitment.
Policy fragmentation (subcode)	Documents identify conflicting or unassigned mandates, inconsistent timetables or a documented failure of inter-agency coordination.	Exclude institutional diversity and multiple plans where responsibilities remain compatible. Use implementation gap for delivery shortfall unless a coordination conflict is separately evidenced.

Note: Author's operational codebook derived from the UDTLF and refined during documentary analysis.

Documents were screened, logged and read in full or, for statistical compendia, through the relevant methodological sections and tables. Coded passages were entered in a matrix. Case summaries separated commitments, institutional arrangements, outcomes and contradictions. The cross-case comparison then examined recurring mechanisms and negative evidence.

Negative-case analysis was used to avoid interpreting every policy reference to participation or justice as evidence of transformation. For example, Kenya's strong renewable-generation indicators were considered alongside affordability and access constraints; South Africa's detailed justice architecture was compared with the continuing dominance of coal and the scale of the financing gap; and the DRC's strategic mineral position was compared with the value-chain constraints and corrective actions identified in the World Bank and EITI records.

One researcher conducted the coding. The six deductive parent codes provided a common basis for the initial reading, with four subcodes added during analysis. In the second pass, assignments were checked against the refined definitions and the case matrices. The consolidation of local knowledge and knowledge sovereignty under epistemic plurality resolved a boundary inconsistency. Financing dependence was retained where documentary evidence identified a constraint tied to financing terms or availability. Divergent evidence was retained in the case matrices. Comparing strategy documents with implementation records and statistics, and separating observed results from normative interpretation, helped limit confirmation bias. These checks address consistency within the analysis, while interpretive judgement remains with one researcher. Appendix B illustrates the decision rules without presenting the examples as contemporaneous coding-log entries.

3.4 Interpretation, trustworthiness, ethics, and limitations

The interpretive logic moved from evidence to conclusion in three steps. A claim was first grounded in a specific policy provision or statistic. It was then compared with evidence from other documents in the same case. Finally, it was interpreted through the UDTLF and the identified economic mechanism. Conclusions were accepted only when supported by at least two documents or by one authoritative statistical source corroborated by a policy or implementation document.

Credibility was strengthened by comparing strategies, implementation documents and statistical records. Dependability rests on the stated cutoff, codebook and explicit source-to-claim links. Counter-evidence is reported alongside supporting evidence. Some quantitative indicators are based on official estimates that may be subject to subsequent revisions or methodological differences across statistical sources.

Ethics statement. The study used publicly available documents and aggregate statistics. It involved no human participants, contact with individuals or access to confidential or identifiable personal data. Formal research ethics approval was therefore not required.

AI use disclosure. ChatGPT assisted with drafting and editing the revision, organising the source and evidence tables, and checking bibliographic details against public records. Responsibility for the analysis, interpretation and final manuscript rests with the author.

Official records may overstate implementation and under-report conflict. National documents offer limited insight into local experience, and the three cases cannot capture the continent's institutional diversity. The design identifies plausible mechanisms and supports analytical comparison. Causal effects and subnational variation require additional designs and evidence.

4. Results and Discussion

4.1 Comparative empirical overview

The evidence reveals a continental transition marked by a mismatch between resource potential and developmental outcomes. The electricity-access deficit remains concentrated in sub-Saharan Africa, while investment and renewable-capacity growth are uneven (International Renewable Energy Agency, 2025b). At the same time, the global transition increases demand for minerals in which African economies hold a strategic position. These conditions create opportunities for agency but also intensify distributional and institutional pressures.

Table 4.1.1. Comparative transition indicators and institutional interpretation

Case/context	**Verified indicator**	**Policy architecture**	**Central contradiction**	**UDTLF interpretation**
Sub-Saharan Africa (regional context)	565 million people lacked electricity access in 2023; the region accounted for 85% of the global access deficit	SDG 7, Mission 300, AU climate and development frameworks	Renewable potential coexists with a widening concentration of global energy poverty	Relational accountability requires access, affordability, and service quality to be treated as transition outcomes
Kenya	Installed renewable capacity share: 79.89% (June 2024, EPRA). Renewable electricity generation share: 89% (2023, IRENA).	Updated NDC, Energy Transition and Investment Plan, sector regulation and statistics	Strong generation indicators do not by themselves resolve affordability, grid, and productive-use constraints	Institutional continuity supports investment; productive sovereignty requires local capabilities and inclusive access
South Africa	Electricity generated from coal: 82.7%. Renewable generation: 9.0% (both 2024, Statistics South Africa). JET financing requirement: ZAR 1,480.3 billion (2023–2027, Presidency, 2022).	Just Transition Framework, JET Investment Plan, JET Implementation Plan, sector reforms	Detailed justice commitments confront carbon lock-in, fiscal constraints, municipal weakness, and complex finance	Ethical commitments need binding coordination, transparent finance, worker/community protection, and measurable implementation
DRC	Post-cutoff descriptive update: estimated 75% of global cobalt production in 2024. Mining and processing: 40.0% of GDP. Manufacturing: 8.8% of GDP (2024, USGS country profile).	Mining law and fiscal institutions, EITI, AU Green Minerals Strategy, emerging regional value-chain initiatives	Strategic mineral power coexists with export dependence, low diversification, and weak domestic energy access	Green extractivism persists unless mineral rents fund capabilities, energy access, beneficiation, and accountable community benefit

Note: Installed capacity measures rated generating capability (MW). Generation measures electricity produced over a period (GWh). Different denominators and reference periods mean that Kenya's two renewable shares should be read separately. Sources: EPRA (2024), International Energy

Agency et al. (2025), IRENA (2025a), Presidency of the Republic of South Africa (2022), Statistics South Africa (2026), and U.S. Geological Survey (2026).

Table 4.1.1 places the cases alongside their regional context. Renewable generation, transition financing and mineral production describe different dimensions of the transition. The country evidence points to distinct institutional challenges in extending access, coordinating delivery and retaining value. The indicators are descriptive and are interpreted alongside the institutional records in Sections 4.2–4.5.

4.2 Kenya: renewable expansion, coordination, and the capability question

Kenya's renewable expansion is consistent with the presence of sustained planning and specialised sector institutions. By June 2024, renewable sources represented 79.89 per cent of installed electricity capacity (Energy and Petroleum Regulatory Authority [EPRA], 2024). IRENA's statistical profile reported that renewables generated 89 per cent of electricity in 2023, with geothermal power supplying a particularly important stable source alongside hydro, wind, solar, and bioenergy (International Renewable Energy Agency [IRENA], 2025a). This diversification reduces dependence on a single intermittent source and illustrates the value of accumulated technical capability.

The policy architecture connects climate commitments to sector planning. Kenya's updated NDC combines mitigation and adaptation and identifies energy, agriculture, transport, and land use as linked domains (Government of Kenya, 2020). The Energy Transition and Investment Plan extends the planning horizon and attempts to integrate investment requirements with energy-system transformation, while the ministry's 2023-2027 strategic plan (public draft) sets out sectoral goals and implementation responsibilities (Ministry of Energy and Petroleum, Kenya, 2023a, 2023b). EPRA's regular publication of capacity, generation, and market statistics also strengthens information credibility. Within the UDTLF, these features constitute evidence of institutional coherence: targets are supported by sector-specific institutions, data, and an identifiable investment pathway.

The cited Strategic Plan is the public draft hosted by the ministry. Its cover is dated July 2023 and the filename identifies a 7 June 2024 draft. It is used as evidence of planning intent. The May 2025 public launch refers to a later stage in the plan's policy life and does not date the version cited here.

The economic mechanism is capability accumulation. Geothermal development requires geological knowledge, specialised engineering, project finance, and long-term public coordination. Repeated investment allows learning to become embedded in organisations rather than remaining tied to individual projects. A developmental perspective therefore interprets Kenya's renewable share not simply as natural-resource advantage, but as consistent with cumulative investment and technical learning, alongside resource endowments.

The negative evidence is equally important. A high renewable share does not mean that the transition is universally inclusive. National generation statistics do not capture reliability at every locality, the affordability of connection and consumption, the quality of distribution infrastructure, or whether electricity enables productive activity. The continental evidence shows that access deficits are increasingly concentrated in rural and low-income communities (International Energy Agency et al., 2025). Kenya's transition must therefore be evaluated through household and enterprise capabilities, not capacity alone.

An Ubuntu-informed analysis asks whether the system expands the practical ability of communities to use energy for education, health, irrigation, small enterprise, and dignified domestic life. This requires participatory planning for mini-grids and distribution, affordability safeguards, transparent service standards, and community influence over siting and benefit arrangements. It also requires epistemic plurality. Local knowledge is economically useful in forecasting demand, designing tariff support, locating decentralised systems, and identifying the energy needs of pastoral, agrarian, and informal economies.

Kenya also illustrates the difference between technological adoption and productive sovereignty. Imported equipment can accelerate deployment, but long-term transformation depends on domestic engineering, maintenance, manufacturing, software, and research capabilities. Public procurement and investment agreements should therefore include realistic skills-transfer, local-supplier-development, and research-partnership conditions. Such requirements must be designed around existing capabilities and regional scale to avoid raising costs without creating viable firms. Transformative leadership lies in managing this sequence: protecting access and affordability while deliberately expanding domestic capability.

4.3 South Africa: justice architecture, carbon lock-in, and transition finance

South Africa provides a different institutional configuration. The country has constructed one of the continent's most detailed just-transition frameworks, yet its electricity system remains carbon intensive. Statistics South Africa reports that coal generated 82.7 per cent of electricity in 2024, compared with 9.0 per cent from renewable sources. The renewable share increased from 2.1 per cent in 2016, but the structure of generation continues to reflect deep carbon lock-in (Statistics South Africa, 2026, p. 11).

The Just Transition Framework defines justice in distributive, restorative, and procedural terms and recognises the vulnerability of workers, communities, and regions linked to coal (Presidential Climate Commission, 2022). The JET Investment Plan and Implementation Plan extend this normative architecture into sector programmes covering electricity, new-energy vehicles, green hydrogen, skills, and municipal capacity (Presidency of the Republic of South Africa, 2022, 2023). National SDG reporting also places energy transition within a broader framework of inclusive growth, industrialisation, and inequality reduction (Statistics South Africa, 2025). The 2022 Investment Plan estimates ZAR 1,480.3 billion in financing requirements for 2023–2027. The components are electricity (ZAR 711.4 billion), municipal capacity (ZAR 319.1 billion), green hydrogen (ZAR 319.0 billion), new-energy vehicles (ZAR 128.1 billion) and skills development (ZAR 2.7 billion). The last three account for ZAR 449.8 billion (Presidency of the Republic of South Africa, 2022, Table 2). These figures are estimated financing needs.

The framework's attention to affected workers and communities illustrates moral imagination at the level of policy design. It acknowledges that decarbonisation must consider affected workers, local economies, public finance, industrial development, and spatial inequality. It also creates participatory forums through the Presidential Climate Commission. The existence of a framework, however, is not evidence of implementation. The case reveals a multi-level coordination problem involving the Presidency, energy authorities, Eskom, the transmission system, National Treasury, municipalities, provincial actors, regulators, firms, organised labour, and communities.

Institutional economics clarifies the risks. Ambiguous mandates and policy reversals increase uncertainty and financing costs. Weak municipal capacity restricts distribution investment and service delivery. Transmission constraints can delay renewable connections even when generation projects are ready. Fiscal pressure affects the state's ability to absorb risk, support affected regions, and finance public goods. The implementation problem is therefore not a lack of vision alone, but the absence or unevenness of complementary institutions.

The financing structure adds a political-economy concern. The International Partners Group initially pledged USD 8.5 billion, comprising grants, concessional and commercial instruments, and guarantees (Presidency of the Republic of South Africa, 2022, 2023). The 2023 implementation plan recorded higher international pledges, but the central question remains the cost, maturity, currency exposure, conditionality, and allocation of finance (Presidency of the Republic of South Africa, 2023). Debt-heavy finance can shift transition risk onto the public balance sheet, while grant finance is especially important for worker support, municipal capacity, community development, and institutional strengthening that do not generate conventional project revenue.

The UDTLF does not reject international finance. It requires transparent risk allocation and domestic agenda-setting. Every major financing package should disclose instrument type, currency, pricing, sovereign exposure, procurement conditions, social allocations, and expected emissions and employment outcomes. This converts the decolonial concern with dependency into an auditable institutional requirement.

South Africa also illustrates the analytical value of separating leadership levels. Individual political commitment can convene a coalition and signal direction. Institutional leadership requires implementation mandates, budgets, sequencing, and public reporting. Epistemic leadership requires affected communities and workers to influence not only compensatory measures but industrial and regional development choices. If participation occurs after investment priorities are fixed, it supplies legitimacy without agency.

The economic objective should be structural transformation rather than managed decline. Coal-dependent regions require place-based industrial strategies linked to grid investment, renewable-component supply chains, rehabilitation, agriculture, services, and skills that correspond to credible employment pathways. Community support cannot be reduced to short training programmes. Ubuntu's relational ethic makes the continuity of community life, dignity, and reciprocal obligation central outcomes. Development economics adds that these outcomes need productive investment,

not only social mitigation.

4.4 The DRC: cobalt, rent governance, and green extractivism

The DRC occupies a strategic upstream position in the battery supply chain. As a post-cutoff descriptive update, the U.S. Geological Survey's 2024 country profile reports that the DRC supplied an estimated 75 per cent of global cobalt production in 2024. For the same reference year, mining and mineral processing accounted for an estimated 40.0 per cent of GDP, while manufacturing accounted for 8.8 per cent (U.S. Geological Survey, 2026, 2024 country profile). The core analysis of revenue governance and industrial policy draws on the EITI, World Bank and African Union records available by the cutoff.

The reported sectoral shares illustrate a concentration of economic activity in mining and processing alongside a much smaller manufacturing share. This pattern is consistent with the risk of green extractivism. Aggregate shares cannot establish which firms or communities capture rents, where particular processing stages take place or how specific projects affect livelihoods. Those questions require separate evidence on ownership, production chains and revenue governance.

The World Bank's cobalt analysis recognises both the DRC's cost advantage and the possibility of capturing greater economic rents (World Bank, 2021). The 2022 EITI validation records progress in disclosure alongside remaining corrective actions. The progress report documents subsequent work to strengthen revenue-data integration and oversight (Extractive Industries Transparency Initiative [EITI], 2022, 2026). The African Union's Green Minerals Strategy responds at a continental level by prioritising value addition, regional industrialisation, climate resilience, and stronger value chains (African Union, 2025).

The core leadership question is how strategic leverage is converted into public capability. At the individual level, reformers can negotiate contracts and challenge opaque practices. At the institutional level, durable transformation requires transparent licensing, beneficial-ownership disclosure, audited revenue flows, predictable fiscal rules, environmental enforcement, and community rights. At the epistemic level, mining communities, Congolese research institutions, and regional industrial actors must influence how value-chain strategy is defined.

Ubuntu sharpens the critique of enclave extraction. A mine cannot be considered socially legitimate merely because it contributes to global emissions reduction or national export revenue. Relational accountability requires enforceable obligations to communities affected by land loss, labour risk, water impacts, and displacement. Benefit should be assessed through reliable energy, local infrastructure, livelihoods, public services, and the capacity to contest harm. Community participation must be backed by accessible information, independent technical support, grievance mechanisms, and remedies.

Development economics specifies the path beyond critique. Mineral rents can finance infrastructure and capabilities, but only if they are collected, stabilised, and allocated transparently. Local processing may create value, yet beneficiation policy must be matched with power supply, logistics, finance, standards, skills, and regional demand. A national mandate without these complements can produce an uncompetitive enclave at a different stage of the chain. Regional coordination through the African Continental Free Trade Area and the African Green Minerals Strategy can support scale in precursor materials, battery components, recycling, research, and standards.

The case also exposes a contradiction in global transition governance. Countries demanding traceable, low-carbon minerals may impose standards without financing the institutional and technological changes required to meet them. A decolonial approach calls for shared responsibility: purchasing countries and firms should support traceability, remediation, skills, and local value addition rather than externalising compliance costs. Productive sovereignty is achieved not by closing markets, but by negotiating a more equitable distribution of knowledge, risk, and value.

4.5 Cross-case findings: documentary support and limits of inference

Three recurring institutional questions emerge from the comparison. The first concerns the alignment of mandates and resources. Kenya's planning and statistical records document complementary policy instruments and sector reporting. South Africa's implementation plan identifies a coordination task that extends across finance, electricity and municipal institutions. In the DRC, the cobalt market study and EITI validation direct attention to the relationship between value-chain capability and revenue oversight. Table 4.5.1 sets out the evidence and the qualification that applies to each inference.

The second concerns the influence of participation on decisions. South Africa's Just Transition Framework provides evidence that workers and communities were recognised in the policy architecture. The DRC validation provides documentary evidence on oversight and disclosure. These records support claims about institutional design and identified constraints. The economic proposition that participation improves information or reduces conflict requires evidence of how specific decisions changed, which is uneven in the corpus.

The third concerns how transition costs and benefits are distributed. Kenya's supply indicators and access agenda measure different aspects of the transition. South Africa's finance requirements identify areas requiring support but provide no direct measure of benefits delivered. In the DRC, proposed beneficiation and improvements in disclosure indicate routes to public value. Establishing whether those routes altered revenue allocation or household welfare would require additional implementation evidence.

The comparison also clarifies the distinction between leadership and governance. Named actors or coalitions may initiate reform, while rules, mandates and budgets define how action is institutionalised. The evidence is strongest on formal arrangements and uneven on the continuity of action across office-holders. Institutional durability therefore remains a proposition for longitudinal assessment.

Table 4.5.1. Cross-case evidence, codes and qualifying observations

Case	Documentary observation	Coding and interpretation	Counter-evidence or limit
Kenya	Energy Transition and Investment Plan sets out an investment pathway. The ministry draft specifies sector objectives. EPRA and IRENA report capacity and generation on separate bases (A09, A11–A13).	Institutional coherence at design level, alongside observed renewable deployment.	The same planning agenda includes access and service expansion. Supply shares cannot establish affordability, reliability or local value capture.
South Africa	The Just Transition Framework recognises affected workers and communities. The Implementation Plan assigns workstreams. The Investment Plan identifies financing needs (A14–A16).	Distributive justice and institutional coherence at design level. Financing dependence is assessed through the scale and terms of finance.	The financing requirement is larger than the initial pledge. Coal still supplied 82.7% of measured generation in 2024 (A18). This is a baseline constraint rather than evidence of a missed milestone.
DRC	The World Bank market analysis identifies opportunities and constraints in cobalt. EITI validation documents disclosure progress and corrective actions (A19–A20).	Productive sovereignty and relational accountability. Identified constraints support a qualified reading of green extractivism.	EITI records progress as well as shortcomings. Mineral output and disclosure cannot establish local beneficiation or community outcomes.

Note: Record IDs refer to Appendix A. The coding column identifies interpretations of the cited evidence and the final column states their limits.

The three traditions in the framework retain productive tensions. Ubuntu's communitarian orientation is constrained by rights and dissent. Decolonial policy sovereignty is constrained by ecological interdependence and the value of global science. Transformative agency is constrained by the danger of personalisation. These constraints strengthen rather than weaken the framework because they prevent any one tradition from becoming absolute.

5. Policy and Institutional Implications

The analysis supports seven mechanisms through which Ubuntu-informed transformative leadership can operate in climate and energy policy. These mechanisms are designed to move from ethical aspiration to institutional responsibility.

Table 5.1. Institutional mechanisms for an Ubuntu-informed transition

Mechanism	Lead institutions	Required instrument	Public indicators
Integrated transition mandates	Presidency/cabinet office, finance ministry, energy, environment, industry, local government	Statutory or cabinet-approved delivery unit with a single results framework and published responsibility matrix	Milestones met; grid and generation alignment; cross-sector budget execution; unresolved mandate disputes
Justice and community-benefit rules	Regulator, local government, labour and community bodies	Mandatory distributional assessment, community-benefit agreement, grievance process, and worker/community transition plan	Benefit flows; affordability; local employment; gender and spatial distribution; grievance resolution
Transparent transition finance	Treasury, auditor-general, parliament, financing platform	Public finance register disclosing instrument, currency, price, maturity, conditions, procurement, and beneficiaries	Grant/debt mix; sovereign exposure; local procurement; social allocation; outcomes per unit of finance
Mission-oriented innovation	Science and technology ministry, universities, development-finance institutions, utilities	Competitive mission fund linked to grid, storage, adaptation, clean cooking, mineral processing, and local supplier challenges	R&D expenditure; patents and open solutions; supplier participation; skills transfer; scale-up rates
Green-mineral value governance	Mining, industry, revenue authorities, regional bodies	Transparent licensing, beneficial ownership, fiscal modelling, revenue rule, community share, and regional beneficiation compact	Effective tax and royalty collection; project-level disclosure; local processing; manufacturing share; community outcomes
Participatory evidence institutions	Statistical agencies, regulators, universities, communities	Standing citizen/worker panels, local monitoring partnerships, and mandatory public response to evidence submitted	Representation; response rate; policy changes arising from participation; accessible disaggregated data
AU/APRM transition peer review	African Union, APRM, regional economic communities	Continental scorecard aligned with AU climate and green-minerals strategies	Energy access, policy coherence, finance transparency, local value addition, justice, and implementation progress

Note: Author's policy synthesis of Sections 4.2–4.5.

5.1 Create binding coordination and accountability arrangements

Climate, energy, industrial, fiscal, and local-government plans should be consolidated into a single transition results framework. A central delivery mechanism should not displace departments or regulators; it should publish who is responsible for each milestone, which budget funds it, what dependencies exist, and how delays will be resolved. Parliamentary committees, audit institutions, and the public should receive a consolidated annual implementation report.

For South Africa, this means integrating electricity reform, transmission expansion, municipal capacity, regional diversification, skills, and industrial policy rather than reporting them as parallel workstreams. For Kenya, it means connecting generation success to distribution, affordability, productive use, and local capability. For the DRC, it means linking mining, energy access, revenue, industrial, and community policy.

5.2 Make justice enforceable at project and programme level

Justice should be converted into regulatory requirements. Major energy and mineral projects should complete a distributional-impact assessment covering tariffs or prices, employment, land, gender, local services, environmental burdens, and intergenerational effects. Affected communities should have access to independent technical support and a grievance mechanism with published timelines and remedies.

Community-benefit agreements should specify revenue or benefit flows, procurement opportunities, service commitments, monitoring rights, and consequences for non-compliance. These agreements must complement, not replace, public taxation and state obligations. Workers and informal livelihoods should be included in transition plans before closure or restructuring decisions are finalised.

5.3 Govern climate finance as a public-development instrument

Treasuries should maintain a public register of transition finance. The register should identify whether funding is a grant, concessional loan, commercial loan, guarantee, equity instrument, or results-based payment; disclose currency and maturity; and report procurement conditions and sovereign liabilities. Projects should be assessed against emissions, access, employment, local capability, and distributional indicators.

Grant and highly concessional finance should be prioritised for public goods: municipal capacity, social protection, worker support, community participation, data systems, and early-stage innovation. Revenue-generating infrastructure may support debt, but affordability and currency risk must be tested. This approach gives operational meaning to policy sovereignty while preserving international partnership.

5.4 Build mission-oriented African innovation systems

Innovation policy should be organised around public missions rather than isolated technology grants (Mazzucato, 2018). Missions could include affordable mini-grids, climate-resilient agriculture, grid flexibility, storage, clean cooking, mine-site remediation, mineral traceability, and low-carbon processing. Funding should connect universities, technical colleges, utilities, firms, municipalities, and communities.

Procurement should reward verified skills transfer and supplier development. Local-content rules should be sequenced with capability assessments and regional market strategies. The aim is not autarky, but the deliberate accumulation of knowledge that allows African institutions and firms to adapt, maintain, and eventually produce transition technologies.

5.5 Convert mineral leverage into diversification and public value

The DRC and other mineral-producing states should combine fiscal transparency with regional industrial policy. Project-level disclosure, beneficial-ownership data, independent auditing, and fiscal modelling can strengthen rent collection. A transparent revenue rule should allocate a defined share to infrastructure, human capital, economic diversification, affected communities, and intergenerational savings.

Beneficiation strategies should identify realistic stages of the value chain and the complementary power, logistics, skills, standards, and finance required. Regional agreements can prevent destructive tax competition and support scale. The African Green Minerals Strategy provides a continental foundation, but implementation requires measurable country commitments and peer review (African Union, 2025).

5.6 Institutionalise epistemic plurality

Participation should be treated as part of the evidence system. Regulators and planning bodies should establish standing community and worker panels, partner with African universities, and publish how submitted knowledge changed or did not change policy. Data should be disaggregated by gender, income, geography, disability, and livelihood where appropriate.

Indigenous knowledge should not be extracted as free information or treated as timeless tradition. Protocols should recognise attribution, consent, control, and benefit. Scientific and local knowledge should be evaluated through transparent processes suited to the decision at hand.

5.7 Establish continental peer review for transition governance

The African Union and African Peer Review Mechanism could develop a transition-governance scorecard aligned with the AU Climate Change and Resilient Development Strategy and Africa's Green Minerals Strategy. Indicators should cover energy access and affordability, implementation coherence, financing transparency, local value addition, participatory rights, and distributional outcomes.

Peer review would strengthen collective agency in global negotiations by generating comparable African evidence. It would also create a forum for learning across different models rather than presenting one national path as universally applicable.

Conclusion

The comparison suggests that ethical and epistemic commitments gain practical force when translated into institutions that coordinate investment, allocate risk, build capability and remain accountable.

The UDTLF connects Ubuntu's relational ethic and decolonial attention to agenda-setting with transformative agency and the institutional economics of coordination, rents and capability formation.

The comparison illustrates why a just transition requires evidence on several dimensions. In Kenya, a high renewable share coexists with a policy agenda that still includes affordability, distribution, productive use and local innovation. South Africa's just-transition architecture provides a strong normative and participatory foundation, but coal dependence, financing structure, municipal capability, and cross-government coordination determine whether commitments become material outcomes. The DRC's dominance in cobalt supply creates strategic leverage, yet mineral dependence and limited manufacturing reveal the danger of green extractivism.

These cases also clarify the relationship between leadership and governance. Leadership is the agency through which actors identify injustice, construct coalitions, and alter inherited arrangements. Governance consists of the rules and organisations that distribute, constrain, and preserve that agency. Transformative leadership therefore cannot be judged by rhetoric or personal virtue. It must be observed in aligned mandates, transparent finance, enforceable community rights, domestic capability formation, and institutions that continue to perform after leaders leave office.

Ubuntu does not offer a uniform African policy template, and the article does not treat it as culturally uncontested. Its contribution is to provide a relational standard against which transition institutions can be evaluated. When combined with rights, dissent, economic analysis, and implementation mechanisms, Ubuntu directs attention to whether people are treated as agents in a shared transformation rather than as costs to be compensated after decisions have been made.

The practical implication is clear: Africa's transition should be governed as a project of structural transformation and democratic public value. Integrated delivery arrangements, justice and benefit-sharing rules, transparent finance, mission-oriented innovation, accountable mineral regimes, participatory evidence institutions, and continental peer review provide concrete routes from normative commitment to implementation. These mechanisms will not remove political conflict. They can, however, make conflict visible, allocate responsibility, and improve the possibility that climate action expands rather than narrows African agency.

Interviews and subnational studies could examine how affected groups shape implementation. Longitudinal research could assess whether the institutional indicators are associated with access, investment, employment and local value addition.

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Appendix A. Documentary source register

The register reconstructs the source inventory from the manuscript and its cited records. The unit column identifies the part of the record used in the comparison. Where a record provides statistical or regional context, the final column gives the case-matrix category rather than implying that a statistic was assigned a thematic code.

ID	Record and version	Documentary unit	Code or comparison category
A01	African Union, Agenda 2063 (2015)	Development aspirations and implementation priorities	Regional development and policy sovereignty
A02	African Union, Climate change and resilient development strategy and action plan (2022–2032, 2022 edition)	Governance and adaptation priorities	Regional climate coordination
A03	African Union, Africa's green minerals strategy (2025)	Value addition and regional integration provisions	Productive sovereignty and mineral policy
A04	IPCC, Climate change 2023: Synthesis report (2023)	Climate risk and vulnerability assessments	Regional climate context
A05	IEA, Africa energy outlook 2022 (2022)	Energy access and critical-mineral analysis	Regional energy and mineral context
A06	IEA et al., Tracking SDG 7 (2025 edition)	Electricity access regional estimates for 2023	Regional electricity access benchmark
A07	UNECA, Economic report on Africa 2024 (2024)	Assessment of financing and structural constraints	Transition finance and productive capacity context
A08	IRENA, Renewable energy statistics 2025 (2025b)	Country and regional renewable capacity series	Regional renewable deployment context
A09	IRENA, Energy profile: Kenya (2025a)	Generation in 2023 table	Kenya electricity output mix
A10	Government of Kenya, Updated NDC (2020)	Energy and linked sector commitments	Kenya climate policy architecture
A11	Kenya Ministry of Energy and Petroleum, Energy transition & investment plan (2023a)	Sector investment and access pathways	Institutional coherence and productive sovereignty

ID	Record and version	Documentary unit	Code or comparison category
A12	Kenya Ministry of Energy and Petroleum, Strategic plan (2023b, July cover, public draft file dated June 2024)	Strategic objectives and implementation responsibilities	Institutional coherence at design level
A13	EPRA, Energy & petroleum statistics (FY ended June 2024)	Installed capacity by technology	Kenya renewable capacity share
A14	Presidential Climate Commission, Just transition framework (2022)	Justice principles and affected groups	Distributive justice and relational accountability
A15	South African Presidency, JET investment plan (2022)	Table 2 and initial financing offer	Financing dependence and distribution of financing needs
A16	South African Presidency, JET implementation plan (2023)	Workstreams, responsibilities and financing updates	Institutional coherence and delivery arrangements
A17	Statistics South Africa, SDG country report (2025)	Energy, industrialisation and equity indicators	South Africa development context
A18	Statistics South Africa, Electricity, gas and water supply industry, 2024 (7 May 2026)	Electricity generation by source and year	South Africa coal and renewable generation shares
A19	World Bank, Cobalt in the DRC: Market analysis (2021)	Market structure and value-chain opportunities	Productive sovereignty and green extractivism
A20	EITI, DRC validation report (October 2022)	Validation findings and corrective actions	Relational accountability and revenue governance
A21	EITI, EITI progress report 2025 (released 20 April 2026)	DRC revenue-data integration and transparency examples	Relational accountability and institutional learning

Post-cutoff descriptive source. U.S. Geological Survey (31 August 2026), 2024 Congo (Kinshasa) country profile. Unit: reported 2024 cobalt production and sectoral GDP shares. Used for descriptive context in Table 4.1.1 and Section 4.4. Excluded from the coded register.

Appendix B. Illustrative coding decisions

These paraphrased examples illustrate how the codebook applies to identifiable source units. The evidence status indicates the inference each unit supports.

Record and unit	Paraphrased observation	Code or category	Decision boundary
A15, Table 2	Financing needs are specified by sector and enabling function.	Financing requirement. Read with A16 for financing dependence.	An estimate supports a statement about needs. Evidence of disbursement or an unmet delivery milestone requires another record.
A14, justice principles	Procedural justice requires meaningful participation of groups affected by the transition.	Relational accountability, policy commitment.	Epistemic plurality would require evidence that a group's knowledge influenced a decision or programme design.
A20, validation findings	Public disclosure advances coexist with corrective actions.	Relational accountability, implementation evidence with counter-evidence.	Disclosure improvements support a qualified transparency claim. Distributional effects and community benefits require distinct evidence.

Record and unit	Paraphrased observation	Code or category	Decision boundary
A13 and A09, electricity tables	The documents report a capacity share and a generation share respectively.	Descriptive supply indicators.	Affordability and productive use require separate household or enterprise measures.

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