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CoST Infrastructure Transparency Initiative

Enhancing Revenue-Side Transparency in Zambia's Electricity Sector

A diagnostic on commercially significant electricity-sector datasets under current power-market conditions

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Executive Summary

Zambia's electricity sector is at a critical point in its reform trajectory. The sector is facing constrained supply, hydropower volatility, rising demand from mining and other productive users, increasing reliance on electricity imports, and growing pressure around tariffs, procurement, cost recovery and market participation. At the same time, Zambia is undertaking market-oriented reforms of the electricity sector, including Open Access, greater private participation, electricity trading and new forms of commercial supply. In this context, decisions on who can participate, how electricity is procured, how tariffs are set, how payment obligations are allocated and how operational performance is assessed become central to fairness, efficiency, investor confidence and fiscal oversight.

This diagnostic note explores the market-access and revenue-side datasets needed to understand these issues. It builds on the earlier CoST-supported assessment of integrity, performance and disclosure risks across Zambia's energy infrastructure lifecycle, but applies a narrower and more market-oriented lens. The starting point is that electricity is not only an infrastructure asset. It is an infrastructure service that must be generated, procured, transmitted, supplied, paid for and financially sustained. Data publication therefore needs to extend beyond project and contract delivery. It must also illuminate market access, revenue flows, payment obligations, risk allocation, realised performance and the source of supplied electricity.

The central finding is that significant amounts of relevant data and information are already produced and available. Public institutions, regulators, utilities, financiers and market participants already generate or hold substantial information on market access, tariffs, procurement, power-purchase obligations, electricity trading, operational performance, ownership and generation sources. The main challenge is that much of this information is not routinely converted into structured, standardised, regularly updated and publicly accessible datasets that can support market analysis, evidence-based decision-making, oversight and external scrutiny.

This matters because current power-market conditions amplify the risks created by weak publication. Hydropower volatility and reduced generation availability increase the importance of data on generation mix, dispatch, imports, source of supply and procurement costs. Rising mining demand increases the need for transparency around supply allocation, network access, tariffs and power-purchase obligations. Open Access reforms make practical access data essential, including information on licences, applications, approvals, connection conditions, available and committed transmission capacity, congestion, wheeling charges, use-of-system charges and customer migration. Tariff reform and cost-recovery pressures require clearer publication of tariff-setting assumptions, system losses, collection efficiency, subsidies, cross-subsidies and network-use charges.

These data gaps are not only transparency problems. They also increase information asymmetries, distort market functioning and weaken the signals needed for efficient investment, fair competition and reliable electricity supply. If Zambia's reforms are to help close the supply gap, market participants, regulators and the public need data that shows whether supply-side responses are efficient, financially sustainable and capable of supporting reliable electricity production over time.

The diagnostic identifies several priority transparency gaps. Market-access, trading and network-use data are not consistently available in structured form, creating the risk that market access remains formal rather than practical. Import, export and electricity-trading data are partially visible, but information on costs, prices, procurement channels and counterparties is weaker, limiting scrutiny of how supply deficits are managed and paid for. Tariff and cost-recovery data are partly public, but

the assumptions behind tariff decisions are not routinely published in a form that allows external analysis. PPA, PSA and bilateral supply variables remain constrained by confidentiality, creating limited visibility over long-term payment obligations, capacity payments, indexation and take-or-pay exposure.

Other gaps concern appraisal-stage assumptions, realised operational performance, ownership and source-of-supply data. Appraisal-stage assumptions are often not visible before commitments become embedded in tariffs, procurement and public expenditure. Realised operational and financial performance data remain fragmented, weakening the ability to compare expected and actual performance. Ownership and beneficial ownership information is not consolidated into a searchable electricity-sector dataset. Source-of-supplied electricity data is available at aggregate level, but less transparent where it concerns dispatch, curtailment, source-specific costs and the link between supply mix and tariff outcomes.

Taken together, these gaps create integrity, efficiency, competition, financial sustainability, fiscal and accountability risks. Limited visibility over commercially negotiated electricity transactions can make it difficult to assess value for money, prudence and risk allocation. Weak publication of cost drivers can obscure tariff pressure and utility financial stress. Incomplete market-access data can advantage incumbents and discourage new entrants, traders, suppliers, IPPs and eligible consumers. Missing information on power-purchase commitments, import expenditure, arrears and realised cost recovery can weaken both sector oversight and macro-fiscal monitoring.

The report responds by proposing a preliminary priority dataset matrix for validation and prioritisation in Zambia. The matrix is practical and Zambia-facing. It is intended to help public institutions and regulated sector actors identify which electricity-sector data should be published, by whom, in what format and with what confidentiality safeguards. It is not a finished standard, and it should not be read as a requirement to publish every datapoint at once. Rather, it is an initial menu for testing which datasets are already collected, which are publicly available, which require standardisation or aggregation, and which publication responsibilities should be assigned to specific institutions.

The recommended approach is progressive. Immediate priorities should focus on data already collected by public institutions or regulated entities, central to current power-market pressures, and publishable without full disclosure of protected commercial terms. These include market-access and network-use data, import and export data, tariff and cost-recovery data, generation mix and source-of-supply data, and selected operational financial performance indicators. Short-term priorities should develop standardised public-interest summaries for commercially significant datasets, including PPA and PSA obligations, aggregate committed capacity, payment exposure, indexation approaches, appraisal-stage assumptions and realised performance. Medium-term priorities should institutionalise electricity-sector data publication through a consolidated public platform, stronger publication obligations, ownership and beneficial ownership linkages, historical datasets and data-quality assurance. Effective implementation will require clear responsibilities. ERB, the Ministry of Energy, ZESCO or the system operator, the Ministry of Finance and National Planning, PACRA, IPPs, traders, suppliers, eligible consumers and relevant public investment authorities all hold parts of the data landscape. A publication protocol should identify the data holder, validator, publication institution, publication frequency, format and confidentiality treatment for each priority dataset.

The diagnostic therefore leaves Zambia with a practical opportunity: to move from fragmented and retrospective reporting towards a more structured electricity-market publication system. Such a system will not solve Zambia's electricity-sector challenges on its own. But without it, market reform, investment planning, tariff scrutiny, fiscal oversight and public accountability will continue to operate with avoidable information gaps. The next step is to validate and refine the proposed dataset matrix with Zambian data holders and users, confirm feasibility and confidentiality safeguards, and begin publishing priority data in a structured, regular and usable form.

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1. Introduction, purpose and analytical focus

This diagnostic note examines market-access and revenue-side data publication within Zambia's electricity sector. It focuses on the commercially significant datasets that shape pricing, revenue generation, financial obligations, market access, investment decisions and the allocation of risk across the sector. In the context of constrained supply, rising demand and ongoing market-oriented reforms, these datasets are increasingly important for understanding whether market access is transparent, whether competition is developing on fair terms, and whether revenue and payment arrangements support efficient investment, reliable supply and value for money in electricity service delivery.

This diagnostic therefore aims to identify the market-access and revenue-side datapoints that are most significant for understanding electricity-sector revenues, market participation, fiscal exposure and service-delivery performance under current conditions, assesses whether they are available, accessible, reliable and publicly published, and considers where publication gaps create integrity, efficiency, competition, accountability or fiscal-oversight risks. It also provides a sequenced and institutionally feasible basis for strengthening CoST-aligned data publication in Zambia's electricity sector.

The research builds on the earlier CoST-aligned assessment, Enhancing Transparency and Performance in the Zambian Energy Sector, but does not reproduce its broader infrastructure lifecycle-based analysis. Whereas that earlier assessment examined integrity, performance and fiscal risks across the wider energy infrastructure investment lifecycle, this note applies a narrower and more market-oriented lens, shifting the focus from infrastructure assets to electricity supply as an infrastructure service.

This narrower focus reflects the fact that Zambia's electricity sector is not only an infrastructure delivery system, but also a commercially organised utility service. Data publication therefore needs to extend beyond physical generation and network assets. It must also help explain how electricity is generated, procured, transmitted, supplied and paid for, who has access to the market, how prices and payment obligations are structured, where financial risks sit, and whether revenue flows and payment arrangements support reliable and efficient supply. This focus is particularly relevant in the context of hydropower volatility, rising demand from productive users, increasing reliance on imports and growing commercial sensitivity around electricity procurement, pricing, cost recovery and market participation.

The central question is therefore not whether transparency matters in general terms, but which market-access and revenue-side datasets are most important under current conditions, which institutions hold them, which are already publicly available, where publication gaps persist, and how those gaps affect accountability, efficiency, competition, fiscal oversight, investor confidence and value for money.

2. Sector context and analytical rationale

Zambia's electricity sector is presently operating under pressure from constrained supply, hydropower volatility, rising demand from the mining sector and other productive users, increasing reliance on imports and growing pressure around pricing, procurement, cost recovery and market participation. These pressures have elevated the importance of commercially significant decisions relating to generation, procurement, electricity imports, dispatch, power-purchase obligations, tariff setting, market access network use and operational performance.[1]

Hydropower continues to dominate Zambia's generation mix, which has made the electricity sector highly exposed to drought, rainfall variability and changing water levels in the Kafue and Zambezi river systems. Recent drought conditions have reduced generation availability and increased the importance of diversification, imports and non-hydro supply arrangements. Although installed generation capacity has continued to increase, supply constraints have persisted, affecting system reliability, industrial productivity and broader economic activity.

The consequences of these supply constraints have extended beyond generation shortfalls. Insufficient generation during periods of low water availability has increased reliance on imported electricity, often at relatively high cost and in a context where domestic tariffs remain below fully cost-reflective levels.[2] This

[1] ERB Energy Sector Report 2024
[2] KII Code 3.

creates pressure on ZESCO's financial position and raises wider concerns about cost recovery, long-term sector sustainability and investor confidence These pressures are compounded by constrained regional supply, transmission constraints and rising demand from mining operations and other productive users.[3] The widening supply-demand gap therefore increases pressure on imports, power purchases and cost-recovery mechanisms, while amplifying the commercial significance of procurement, dispatch and market-access decisions.

This context has made the availability and access to relevant data increasingly important. Key datasets include generation availability, generation mix, market-access arrangements, electricity imports, dispatch, procurement decisions, pricing structures, power-purchase obligations, operational performance, fiscal exposure, and the cost implications of Zambia's evolving supply arrangements.[4]

The sector is already responding to these pressures through the Open Access initiative, imports and regional trading, generation diversification, tariff and cost-recovery reforms, transmission investment and greater private-sector participation. These responses make data publication more important, not less. They create a need to understand whether supply-side responses are increasing generation, transmission capacity and reliable supply, whether they are financially sustainable and cost-effective, and whether they support fair competition, efficient investment and value for money.

A range of stakeholders interviewed to inform this diagnostic note validate the relevance of the research by confirming the need for greater transparency in this process beyond physical supply constraints.[5] They consistently point to the importance of reliable market and revenue-side data for investor confidence, market participation, project financing and efficient decision-making.[6]

Stakeholder evidence also indicates that information asymmetries may affect the competitive functioning of the electricity market. One large electricity consumer characterised the market as highly concentrated and described current supply options as limited, with large users facing constrained bargaining power because market power remains concentrated among a small number of suppliers and network owners. Limited visibility over negotiated power prices, procurement arrangements and contractual pricing structures can reduce the ability of market participants to benchmark costs, assess alternative supply options and negotiate from an informed position. These information gaps may therefore affect price discovery, fair competition and the practical effectiveness of emerging market-access reforms.[7]

Another significant concern emerging from the interviews relates to the availability of commercially significant datasets. Interviews indicate that regulators, utilities and financiers hold substantial information on tariffs, demand forecasts, generation performance, power purchases, financial performance, outages, customer consumption, debt management and cost recovery.[8] However, access to these datasets remains uneven, and much of the information is not routinely published in a structured form that enables independent market analysis.[9] As a result, information that is critical to understanding electricity pricing, utility financial exposure and long-term procurement obligations often remains fragmented, difficult to access, or available only through regulatory processes.

The implications of these information gaps become increasingly significant as Zambia moves towards implementation of Open Access market reforms. This cluster of reforms are intended to increase competition and expand market participation, but stakeholders also identified emerging risks associated with the transition. Creditworthy customers may migrate towards alternative suppliers, potentially weakening ZESCO's revenue base while leaving the utility responsible for legacy obligations and network costs.[10] At the same time, stakeholders highlighted the need for greater transparency over wheeling arrangements,

[3] KII Code 1.
[4] The ERB bulletin provides official data on, electricity demand by sector, mining electricity consumption, imports and exports, generation, transmission, and sector performance indicators. The January-December 2022 bulleting specifically shows rising electricity demand from mining operations, with total electricity consumption by mines increasing significantly between 2021 and 2022. Accessible on https://www.erb.org.zm/wp-content/uploads/statBullet2022.pdf?
[5] A short methodological note is available in Annex I
[6] KII Code 2.
[7] KII Code 6.
[8] KII Code 3.
[9] KII Code 2.
[10] KII Code 3.

network-access conditions, supplier pricing structures and market-access rules to ensure that competition develops on a fair and informed basis.

Taken together, these findings suggest that Zambia's electricity sector is facing challenges that extend beyond generation adequacy alone. The sector is simultaneously confronting climate-related supply risks, increasing import dependence, financial sustainability pressures, transmission constraints, market-concentration concerns and significant information asymmetries. These challenges have elevated the importance of market-access and revenue-side data publication because many of the most consequential commercial decisions affecting electricity pricing, procurement, investment and market participation depend upon datasets that remain partially published, inconsistently published or shielded from public scrutiny.

The remainder of the report therefore examines these datasets in more detail, distinguishing between market-access and network-use data, tariff and cost-recovery data, power-purchase and procurement obligations, appraisal-stage assumptions, realised operational performance, ownership transparency and source-of-supplied electricity data.

3. Current Power-Market Conditions

This section provides an overview of the power-market conditions that frame the diagnostic, focusing on how constrained supply, hydropower volatility, rising demand, Open Access reforms and changing generation sources increase the relevance of market-access and revenue-side data.

3.1 Supply Constraints and Hydropower Volatility

Hydropower remains Zambia's dominant generation source, accounting for approximately 80-85 per cent of installed generation capacity.[11] This dependence has increased the sector's exposure to hydrological volatility, as recent drought conditions have reduced generation availability and increased reliance on imports, regional power trading and non-hydro supply arrangements.[12]

According to the Energy Regulation Board (ERB), Zambia's installed generation capacity increased from 3,885.86 MW in 2024 to 3,985.86 MW in 2025. Despite this increase, electricity supply constraints have continued to affect system reliability, industrial productivity and broader economic activity.[13] The current supply situation reflects the structural vulnerability and climate-related risks created by heavy reliance on hydropower. Reduced water levels directly affect generation output, underscoring the need for a more diversified and balanced generation mix.[14]

The supply crisis has prompted Zambia to make greater use of the Southern African Power Pool (SAPP), which allows electricity trading among member countries.[15] The Integrated Resource Plan (IRP) reports that Zambia had interconnector capacity of 230 MW with Namibia, 460MW with the DRC and 1,400MW with Zimbabwe during the period under review.[16] However, regional trading does has not fully resolved the issue of supply risk. Interview evidence indicates that the SAPP market has itself faced supply constraints, while public ZESCO updates show that import flows have been vulnerable to supplier and route-specific disruptions. Zambia is additionally pursuing transmission upgrades, including the Zambia-Tanzania Interconnector Project (ZTIP), which is expected to strengthen access to the Eastern African Power Pool (EAPP).[17]

This situation has elevated the commercial significance of dispatch decisions, generation mix disclosure, pricing structures, import arrangements and operational performance data, as well as the market-access and revenue-side data needed to understand how supply constraints are being managed and paid for. Publicly

[11] Ministry of Energy, Integrated Resource Plan for the Power Sector in Zambia: Deliverable 5.3; Generation Resource Assessment and Planning Final Report, 30 June, 2022, accessed on https://www.moe.gov.zm/wp-content/uploads/2022/12/D5.03_IRP_Generation-Final-Report.pdf (the "IRP").
[12] Ibid.
[13] ERB, Mid-Year Statistical Bulletin, August 2025.
[14] KII Code 3.
[15] PwC, Generation and importation of electricity, 4 December 2024, accessed on https://www.pwc.com/zm/en/blog/generation-importation-of-electricity.
[16] Ministry of Energy, Integrated Resource Plan (op. cit)
[17] KII Code 01.

available ERB statistical bulletins provide import and export volume data, while ZESCO and ERB emergency-tariff disclosures provide partial information on the scale and cost pressure of electricity imports. However, based on reviewed public sources, import-cost data does not appear to be routinely published as a structured dataset showing weighted average import prices, procurement channels, counterparties and total import expenditure. This limits the ability of external users to assess the cost implications of import dependence and regional trading arrangements.

3.2 Rising Demand and Mining Sector Pressures

Electricity demand from mining operations and other major productive users has become a central driver of Zambia's power-sector planning. The IRP confirms that mining accounted for more than half of national electricity consumption in 2019 and projects substantial additional mining related peak demand through 2040 and 2050, including new mining loads in North-Western Province, the Copperbelt and other regions.[18] In a supply constrained system dominated by climate-vulnerable hydropower, these demand pressures heighten the commercial sensitivity of dispatch arrangements, tariff structures, cost recovery, market access reforms and procurement decisions.

Where the underlying data on supply allocation, tariffs, power purchase obligations, imports, grid access and operational performance are not routinely published, it becomes harder to assess whether rising demand is being managed efficiently, transparently and on fair market terms. Limited availability of data may also increase risks of unequal access to commercially relevant information, reduce confidence in market-access and procurement decisions, and weaken scrutiny of how electricity supply is allocated in a constrained system.

The IRP's input peak demand projections indicate that total projected demand rises from 2,318 MW in 2020 to 6,950 MW in 2050. The projections include additional mining and industrial loads, as well as projected exports to the DRC and Zimbabwe, underlining the importance of generation expansion planning, transmission capacity, procurement decisions and transparent allocation of available supply.

Table 1: Summary of IRP input peak demand projections (detailed table in annex II)

Year	Total projected input peak demand (MW)	Increase from 2020 (MW)	Additional mining and industrial loads explicitly listed under "Additional nodes" (MW)	Projected exports to DRC and Zimbabwe (MW)
2020	2,318	0	0	138
2026	3,496	1,178	261	300
2030	4,390	2,072	782	500
2040	5,922	3,604	1,294	1,000
2050	6,950	4,632	1,314	1,000

These projections clearly illustrate a power market under pressure from rapidly increasing demand, led by mining and other productive users. In this context, data on supply allocation, procurement, network access, tariffs, power-purchase obligations and cost recovery becomes more important for understanding how the sector is responding to demand growth.

The IRP identifies mining as the largest electricity consuming sector and projects substantial additional mining-related peak demand through 2050. In a constrained supply environment, limited transparency around dispatch, tariff approval, procurement and access decisions increases the risk of preferential treatment, market distortions, unequal access to commercially relevant information and inefficient allocation of electricity supply.

3.3 Open Access and Market Reform

Zambia's ongoing Open Access reforms form part of the sector's response to constrained supply, rising demand and the need for greater private-sector participation.[19] The reforms seek to enable non-

[18] Ministry of Energy, Integrated Resource Plan for the Power Sector in Zambia: Deliverable 5.3; Generation Resource Assessment and Planning Final Report, 30 June 2022, accessed on https://www.moe.gov.zm/wp-content/uploads/2022/12/D5.03_IRP_Generation-Final-Report.pdf on page 24 to 25.
[19] Ministry of Energy and ERB, Open Access Market Structure and Design – Market Guidelines, November 2023.

discriminatory access to transmission and distribution infrastructure, creating the basis for a more market-oriented electricity sector. In this context, market access depends not only on the ability to obtain licences or authorisations to generate, trade or supply electricity, but also on the practical conditions for connecting to and using the network. Licensing, connection requirements, available capacity, network constraints, wheeling charges and use-of-system arrangements are therefore becoming increasingly important features of Zambia's power-market landscape.

By moving beyond the traditional single-buyer model, the new open access regulations[20] allow independent power producers to wheel electricity across existing network infrastructure and enter into direct commercial arrangements with eligible customers, particularly large industrial and mining users. They also introduce clear eligibility criteria, standardised application procedures, defined categories of short-, medium- and long-term access, and obligations on network service providers to process access requests based on available capacity and objective technical standards. Together, these measures lower barriers to market entry, expand customer choice, encourage private investment in generation and electricity trading, improve utilisation of existing grid infrastructure, and foster a more competitive and efficient electricity market while preserving system security, reliability and regulatory oversight by the ERB.

3.4 Generation Mix and Source-of-Supplied Electricity Transparency

Current market conditions also increase the importance of generation-mix and source-of-supplied electricity transparency. While hydropower generation remains the dominant source, total electricity generation sent out declined by 31.26 percent to 13,324.38 GWh in 2024 from 19,372.92 GWh in 2023, primarily due to the severe drought that resulted in reduced water levels in major reservoirs, significantly affecting hydro power generation.[21]

As Zambia diversifies toward solar and non-hydro generation, disclosure relating to generation mix, renewable generation share, imports, fossil fuel reliance and dispatch priorities, becomes increasingly relevant to policy decisions promoting cleaner and more resilient energy supply arrangements.

4. Market Structure and Institutional Landscape

This section identifies the main institutions and market actors that shape Zambia's electricity-market structure and hold, generate or regulate commercially significant market-access and revenue-side data.

4.1 Ministry of Energy

The Ministry of Energy serves as the principal policy-making authority responsible for sector planning, generation planning, energy policy, IRP implementation and Open Access reforms.[22] The Ministry therefore holds significant upstream planning and market-structure datasets. According to the IRP, the Ministry of Energy (MoE) is the apex institution overseeing the development and operation of all facets of the electricity and petroleum sectors in Zambia. It provides policy guidelines, oversees the procurement of new capacity and infrastructure, and supports international agreements.[23]

4.2 Energy Regulation Board

The Energy Regulation Board (ERB) performs a central role in tariff regulation, licensing, market oversight, investment endorsements and compliance monitoring. The ERB generates substantial regulatory data, including tariff approvals, licensing information, market performance information, cost-of-service studies and regulatory compliance submissions.[24] Its role is particularly important for this diagnostic because licensing, tariff determination, regulatory reporting and market oversight are key channels through which market-access and revenue-side data are collected, assessed and, in some cases, published.

[20] The Electricity (Open Access) Regulations, 2024 (SI No. 40 of 2024).
[21] ERB Energy Sector Report 2024, page 2.
[22] Ministry of Energy Zambia, https://www.moe.gov.zm.
[23] IRP, 2022.
[24] ERB Annual Reports and Statistical Bulletins accessed at https://www.erb.org.zm.

4.3 ZESCO Ltd

Zambia Electricity Supply Corporation Limited (ZESCO) is a state-owned, vertically integrated electricity utility, which generates, transmits, distributes, and supplies electricity, accounting for 80% of the total electricity consumption in Zambia.[25] ZESCO remains Zambia's dominant utility, system operator and principal electricity off-taker. ZESCO therefore, controls commercially significant operational and financial datasets linked to power purchase arrangements, dispatch, generation availability, imports, system losses, cost recovery and operational financial performance.

4.4 Independent Power Producers ("IPPs")

IPPs increasingly participate in generation investment, electricity supply, procurement arrangements and the implementation of open access reforms and therefore form a vital part of the strategy to close the supply gap. They generate and hold project-level technical, commercial and financial information, including data linked to generation capacity, source of energy, technology choice, project costs, power-purchase arrangements, dispatch expectations, financing assumptions and operational performance.[26] Where IPPs sell power through PPAs, PSAs, bilateral arrangements or Open Access structures, their activities become directly relevant to electricity pricing, offtake obligations, cost recovery and market participation.

4.5 Electricity traders and market intermediaries

Electricity traders and other market intermediaries are becoming increasingly relevant as Zambia moves towards more market-oriented electricity arrangements, including Open Access, bilateral supply arrangements and greater regional power-market participation. Their relevance lies not only in the physical movement of electricity, but also in the commercial arrangements that shape market access, trading volumes, counterparties, wheeling, payment obligations and revenue flows.[27] For this diagnostic, traders are therefore relevant data holders and market participants in relation to trading licences, electricity supply licences, import and export arrangements, trading counterparties, wheeled energy volumes, use-of-system charges and the terms under which electricity is traded or supplied across the network.

5. Legal and Policy Framework

Zambia's electricity sector operates within a legal and regulatory framework that governs tariff determination, electricity procurement, licensing, financial reporting and market participation. The principal instruments include the Electricity Act No. 11 of 2019, the Energy Regulation Act No. 12 of 2019, the Public Procurement Act No. 8 of 2020, the National Energy Policy (2019), the Integrated Resource Plan (IRP), and the Open Access framework. Collectively, these instruments establish the legal basis for the collection, regulation and, in certain instances, publication of market-access and revenue-side information, including tariff applications, financial performance data, licensing information, procurement records, operational performance reports and market-participation data.

The tariff-setting framework requires regulated entities seeking tariff adjustments to submit detailed financial and operational information to the Energy Regulation Board.[28] Tariff applications are supported by Cost-of-Service studies, financial models, demand forecasts, audited financial statements, asset registers, business plans, debt-management information, and system-loss data.[29] These datasets form the evidentiary basis upon which tariff determinations are made. While approved tariffs and regulatory decisions are publicly available, much of the supporting information submitted during tariff reviews remains accessible primarily to regulators and is not routinely published in a consolidated, machine-readable or publicly searchable format.

[25] The IRP, 2022.
[26] Speech by the Honourable Minister of Energy, Hon. Makozo Chikote: "Electricity Open Access Launched", Published February 17, 2025, available at https://www.moe.gov.zm.
[27] The International Energy Agency (IEA) notes that a key trend in electricity-market liberalisation is the emphasis on "competition among electricity traders and in the trade of electricity" while transmission systems remain regulated monopolies providing network access to market participants. International Energy Agency (IEA). Competition in Electricity Markets. OECD Publishing, 2001.
[28] Energy Regulation Act 2019, s 4.
[29] KII Code 003.

The legal framework provides the Energy Regulation Board with extensive powers to obtain market-access and revenue-side information from regulated entities. Under section 12 of the Energy Regulation Act, the ERB is empowered to require licensees and other regulated entities to furnish information, records and reports necessary for the performance of its regulatory functions.[30] Similarly, the Electricity Act requires licensees to comply with licence conditions and furnish information necessary for regulatory oversight and performance monitoring.[31] These provisions create a strong legal basis for regulatory data collection, but they do not create an equivalent obligation for routine publication of all commercially significant datasets collected through regulatory processes.

The framework also contains provisions that indirectly support market-access and revenue-side transparency through financial reporting and accountability requirements. The Electricity Act and licence conditions require regulated entities to maintain records and accounts in a form acceptable to the regulator and to make such records available for inspection where required.[32] These provisions support regulatory scrutiny of revenues, expenditure, asset bases, debt obligations, cost-recovery performance and operational efficiency, but do not by themselves establish equivalent public-disclosure requirements. The licensing framework also generates ownership and governance information relevant to market transparency. Section 12(3) of the Energy Regulation Act requires the ERB to publish notice of its intention to grant a licence in the Government Gazette. Information published includes the applicant's identity, location, shareholders, directors and licence category. The framework therefore provides a degree of transparency regarding legal ownership and market participation. However, beneficial ownership information obtained through supporting corporate documentation submitted during licensing processes is not specifically required to be published,[33] creating a gap between information collected by regulators and information accessible to the public.

Operational and financial performance reporting also gives the ERB access to information relevant to sector performance. Regulated entities also submit data relating to electricity generation, energy supplied, system losses, outages, customer connections, customer complaints and financial performance.[34] Although portions of this information are subsequently reflected in annual reports, statistical bulletins and sector publications, the legal framework primarily facilitates regulatory access rather than public access. Publication practices therefore vary across institutions and reporting categories, creating a distinction between information available to regulators and information routinely disclosed to consumers, investors and other market participants.

The legal framework governing electricity procurement also has significant implications for revenue-side transparency. The Public Procurement Act establishes principles of transparency, competition, fairness and accountability in public procurement processes and requires the publication of certain procurement opportunities, contract awards and procurement information.[35] However, electricity procurement and supply arrangements also include bilaterally negotiated Power Purchase Agreements (PPAs) and Power Supply Agreements (PSAs) between ZESCO and Independent Power Producers (IPPs) or mining off-taker blocks, as well as cross-border import/export arrangements through the Southern African Power Pool (SAPP). Because these transactions are executed via private commercial contracts, they routinely use confidentiality provisions that restrict public disclosure of key financial variables.[36] As a result, key datasets relevant to revenue forecasting and market oversight, including energy charges, capacity payments, indexation formulas, take-or-pay obligations, contracted volumes and payment-security arrangements, are often available only to contracting parties, regulators and financiers involved in transaction due diligence, while they are generally not publicly disclosed owing to contractual confidentiality provisions. This creates a tension between public-interest transparency and the confidentiality surrounding commercially negotiated electricity transactions.

The National Energy Policy, the Integrated Resource Plan (IRP) and the ongoing implementation of the Open Access framework place increasing importance on the availability of operational and planning datasets that influence investment and market-participation decisions. The IRP contains information on projected electricity demand, generation-capacity requirements, transmission-expansion priorities, technology pathways and least-cost development scenarios that are central to revenue forecasting and project appraisal.[37]

[30] Energy Regulation Act No 12 of 2019, s 12.
[31] Electricity Act No 11 of 2019, s 9.
[32] Electricity Act No 11 of 2019, s 50(1).
[33] KII Code 003; see also Companies Act No 10 of 2017 (Zambia) regarding PACRA beneficial ownership limitations.
[34] KII Code 001.
[35] Public Procurement Act No 8 of 2020, Part V,
[36] KII Code 001.
[37] IRP 2022

Simultaneously, the implementation of Open Access under section 14 of the Electricity Act presupposes access to information regarding available transmission capacity, network constraints, wheeling charges and use-of-system charges, as these datasets determine the practical ability of third parties to access the transmission network.[38] While these datasets are essential for enabling competition and informed market participation, the legal framework does not currently establish a comprehensive obligation requiring their routine publication in a consolidated, machine-readable and publicly accessible format. Consequently, prospective investors and market participants may have access to the rules governing market entry without equivalent access to the operational datasets necessary to assess commercial opportunities and risks.

Overall, the legal and policy framework establishes extensive obligations for regulated entities to provide market-access and revenue-side information to regulators, particularly through tariff filings, licensing processes, operational reporting and procurement oversight mechanisms. However, the framework is considerably less developed regarding the routine public disclosure of such information. The principal transparency challenge identified by this diagnostic is therefore not the collection of data, but the absence of clear and consistent legal obligations requiring publication of commercially significant datasets relating to tariffs, power purchases, ownership structures, network access and market performance.

6. Market-Access and Revenue-Side data landscape

This section constitutes the core diagnostic component of the report. Unlike the earlier CoST-supported assessment, which examined disclosure and integrity risks across the broader infrastructure lifecycle, the present analysis focuses specifically on commercially significant market-access and revenue-side data gaps affecting Zambia's electricity market.

The section is organised around the datasets most relevant to understanding how electricity is accessed, procured, supplied, priced and paid for under current power-market conditions. These include data on market entry, trading, network use, imports and exports, tariffs, power-purchase obligations, appraisal-stage assumptions, realised financial performance, ownership and source of supplied electricity.

The analysis shows that commercially significant information is distributed across multiple institutions with varying degrees of accessibility, reliability and publication maturity. The diagnostic therefore focuses not on the complete absence of data, but on partial disclosure, fragmented institutional ownership and limited public accessibility of datasets that are important for pricing transparency, procurement integrity, fiscal oversight, market access, investor confidence, operational accountability and electricity-sector governance.

6.1 Market-access, trading and network-use data

Market-access, trading and network-use data should be treated as a distinct category of commercially significant electricity-sector information. As Zambia moves towards Open Access and more market-oriented electricity arrangements, participation depends not only on licences or authorisations, but also on the practical conditions for generating, trading, supplying, wheeling and consuming electricity through the network.[39]

Relevant datasets include generation, trading and supply licences, eligible-consumer arrangements, Open Access applications and approvals, connection requirements and approvals, available and committed transmission capacity, congestion points, network utilisation, wheeling arrangements and use-of-system charges.[40] These datasets help show who can participate in the market, whether network access is commercially feasible and how electricity transactions affect revenue flows, payment obligations and cost recovery.

The key issue is whether this information is available in a structured and timely form. Limited publication of practical access conditions can create information asymmetries between incumbents, potential entrants, traders, suppliers and large consumers, particularly where network capacity, connection conditions, wheeling charges and customer migration affect competition and sector revenues.

[38] Ministry of Energy and ERB, Open Access Market Structure and Design – Market Guidelines, November 2023.
[39] KII Code 06.
[40] KII Code 06 and KII Code 03.

6.2 Import, Export and Electricity-Trading Data

Import, export and electricity-trading data should be treated as a separate category of commercially significant information because imports and regional trading have become increasingly important under current supply conditions. Zambia's reliance on regional power trading, emergency supply arrangements and cross-border electricity flows affects not only system reliability, but also procurement costs, tariff pressure, cost recovery and utility financial exposure.[41]

Publicly available ERB statistical bulletins provide information on electricity imports and exports, and interview evidence indicates that aggregated import and export volumes, trading counterparties where appropriate, and participation in the Southern African Power Pool are already disclosed periodically through ERB publications. However, the same evidence suggests that publication could be more regular and structured, particularly where import and export data are relevant to supply deficits, tariff decisions and cost-recovery pressures.[42]

The more significant disclosure gap concerns the cost and commercial structure of electricity trading. Relevant datasets include import and export volumes, import and export prices, total import costs, total export revenues, procurement channels, trading counterparties, contract duration, procurement periods and emergency procurement arrangements. These datapoints are consistent with the emerging findings matrix, which identifies import, export and electricity-trading data as an immediate priority for clarifying how trading transactions affect supply deficits, tariffs, cost recovery, revenue generation and fiscal exposure.[43]

At present, import-cost information appears to be disclosed only partially, with some information communicated through emergency-tariff documents, public statements, Ministry reporting or parliamentary processes rather than through a standing public dataset. More structured publication of electricity-trading data would improve visibility over the cost implications of import dependence and regional trading arrangements, without necessarily requiring publication of full commercial contracts or protected transaction-level information.

6.3 Tariff and Cost-Recovery Data

Electricity pricing data constitutes one of the most commercially significant yet inconsistently disclosed categories of information within Zambia's electricity sector. Although tariff approvals are periodically published by the Energy Regulation Board, the broader pricing architecture underpinning electricity sub-sector cost recovery remains only partially accessible, with some information disclosed retrospectively through annual reports, statistical bulletins and tariff-determination processes.

The Cost of Service Study identified a lack of a transparent pass-through mechanism for reflecting changes in cost items that are not manageable by ZESCO, including hydrology and fuel costs, power purchase agreements prices, local inflation and exchange rate. It recommended that a predictable adjustment or pass-through formula be established for these cost drivers.[44]

To address the gaps identified by the Cost of Service Study, the ERB's Multi-Year Tariff Framework ("MYTF") now provides an important institutional basis for structured, systematic and predictable tariff regulation.[45] Interview evidence emphasised that tariff predictability and movement towards cost-reflective tariffs are central to investor confidence, utility financial sustainability and bankability. The MYTF and Power Development Framework were identified as important steps towards improving tariff predictability over a five-year review period, with cost reflectivity expected to remain a key issue through 2027.[46]

[41] ERB Mid-Year Statistical Bulletin, August 2025, ERB statistics page https://www.erb.org.zm/statistics, KII Code 01.
[42] Ibid, KII Code 03.
[43] Ibid, KII Code 01 and KII Code 03.
[44] Energy Market and Regulatory Consultants Limited (part of the MRC Group), Zambia Electricity Cost of Service Study – Final Report, 21 December 202.
[45] https://www.erb.org.zm/wp-content/uploads/MYTFRegulated-Generator-Pricing-Rule_200922_ERB.pdf
[46] Ibid.

Tariff applications are supported by extensive datasets submitted as part of the tariff-filing process.[47] These include cost-of-service studies, accompanying financial models, demand and load forecasts, consumer surveys, audited financial statements, asset registers, detailed operational budgets, business plans, debt-management information, loan obligations, system-loss information, sustainability programmes and rate-of-return calculations. Tariff applications are further subjected to public consultation through consultation papers and public hearings before determinations are made.[48]

However, several commercially important pricing and tariff datasets are not routinely published in a form that allows meaningful external scrutiny. These include detailed forecast demand data, system loss assumptions, collection efficiency assumptions, import-cost structures, bilateral supply prices, power purchase agreement pricing terms, and tariff assumptions for non-retail customers such as mining companies.[49]

This diagnostic study found that a key reason why these datasets remain only partially disclosed is that information is considered commercially sensitive, particularly where bilateral agreements contain negotiated pricing terms, indexation mechanisms and customer-specific supply arrangements.[50] While electricity tariffs are in general regulated and approved by the ERB, large-consumer and mining-sector supply arrangements may be governed by bilateral or long-term contractual structures, including arrangements involving the Copperbelt Energy Corporation (CEC), ZESCO and mining off-takers. Confidentiality around such arrangements can limit visibility over the relationship between mining tariffs, cost of supply and broader cost-recovery pressures.[51]

Such limitations in the availability of data are becoming increasingly significant under current market conditions. Constrained hydropower generation, rising demand from mining and other productive users, transmission bottlenecks and reliance on higher-cost imports have intensified pressure on pricing decisions and utility financing.[52] In this context, limited visibility over tariff-setting assumptions, bilateral pricing arrangements, cost-allocation methodologies, pass-through formula, cost allocation methodologies and subsidy arrangements can obscure the true cost of electricity supply.[53]

Overall, substantial tariff and cost-recovery information is already available to public institutions and used for internal decision-making but is not routinely published in a form that allows independent scrutiny of tariff assumptions, pricing structures and cost recovery models.

6.4 Power Purchase Arrangements, Power-Supply and Procurement Obligations

Power purchase arrangements represent one of the most commercially sensitive category of revenue-side information in Zambia's electricity market. This is particularly significant given the increasing reliance on IPPs, emergency power procurement and regional electricity imports under current supply conditions.

Power purchase agreements contain several commercially significant variables that directly influence electricity prices and utility finances, including energy tariffs, capacity charges, exchange-rate indexation, inflation adjustments, fuel-cost-pass-through provisions, minimum offtake obligations and take-or-pay commitments.[54] These contractual features can create long-term financial obligations extending well beyond the immediate procurement decision and therefore have significant implications for both tariff affordability and utility liquidity.

Interview evidence highlighted the limited public availability of information on capacity and energy payment obligations, tariff indexation mechanisms, take-or-pay commitments, utility power-purchase obligations and long-term power-supply commitments. These datasets are important because they shape procurement costs,

[47] KII Code 03
[48] KII Code 03. These datasets are contained in a Tariff Filing Guideline issued and published by the ERB
[49] KII Code 01.
[50] Ibid.
[51] Batidzirai, B; Moyo, A and Kapembwa, M., Willingness to pay for improved electricity supply reliability in Zambia-A survey of urban enterprises in Lusaka and Kitwe, 2017, University of Cape Town, Cape Town, at page 6-7.
[52] KII Code 03.
[53] Ibid.
[54] KII Code 03.

revenue forecasting, tariff pressure and operational planning. Related issues are addressed in sections 6.1 and 6.2.

The main publication issue is the tension between commercial confidentiality and public-interest transparency. Confidentiality provisions in PPAs, PSAs and bilateral supply contracts may be justified on legitimate commercial grounds, but they can also limit public visibility over cost drivers, payment obligations and market conditions. For the purposes of this diagnostic, the relevant question is therefore not whether full contracts should be disclosed, but whether standardised summary information can be published in a way that improves transparency without exposing commercially protected technical annexes or proprietary financing information.[55]

Interview evidence indicates that disclosure of many power-purchase and bilateral supply arrangements remains constrained by non-disclosure commitments. As a result, publicly available information is generally limited to regulated tariff information published by the ERB, while detailed contractual provisions relating to procurement prices, capacity obligations, indexation mechanisms and payment arrangements remain largely inaccessible to the public.[56]

Another important PPA-related datapoint is the distinction between firm and non-firm supply arrangements. Interview evidence indicates that this distinction affects planning assumptions, dispatch decisions, reliability assessments and the valuation of electricity supply. Where supply firmness is unclear or not publicly visible in standardised form, external users may find it difficult to assess how contractual arrangements affect system reliability, procurement costs and the valuation of electricity supplied under constrained market conditions.[57]

Overall, the data landscape for power-purchase, power-supply and procurement obligations is characterised by a gap between the commercial significance of the information and the limited extent of routine public disclosure. Standardised summary publication of key contractual variables, especially energy and capacity charges, indexation arrangements, supply firmness, offtake obligations and aggregate take-or-pay exposure, could improve transparency while avoiding publication of full commercial contracts or sensitive technical annexes.

6.5 Appraisal-Stage Financial Viability Assumptions

This subsection distinguishes appraisal-stage financial viability assumptions from realised operational performance data. Appraisal-stage assumptions are commercially significant because they help justify generation investments before implementation and can shape long-term procurement commitments, electricity pricing trajectories, tariff pressure, public-sector exposure and future cost-recovery requirements.

The 2026 Public Investment Plan explicitly states that projects are subjected to economic and financial viability assessments, including cost-benefit analysis, affordability testing, and estimated rates of return before approval for financing or implementation. The Plan further emphasizes that project selection is guided by viability, affordability, and value-for-money principles under Zambia's Public Investment Management framework. These requirements make appraisal-stage assumptions an important category of market-access and revenue-side information.[58]

Similarly, the IRP[59] for Zambia's power sector demonstrates that generation planning depends heavily on long-term forecasting and least-cost modelling assumptions. The report warns that inaccurate assumptions may result in expensive investment decisions which GRZ can ill-afford.[60] Appraisal assumptions are therefore predictive and justificatory in nature, while operational datasets are evidentiary and performance-based.

At appraisal stage, projected demand assumptions are among the most commercially consequential variables because they determine the scale, timing, and urgency of generation investments. The IRP states that generation planning is critically linked to demand projections for both peak load and total energy requirements. It identifies major uncertainties affecting electricity demand forecasting, including mining and

[55] KII Code 3 and KII Code 6.
[56] KII Code 1
[57] Ibid.
[58] The Public Investment Plan, 2026, at page 2-3.
[59] IRP Generation Resource Assessment and Planning Final Report (the "IRP").
[60] IRP, page 8-9.

industrial uptake, self-generation through solar PV, regional electricity trading, suppressed demand from prior load shedding and rural electrification expansion.[61]

This issue is particularly significant in Zambia because mining is a major electricity-consuming sector. The IRP notes that mining accounted for 51 per cent of total electricity consumption in 2019, equivalent to 6,359 GWh. Assumptions concerning future mining expansion therefore influence projected demand growth, generation procurement, transmission expansion and future tariff obligations.[62]

The IRP also identifies several modelling inputs that are relevant to revenue forecasting and investment appraisal, including unit size, fixed annuities, transmission reinforcement costs, electricity imports and exports, tariff assumptions, utility revenue forecasts and long-term debt recovery structures. Exchange-rate assumptions are also commercially significant where financing or procurement obligations are denominated in foreign currency, since currency movements may affect debt-service costs, tariff pressure and affordability calculations.[63]

Forecast generation costs similarly constitute a central category of commercially significant appraisal data. The IRP confirms that generation modelling incorporates investment costs, operations and maintenance costs, emission costs, unserved energy costs, operational parameters and cost data.[64]

Interview evidence reinforces this distinction. Project appraisal frameworks may incorporate project-specific financial models containing assumptions relating to payback periods, internal rates of return, net present value, debt-service ratios and broader social impact considerations. Interview evidence also emphasised that revenue assurance is central to project finance analysis, because lenders and investors need to understand how cash will flow from the electricity consumer through the supply chain and eventually support debt repayment. Projected demand, tariff assumptions, generation forecasts and procurement commitments are therefore commercially significant because they directly influence the expected revenue stream supporting an investment.[65]

The main appraisal-stage datasets relevant to this diagnostic include technology-specific cost assumptions, generation forecasts, plant availability assumptions, peak-load growth, differences between large power users and retail consumers, tariff escalation mechanisms, exchange-rate assumptions, inflation adjustments, fuel-cost pass-through provisions, energy tariffs, capacity charges and take-or-pay obligations. PPA-related variables are discussed further in Section 6.4, while this subsection focuses on their role as inputs into investment appraisal and revenue forecasting.[66]

Certain appraisal-related datasets are publicly available through government publications, particularly approved-project information, budget allocations and summary planning assumptions, while the underlying financial models, economic assessments, affordability tests, project-prioritisation assessments, least-cost option assessments, debt assumptions, government support commitments and subsidy assumptions are generally not routinely disclosed.

Stakeholder evidence indicates that a significant transparency gap arises because disclosure of appraisal-related information occurs largely after projects have been approved and incorporated into government investment plans. While approved projects are publicly visible through the Public Investment Plan and National Inventory of Ongoing Projects, the underlying financial, economic and risk assumptions that justified those decisions are generally not disclosed. This limits independent scrutiny of assumptions that may ultimately shape electricity pricing, procurement commitments, public expenditure and long-term sector investment decisions.[67]

[61] Ibid.
[62] Ibid, at page 5.
[63] The Public Investment Plan, 2026, at pages 4-5, identifies over US$529 million in foreign currency-denominated projects. The infrastructure sector alone accounts for more than US$509 million in foreign currency obligations.
[64] IRP, at page 11.
[65] KII Code 01, KII Code 02 and KII Code 03.
[66] KII Code 01 and KII Code 03.
[67] KII Code 1 and KII Code 4.

6.7 Realised Operational Financial Performance

This subsection distinguishes realised operational financial performance from appraisal-stage assumptions. Once generation assets, supply arrangements and procurement commitments become operational, actual datasets emerge on revenues, costs, dispatch, payment performance, system losses, import expenditure, operational efficiency and cost recovery. These datasets are commercially significant because they show whether investments and procurement arrangements perform in line with the assumptions used to justify them.

The IRP records that Zambia's electricity system experienced operational deterioration as a result of hydrological constraints, with national electricity generation declining from 16,189 GWh in 2018 to 15,040 GWh in 2019 because hydropower generation was constrained by low reservoir levels. It also notes that low rainfall contributed to deficits of up to 425 MW in 2019 and that emergency electricity imports increased following hydrological shocks. These examples illustrate why realised operational and cost data are necessary for assessing whether planning assumptions, procurement decisions and tariff expectations remain valid once market conditions change. The IRP also identifies operational variables relevant to dispatch and cost performance, including hydro utilisation, power scheduling, reserve margins, least-cost dispatch, fuel costs, operational expenditure, operational efficiency and realised tariff recovery.[68]

The Multi-Year Tariff Framework (MYTF) also supports the distinction between forecast assumptions and actual operational financial performance by providing for revenue calculations to account for differences between forecast and actual revenues or costs. This makes realised revenue, cost and performance data relevant not only for retrospective accountability, but also for tariff adjustment, cost recovery and future regulatory decisions.[69]

Interview evidence similarly emphasised that lenders rely on actual financial performance data, audited financial statements and ongoing operational reporting once projects become operational. This data helps assess whether projects are performing in accordance with the assumptions that justified financing and approval, and may provide early-warning indicators of emerging financial or operational distress.[70]

Interview evidence also indicates that regulated entities submit periodic operational and financial performance reports after projects become operational. These reports may include financial performance data, energy generation statistics, electricity supplied, power-quality indicators, customer consumption data, outage information, safety incidents and customer-service performance metrics. This information enables regulators to assess whether actual operational outcomes align with the assumptions that informed project approval, tariff determinations and investment decisions.[71]

The main publication issue is that much of this information is reported to public institutions, including the Ministry of Energy, the ERB and the Bank of Zambia, rather than routinely published in a structured and timely form. Planned outages are communicated publicly through ZESCO's website and social media platforms, and some generation-related information is available through institutions such as the Zambezi River Authority. However, wider disclosure remains fragmented and retrospective across annual reports, statistical bulletins, parliamentary references and institutional publications. This limits systematic public scrutiny of actual utility performance, realised procurement costs, operational efficiency and long-term financial sustainability.[72]

Overall, portions of realised operational financial performance data appear in annual reports, parliamentary references, statistical bulletins and selected Ministry of Finance publications. However, disclosure remains inconsistent, retrospective and insufficiently standardised to support systematic public analysis. This is consistent with the IRP's acknowledgement that Zambia-specific operational and cost data is limited, requiring planners to rely partly on industry data from a comparable developing country.

[68] IRP, at page 10, 6-7.
[69] Multi-Year Tariff Framework (MYTF), at page 3.
[70] KII Code 02.
[71] KII Code 03.
[72] KII Code 01.

6.8 Ownership and Beneficial Ownership Transparency

The ERB is responsible for licensing electricity generation entities, including IPPs, and publishes some licensing and tariff-related information. The IRP report identifies ERB as the institution responsible for regulating operations in the energy sector. For this diagnostic, ERB licensing data is relevant because it identifies market participants and provides a partial basis for understanding who is authorised to generate, transmit, distribute, supply or trade electricity.[73]

However, data published by the ERB typically focus on licensing status, tariffs and operational regulation rather than full beneficial ownership structures.[74] Although lists of licensed operators are public on the ERB website, detailed shareholder structures, politically exposed persons, ultimate beneficial owners and cross-linked corporate interests are not systematically consolidated into a single publicly searchable disclosure framework. Interview evidence indicates that ERB does not require a separate beneficial ownership disclosure beyond company registration documentation obtained from the Patents and Companies Registration Agency (PACRA).[75]

Prior to ERB's regulatory mandate being invoked, PACRA acts as the inception point for company registration and corporate filings in Zambia, including custody of shareholder information. However, despite the availability of searchable public register, public access to beneficial ownership information remains limited in practice because the relevant information may remain fragmented across company-level filings. Where supported by the underlying source, relevant limitations include fragmented filings, difficulty tracing historical ownership changes, inconsistent accessibility of beneficial ownership declarations and the possible use of nominee or intermediary structures that obscure ultimate control.

This creates a significant gap regarding IPPs and generation investors because electricity projects are frequently implemented through special-purpose vehicles whose ultimate ownership may not be transparently disclosed. Although Zambia has recently introduced beneficial ownership disclosure reforms through PACRA[76], implementation and public accessibility challenges remain relevant for electricity-sector transparency where project ownership is fragmented across special-purpose vehicles, parent companies and financing structures.[77]

Overall, the ownership-data landscape is characterised by partial publication of licensing and legal ownership information, but no consolidated electricity-sector ownership dataset that links licences, shareholders, beneficial ownership, politically exposed persons where relevant, project companies and parent-company structures. This limits public visibility over who ultimately controls commercially significant electricity-sector assets and market participants.[78]

6.9 Source-of-Supplied Electricity and Generation-Mix Data

The IRP confirms that Zambia's electricity generation mix consists of hydropower at 80.5 per cent, coal at 10 per cent, heavy fuel oil at 3.7 per cent, diesel at 2.8 per cent and solar at 3 per cent. This information is primarily compiled through ERB sector reporting and ZESCO operational data.[79]

Generation mix transparency remains increasingly important under current market conditions because Zambia's electricity system is operating under conditions of hydrological stress, increasing import dependence, expanding regional power trading and growing non-hydro generation. Although portions of generation-mix information are disclosed through ERB reports and planning documents, significant gaps remain concerning plant-level dispatch, curtailment decisions, generation availability, operational costs by source and operational performance data. Improved disclosure would strengthen market analysis, support climate responsive planning, improve investor confidence and enable greener and more transparent procurement choices. Readily availability of data would support market analysis, reliability assessment,

[73] IRP, at page 5.
[74] KII Code 3.
[75] Ibid.
[76] In 2017, the Government of Zambia amended the Companies Act to include beneficial ownership disclosure. The legislation provides for the disclosure of beneficial owners and the creation of a beneficial ownership register hosted by the Patents and Companies Registration Agency (PACRA).
[77] https://www.openownership.org/en/publications/beneficial-ownership-in-zambia.
[78] https://eiti.org/countries/zambia.
[79] IRP, at page 5-6.

procurement scrutiny, investor confidence and understanding of how generation-source decisions affect tariff and cost-recovery pressures.

From a revenue-side transparency perspective, the significance of generation-mix information lies not in broader climate transition objectives, but in understanding how the composition of supplied electricity influences procurement decisions, supply reliability, generation costs, import dependence and ultimately electricity pricing. The source from which electricity is generated or procured determines the cost of supply borne by utilities and consumers and directly affects tariff setting, dispatch decisions, power purchase commitments and investment planning. The IRP documents show low reservoir levels contributed to reductions in electricity generation and supply deficits, requiring increased reliance on imports and emergency supply arrangements. This underpins the importance of generation mix data not simply as a planning statistic, but as a key determinant of actual procurement costs and system reliability.

While aggregate information concerning installed capacity and generation is currently available through ERB Statistical Bulletins, Energy Sector Reports and IRP publications, there is limited routine disclosure regarding dispatch decisions, operational costs associated with different generation sources and the relationship between generation-source decisions and tariff outcomes. Information on electricity imports and trading arrangements is addressed separately in Section 6.2, while the present subsection focuses on the source composition of supplied electricity and its implications for cost, reliability, dispatch and tariff pressure.[80]

Overall, generation-mix and source-of-supplied electricity data are partly available at aggregate level, but remain less transparent where they concern plant-level dispatch, source-specific operational costs, curtailment, generation availability and the link between generation-source decisions and tariff outcomes. This limits the ability of external users to assess how Zambia's evolving supply mix affects procurement costs, supply reliability and cost recovery.

7. Transparency Gaps and Associated Risks

The diagnostic findings indicate that Zambia's electricity sector does not suffer from a lack of data collection. Public institutions, regulators, utilities, financiers and market participants already generate or hold substantial information on market access, tariffs, procurement, power-purchase obligations, electricity trading, operational performance, ownership and the source of supplied electricity. The central challenge is that much of this information is not routinely converted into structured, regular and publicly accessible datasets capable of supporting external scrutiny, market analysis and evidence-based decision-making.

The risks arising from these gaps are amplified by current power-market conditions. Constrained domestic supply, hydropower volatility, rising demand from mining and other productive users, increased reliance on imports, tariff reform and Open Access all make commercially significant data more important. Under these conditions, limited publication of market-access and revenue-side data can affect not only transparency, but also procurement quality, cost recovery, investment confidence, competition, public oversight and long-term sector resilience.

This section synthesises the principal risks arising from the data gaps identified in Section 6. Section 8 then translates these findings into a CoST-aligned priority dataset matrix. The distinction is important: this section explains why the gaps matter, while Section 8 identifies the priority datasets that would help address them.

7.1 Overview of Priority Transparency Gaps

The diagnostic identifies four recurring weaknesses in the current publication landscape: data that is not publicly disclosed; data that is only partially disclosed; data that is published retrospectively or irregularly; and data that is available only in formats that are not sufficiently structured for independent analysis. These weaknesses cut across the main dataset categories examined in Section 6.

Dataset area	Main publication gap	Principal risk
Market-access, trading and network-use data	Practical access conditions, applications, approvals, available	Market access may remain formal rather than practical, creating

[80] KII Code 03.

	capacity, congestion and network utilisation are not consistently available in structured form.	information asymmetries between incumbents, entrants, traders, suppliers and large consumers.
Import, export and electricity-trading data	Import and export volumes are periodically published, but cost, price, counterparty, procurement-channel and emergency-procurement data are only partially disclosed.	External users may be unable to assess the cost implications of import dependence, regional trading and emergency procurement.
Tariff and cost-recovery data	Approved tariffs are public, but tariff-setting assumptions, system-loss assumptions, collection-efficiency assumptions, cost allocation and non-retail pricing information are not routinely published.	Tariff decisions may be difficult to scrutinise, weakening confidence in cost recovery, affordability and fair pricing.
Power-purchase, power-supply and procurement obligations	PPA, PSA and bilateral supply variables such as energy charges, capacity payments, indexation, firm or non-firm status and take-or-pay exposure are constrained by confidentiality.	Long-term payment obligations may remain opaque, reducing scrutiny of procurement costs, fiscal exposure and utility liquidity.
Appraisal-stage financial viability assumptions	Approved-project information is available in summary form, but financial models, affordability tests, least-cost assessments, debt assumptions and government support commitments are generally not routinely disclosed.	Project approval may not be open to sufficient scrutiny before assumptions become embedded in tariffs, procurement commitments and public expenditure.
Realised operational financial performance	Operational and financial data are submitted to regulators and public institutions, but wider publication remains fragmented, retrospective and insufficiently standardised.	It becomes harder to compare actual performance with appraisal assumptions or identify emerging financial and operational stress.
Ownership and beneficial ownership data	Licensing and legal ownership information are partly public, but beneficial ownership and cross-linked interests are not consolidated in a searchable electricity-sector dataset.	Conflicts of interest, concentration and preferential-access risks may be harder to detect.
Source-of-supplied electricity and generation-mix data	Aggregate generation-mix data are available, but plant-level dispatch, curtailment, source-specific costs and the link between supply mix and tariff outcomes are less transparent.	Supply planning, procurement and tariff decisions may not adequately reflect reliability, cost, climate and transition risks.

7.2 Integrity and Procurement Risks

The most significant integrity and procurement risks arise where commercially negotiated electricity transactions are only partially visible to regulators, market participants and the public. PPAs, PSAs, bilateral supply arrangements, import contracts and emergency procurement arrangements may include legitimate commercial confidentiality provisions. However, where no standardised public-interest summary is available, opacity around tariff components, capacity payments, indexation mechanisms, payment-security

arrangements, take-or-pay obligations and contract duration can make it difficult to assess prudence, value for money and the allocation of risk.[81]

These risks are heightened in a supply-constrained market. Where electricity is scarce and procurement decisions involve high-cost imports, emergency supply arrangements or long-term contractual commitments, limited visibility over cost drivers and payment obligations can create perceptions of preferential treatment or weak procurement discipline, even where no misconduct is established. The risk is therefore not only corruption in a narrow sense, but the wider integrity problem created when consequential procurement and payment decisions cannot be independently scrutinised.

Ownership and beneficial ownership gaps add a further integrity dimension. Licensing information provides some visibility over legal market participants, but the absence of a consolidated electricity-sector dataset linking licences, shareholders, beneficial owners, directors, politically exposed persons where relevant, project companies and parent-company structures limits the ability of external users to identify conflicts of interest, concentration risks or cross-linked commercial interests.[82]

7.3 Efficiency and Cost-Recovery Risks

Efficiency risks arise where decision-makers and market participants cannot access the data needed to understand the true cost of electricity supply. Section 6 identified gaps around tariff-setting assumptions, system-loss assumptions, collection efficiency, import-cost structures, bilateral supply prices, PPA pricing terms, source-specific operational costs and realised tariff recovery. Where such data are not routinely published, it becomes harder to assess whether tariffs, procurement decisions and cost-recovery arrangements are aligned with actual costs.

These gaps can weaken both operational efficiency and pricing discipline. Limited visibility over import costs, dispatch costs, system losses, collection efficiency and subsidy or cross-subsidy arrangements may obscure the drivers of utility financial stress. It can also reduce pressure on utilities and market actors to improve efficiency, since external users cannot easily compare costs, performance and tariff assumptions over time. The KII evidence indicates that opacity may reduce investor confidence, create consumer perceptions of exploitation and weaken incentives for efficiency in utility operations.[83]

The absence of structured realised-performance data also weakens feedback loops between planning and operations. Appraisal-stage assumptions may justify new generation investments, procurement commitments or tariff trajectories, but realised operational data relating to assets, contracts and market arrangements is needed to determine whether those assumptions became operational. Without this feedback, poor assumptions, inefficient procurement decisions or underperforming assets may persist across investment cycles.

7.4 Competition and Market-Access Risks

Competition risks become more significant as Zambia moves towards a fully-fledged Open Access framework and more market-oriented electricity arrangements. Formal licences, rules and market-entry rights are not sufficient if potential participants cannot access practical information on applications, approvals, connection requirements, available and committed transmission capacity, congestion points, network utilisation, wheeling charges and use-of-system conditions. In the absence of such data, market access may remain legally available but commercially uncertain.

The resulting information asymmetries may advantage incumbent actors and discourage new entrants, traders, suppliers, IPPs and eligible consumers from making efficient investment or contracting decisions. They may also make it harder for large consumers to benchmark prices, compare supply options or negotiate from an informed position. This is directly relevant to Open Access because the benefits of competition

81 KII Code 03 and KII Code 01.
82 KII Code 03: Open Ownership, Beneficial ownership in Zambia, https://www.openownership.org/en/publications/beneficial-ownership-in-zambia.
83 KII Code 03.

depend not only on market rules, but also on transparent network access, credible price signals and confidence that participation takes place on fair terms.[84]

Customer migration under Open Access creates an additional competition and revenue-management risk. If creditworthy customers move to alternative suppliers without transparent data on wheeling arrangements, network charges, cost allocation and legacy obligations, ZESCO could face pressure on its revenue base while remaining responsible for existing obligations and network costs. The issue is therefore not whether competition should develop, but whether the information needed to manage competition fairly and sustainably is available.

7.5 Fiscal and Financial Sustainability Risks

Fiscal and financial sustainability risks arise where long-term contractual obligations, import costs, tariff assumptions, arrears, payment delays and utility liabilities are not visible in a form that allows cumulative exposure to be assessed. Power-purchase and power-supply arrangements may include energy charges, capacity payments, indexation mechanisms, take-or-pay commitments and payment-security arrangements that extend well beyond the initial procurement decision. If these obligations are not disclosed even in aggregated or standardised form, it becomes difficult to assess their implications for tariffs, utility liquidity and public finances.

These risks are particularly important in Zambia because ZESCO's financial position is closely linked to sector sustainability and broader fiscal risk. The IMF and World Bank have treated ZESCO-related obligations and IPP payables as relevant to debt sustainability analysis because of the fiscal risks posed by the utility and its power-purchase obligations. Missing or fragmented data on power-purchase commitments, import expenditure, arrears, accrued interest, subsidies and realised cost recovery can therefore weaken both sector oversight and macro-fiscal monitoring.[85]

The same risk applies at appraisal stage. If financial models, affordability assessments, least-cost option assessments, debt assumptions, government support commitments and subsidy assumptions are not disclosed before projects are approved, fiscal and regulatory authorities, investors and the public may have limited ability to scrutinise whether proposed investments are affordable, bankable and consistent with long-term cost recovery. This increases the risk that commercially significant commitments become visible only after they have already shaped procurement decisions, tariffs or public expenditure.

7.6 Political Economy and Accountability Risks

Political economy and accountability risks are especially acute in a supply-constrained electricity market. Decisions about who can access electricity, who can generate or trade it, how imports are procured, how tariffs are adjusted and how payment obligations are allocated have distributional consequences for utilities, consumers, investors, large productive users and the public sector. Where the data behind those decisions is fragmented or unavailable, public scrutiny is weakened and perceptions of unfairness can grow.

This risk is not limited to individual transactions. It also affects the credibility of market reform. International experience shows that market-oriented power-sector reforms can support competition, private participation and more efficient investment when they are accompanied by strong institutions, credible regulation and clear information flows. Conversely, reforms that create formal market rights without decision-useful data may fail to deliver their intended benefits. For Zambia, the risk is that Open Access and related reforms may not generate the market-based benefits experienced in more mature or advanced reform contexts if market

84 KII Code 03, World Bank, Rethinking Power Sector Reform in the Developing World, https://www.worldbank.org/en/topic/energy/publication/rethinking-power-sector-reform
85 IMF, Zambia: Fourth Review Under the Arrangement Under the Extended Credit Facility and Financing Assurances Review, Debt Sustainability Analysis, 2024, https://www.elibrary.imf.org/view/journals/002/2024/350/article-A002-en.xml, World Bank/IMF Joint Bank-Fund Debt Sustainability Analysis, Zambia, 2024, https://documents1.worldbank.org/curated/en/099081424145020012/pdf/BOSIB1e3b08a140881b0a31b0de6d561380.pdf

participants cannot access reliable data on prices, network use, trading conditions, payment obligations and cost recovery.[86]

There is also a climate and transition-related accountability risk. Zambia's response to hydropower volatility includes diversification, imports, non-hydro generation and transmission investment. If decisions on generation mix, dispatch, curtailment, source-specific costs and network capacity are not supported by transparent data, short-term responses to supply shortages may lock in higher-cost or higher-carbon supply arrangements, or lead to assets that become underused as the system evolves. International energy analysis shows that delays in grid development can slow renewable integration and increase fossil-fuel use, with material implications for emissions and transition costs.[87]

Taken together, these risks underline why the priority is not simply more disclosure, but better structured public-interest disclosure. Zambia's market-access and revenue-side transparency challenge lies in converting information already held by public institutions, utilities, regulators and market participants into regular, comparable and usable datasets. Without that shift, the country may face a weaker version of electricity-sector reform: one in which market rules exist, but the information needed to make them efficient, fair, investable and accountable remains incomplete.

8. Priority Dataset Matrix for further validation and testing

Sections 6 and 7 establish the market-access and revenue-side data landscape and the associated transparency risks. This section translates those findings into a preliminary priority dataset matrix for consideration by the Government of Zambia, ERB, ZESCO and other relevant data holders. The purpose is to identify electricity-sector datapoints that could support more structured, standardised, regularly updated and publicly accessible data publication under current power-market conditions, while leaving detailed recommendations, sequencing and implementation arrangements to Section 9.

The proposed approach is informed by CoST principles and existing infrastructure data-publication practice, but its primary purpose is practical and Zambia-facing: to help public institutions and regulated sector actors identify which electricity-sector data should be published, by whom, in what format and with what confidentiality safeguards.The matrix is informed by CoST principles and by the publication logic of the Infrastructure Data Standard (IDS) and the Open Contracting for Infrastructure Data Standard (OC4IDS), but it is not proposed as a new CoST standard. IDS and OC4IDS remain relevant for publishing project and contract data across the infrastructure lifecycle. However, they do not on their own capture all the market-access and revenue-side questions that arise when electricity is treated as an infrastructure service rather than only as a set of assets and contracts.

The Zambia diagnostic applies this logic to current electricity-sector reform priorities. A market-oriented electricity sector raises practical transparency questions: who is authorised to participate in generation, trading, supply and network access; whether access is available in practice through applications, approvals, connection conditions and available capacity; how tariffs, wheeling charges and use-of-system tariffs are derived; how PPAs, PSAs, imports and trading arrangements allocate payment obligations and risk; whether appraisal-stage assumptions are validated by realised performance; and how the source of supplied electricity affects cost, reliability and transition choices.

Table 8.1 and the cluster subsections below therefore provide a preliminary set of datapoints for validation and prioritisation in Zambia. The datapoints should be read as an initial menu, not as a requirement to publish everything at once. Some may be suitable for immediate publication, while others may require further definition, aggregation, standardisation or redaction where legitimate commercial confidentiality applies. The aim is not to publish protected commercial details or full confidential contracts, but to identify public-interest variables that can make market access, revenue flows, payment obligations, risk allocation and service performance more visible. *Table 8.1: Overview of preliminary dataset clusters*

86 World Bank, Rethinking Power Sector Reform in the Developing World, https://www.worldbank.org/en/topic/energy/publication/rethinking-power-sector-reform

87 International Energy Agency, Electricity Grids and Secure Energy Transitions, Executive Summary, https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions/executive-summary

Dataset cluster	Datapoint count	Suggested sequencing
Market-Access, Trading and Network-Use Data	16	Immediate to short-term priority
Import, Export and Electricity-Trading Data	11	Immediate priority
Tariff and Cost-Recovery Data	12	Immediate priority
Power-Purchase, Power-Supply and Procurement Obligations	11	Short-term priority
Appraisal-Stage Financial Viability Assumptions	12	Short-term priority
Realised Operational Financial Performance	12	Short-term priority
Ownership and Beneficial Ownership Transparency	7	Medium-term priority
Source-of-Supplied Electricity and Generation-Mix Data	8	Immediate to short-term priority

8.1 Market-Access, Trading and Network-Use Data

This cluster addresses the practical conditions for participating in an increasingly market-oriented electricity sector. It complements the legal and regulatory rules on Open Access by identifying the data needed to assess not only whether access is available in practice rather than only in formal market rules, but also whether this access is fair and competitive. The cluster is particularly important because limited information on licences, approvals, connection outcomes, available capacity and network utilisation can create information asymmetries between incumbent actors, new entrants, traders, suppliers and large consumers.

Priority datapoints:

1. Trading licences
2. Electricity supply licences
3. Licence conditions
4. Eligible consumer supply arrangements
5. Open-access applications
6. Open-access approvals
7. Connection and Wheeling requirements
8. Connection applications
9. Connection approvals
10. Customer migration data
11. Interconnected Power System available capacity
12. Available transmission capacity
13. Committed transmission capacity
14. Congestion points
15. Network utilisation

Primary data holders: ERB; ZESCO; Independent System Operator; Ministry of Energy; OPPI.

Publication purpose: Clarify who is authorised to participate in electricity trading and network access, on what terms, and whether access, connection and network-use arrangements support fair competition, efficient investment, transparent revenue flows and reliable supply.

Suggested sequencing: Immediate to short-term priority.

8.2 Import, Export and Electricity-Trading Data

This cluster is relevant because imports, exports and electricity trading are part of Zambia's response to constrained supply and hydropower volatility. Import and export volumes may be periodically visible through sector reporting, but the diagnostic points to weaker publication of the cost, price, procurement-channel, counterparty and emergency-procurement information needed to assess the cost implications of trading decisions. The datapoints below are intended to improve scrutiny of how supply deficits are managed and paid for.

Priority datapoints:

1. Import volumes
2. Export volumes
3. Import prices
4. Export prices
5. Total import cost
6. Total export revenue
7. Procurement channel
8. Trading counterparty
9. Contract duration
10. Procurement period
11. Emergency procurement arrangement

Primary data holders: ZESCO; ERB; Ministry of Energy.

Publication purpose: Clarify how electricity imports, exports and trading transactions affect supply deficits, tariffs, cost recovery, revenue generation and fiscal exposure.

Suggested sequencing: Immediate priority.

8.3 Tariff and Cost-Recovery Data

This cluster covers the data needed to understand how electricity prices and network-use charges are derived. Approved tariffs may be public, but tariff-setting assumptions, cost-of-service inputs, system-loss assumptions, collection-efficiency assumptions, subsidy arrangements and network-use charges are not always published in a regular and structured form. These datapoints are central to tariff scrutiny, cost recovery, investor confidence and affordability debates.

Priority datapoints:

1. Tariff structures
2. Investment endorsement approval
3. Tariff-setting assumptions
4. Cost-of-service study inputs
5. Demand forecasts
6. System-loss assumptions
7. Collection-efficiency assumptions
8. Subsidy arrangements
9. Cross-subsidy arrangements
10. Wheeling charges
11. Wheeling revenues
12. Use-of-system tariffs

Primary data holders: ERB; ZESCO; Ministry of Energy; Ministry of Finance.

Publication purpose: Clarify how tariffs and network-use charges are derived, and whether pricing supports cost recovery, affordability, fair market access and efficient supply.

Suggested sequencing: Immediate priority.

8.4 Power-Purchase, Power-Supply and Procurement Obligations

This cluster covers standardised public-interest variables from PPAs, PSAs, bilateral supply agreements and procurement arrangements. It does not imply publication of full contracts or protected commercial details. The aim is to make the main obligation, payment, risk-allocation and procurement variables visible enough to support scrutiny of long-term payment exposure, utility liquidity, tariff pressure, value for money and fiscal oversight.

Priority datapoints:

1. Energy charge structure
2. Capacity payment obligation
3. Indexation approach
4. Contract duration
5. Firm/non-firm status
6. Take-or-pay exposure
7. Offtake obligation
8. Aggregate committed capacity
9. Dispatch priority arrangement
10. Payment-security arrangement
11. Aggregate payment exposure

Primary data holders: ZESCO; ERB; Ministry of Energy.

Publication purpose: Improve visibility over long-term payment obligations, procurement exposure, underlying cost drivers and allocation of financial risk.

Suggested sequencing: Short-term priority.

8.5 Appraisal-Stage Financial Viability Assumptions

This cluster covers the assumptions used to justify electricity-sector investments before approval. These assumptions are different from realised operational performance data because they explain why investments, tariffs, procurement decisions and financial commitments were considered viable at the time of appraisal. Publishing these datapoints more systematically would support scrutiny of affordability, bankability, least-cost planning, public support commitments and future tariff or fiscal exposure before decisions become locked in.

Priority datapoints:

1. Economic cost-benefit analyses
2. Affordability assessments
3. Financial models
4. Project prioritisation assessments
5. Least-cost option assessments
6. Multi-year funding schedules
7. Projected tariff assumptions
8. Projected revenue streams
9. Financing structures
10. Debt assumptions
11. Government support commitments
12. Subsidy assumptions

Primary data holders: Ministry of Finance; Ministry of Energy; ZESCO; project sponsors; OPPI.

Publication purpose: Improve scrutiny of the assumptions used to justify generation and network investments before approval.

Suggested sequencing: Short-term priority.

8.6 Realised Operational Financial Performance

This cluster covers actual performance once assets, contracts and market arrangements are operational. These datapoints serve a different accountability function from appraisal-stage assumptions: they show whether expected revenues, costs, payment obligations, dispatch outcomes and cost-recovery assumptions held up in practice. More structured publication would help identify emerging financial stress, operational inefficiency, payment risks and divergence between projected and realised performance.

Priority datapoints:

1. Audited annual financial statements
2. Realised revenue performance
3. Arrears
4. Payment delays
5. Accrued interest obligations
6. Realised collection rates
7. Cost-recovery performance
8. Subsidy exposure
9. Electricity import expenditure
10. Realised dispatch costs
11. System losses
12. Operational efficiency indicators

Primary data holders: ZESCO; ERB; Ministry of Finance.

Publication purpose: Compare actual financial and operational performance with appraisal assumptions and strengthen oversight of utility sustainability.

Suggested sequencing: Short-term priority.

8.7 Ownership and Beneficial Ownership Transparency

This cluster addresses the ownership and control of commercially significant electricity-sector actors. Licensing information already provides some visibility over market participants, but beneficial ownership and cross-linked interests are not consolidated in a searchable electricity-sector dataset. The datapoints below would help connect licences, legal owners, directors and beneficial owners, while supporting scrutiny of possible conflicts of interest, concentration and preferential-access risks.

Priority datapoints:

1. Licence applicant identity
2. Legal ownership
3. Shareholder structure
4. Beneficial ownership
5. Director information
6. Directors' interests in other licensed undertakings
7. Cross-linked corporate interests

Primary data holders: ERB; PACRA; licence applicants; licence holders.

Publication purpose: Clarify who owns and controls commercially significant electricity-market actors, and reduce conflict-of-interest, concentration and preferential-access risks in licensing, procurement and market participation.

Suggested sequencing: Medium-term priority.

Note: Parallel work in CoST is expanding on beneficial ownership issues and there will be a need to integrate the different workstreams as part of the validation of these datapoints.

8.8 Source-of-Supplied Electricity and Generation-Mix Data

This cluster treats the source of supplied electricity as a revenue, reliability and service-delivery issue rather than only as an energy-transition issue. Generation mix, dispatch by source, curtailment and the source composition of imports affect procurement costs, supply reliability, tariff pressure and exposure to hydropower volatility. These datapoints also help assess whether supply choices support cleaner and more resilient electricity service delivery.

Priority datapoints:

1. Installed capacity by source
2. Available capacity by source
3. Generation by source
4. Supplied electricity by source
5. Imported electricity by source
6. Dispatch by source
7. Curtailment volumes
8. Hydro, solar, thermal and import shares in supplied electricity

Primary data holders: ERB; ZESCO; Ministry of Energy.

Publication purpose: Clarify how the source of supplied electricity affects cost of supply, procurement decisions, reliability, import dependence, tariff pressure and the transition towards cleaner supply.

Suggested sequencing: Immediate to short-term priority.

Taken together, these clusters provide a structured basis for validating a possible CoST-aligned electricity-sector extension. The matrix should be used to test which datapoints are already collected, which are publicly available, which require improved standardisation or aggregation, and which publication responsibilities should be assigned to specific institutions. Section 9 should build on this matrix by identifying immediate publication priorities, sequencing options, institutional responsibilities and longer-term arrangements for a more accessible electricity-sector data-publication system.

9. Conclusion, Recommendations and Sequencing

Section 8 translated the diagnostic findings into a preliminary CoST-aligned dataset matrix for electricity-sector data publication. This final section sets out the conclusions and recommended sequencing for putting that matrix into practice. The emphasis is on strengthening data publication progressively, using information that is already held by public institutions, regulators, utilities and market participants, while defining clear safeguards for genuinely protected commercial information.

9.1 Conclusion

The diagnostic confirms that the principal transparency challenge in Zambia's electricity sector is not initial data collection. Substantial market-access, operational, financial and revenue-side information is already generated or held by the Ministry of Energy, ERB, ZESCO, the Ministry of Finance, project sponsors, financiers, licence applicants, IPPs, traders and other market participants. The central problem is that much of this information is not routinely converted into structured, standardised, regularly updated and publicly accessible datasets capable of supporting external scrutiny, market analysis and evidence-based decision-making.

This matters because Zambia's electricity sector is operating under constrained supply, hydropower volatility, rising demand from mining and other productive users, increasing reliance on imports and ongoing market-oriented reforms. These conditions make decisions on market entry, electricity trading, imports, tariffs, PPAs, PSAs, network access, dispatch, cost recovery, payment obligations and operational performance more consequential for consumers, investors, ZESCO, public finances and the wider economy.

The report concludes that data publication must extend beyond infrastructure assets and contracts. Electricity is an infrastructure service that must be generated, procured, transmitted, supplied, paid for and financially sustained. Data publication in this sector therefore needs to illuminate not only project and contract delivery, but also market access, revenue flows, payment obligations, risk allocation, realised performance and the source of supplied electricity.

The approach is informed by CoST principles and existing infrastructure data-publication practice, but its primary purpose is practical and Zambia-facing: to help public institutions and regulated sector actors identify which electricity-sector data should be published, by whom, in what format and with what confidentiality safeguards. The proposed dataset matrix is not a finished standard. It is a preliminary electricity-sector layer that should be refined, validated and tested. Its purpose is to provide a practical basis for improving market integrity, fair competition, tariff scrutiny, fiscal oversight, investor confidence, consumer protection and reliable electricity service delivery.

9.2 Immediate Data-Publication Priorities

Immediate priorities should focus on data that is already collected by public institutions or regulated entities, is central to current power-market pressures, and can be published or standardised without requiring full disclosure of protected commercial terms. These priorities should be read alongside the full dataset matrix in Section 8.

Priority area	Recommended immediate action	Primary data holders
Market-access, trading and network-use data	Publish or consolidate trading licences, electricity supply licences, eligible consumer status, open-access applications and approvals, connection requirements, connection approvals, available and committed transmission capacity, congestion points, network utilisation and customer migration data.	ERB; ZESCO/System Operator; Independent System Operator where applicable; Ministry of Energy; OPPI
Import, export and electricity-trading data	Publish import and export volumes, import and export prices, total import cost, total export	ZESCO; ERB; Ministry of Energy

	revenue, procurement channel, trading counterparty, contract duration, procurement period and emergency procurement arrangement in a structured and regular format.	
Tariff and cost-recovery data	Publish tariff structures, tariff-setting assumptions, Cost of Service Study inputs, demand forecasts, system-loss assumptions, collection-efficiency assumptions, subsidy and cross-subsidy arrangements, wheeling charges, wheeling revenues and use-of-system tariffs.	ERB; ZESCO; Ministry of Energy; Ministry of Finance
Generation mix and source of supplied electricity	Publish installed capacity by source, available capacity by source, generation by source, supplied electricity by source, imported electricity by source, dispatch by source and curtailment volumes.	ERB; ZESCO; Ministry of Energy
Operational financial performance	Regularise publication of audited annual financial statements, realised revenue performance, arrears, payment delays, accrued interest obligations, realised collection rates, cost-recovery performance, subsidy exposure, import expenditure, realised dispatch costs and system losses.	ZESCO; ERB; Ministry of Finance

These immediate priorities are intended to create a minimum viable electricity-market publication package. They do not require publication of full PPAs, PSAs, confidential trading strategies or proprietary financial models. Where data is sensitive, publication should begin with standardised, aggregated or redacted public-interest variables.

9.3 Sequencing of Data-Publication Reforms

The recommended approach is progressive. Attempting to publish the full dataset matrix at once may create institutional resistance and capacity constraints. A sequenced approach allows institutions to build publication routines, test data definitions, resolve confidentiality questions and improve quality over time.

Sequencing stage	Focus	Expected output
Immediate priorities	Standardise and publish data that is already collected and relatively less sensitive, including licences, access conditions, import/export data, tariffs and charges, generation/source data, system losses and selected operational indicators.	Minimum viable publication package; data-holder confirmation; common publication templates; publication calendar.
Short-term priorities	Develop structured public-interest summaries for commercially significant datasets, including PPA/PSA obligations, aggregate committed capacity, payment exposure, indexation approach, appraisal-stage assumptions and realised operational financial performance.	Standardised PPA/PSA summary template; appraisal and realised-performance publication templates; aggregation/redaction protocol.
Medium-term priorities	Institutionalise electricity-sector data publication through a consolidated public platform, stronger regulatory publication obligations, ownership and beneficial ownership integration, historical datasets and data-quality assurance.	Electricity-sector data portal; formal publication protocol; PACRA/ERB ownership linkage; CoST-aligned assurance process;

		validated electricity-sector extension.

Sequencing should remain flexible. If some datasets can be published earlier because they are already collected, legally publishable and technically easy to standardise, they should not wait for a later stage. Conversely, datasets involving confidentiality, inter-institutional coordination or legal uncertainty may require piloting before regular publication.

9.4 Institutional Responsibilities

Effective implementation requires clear publication responsibilities. The diagnostic indicates that many priority datasets are already generated through tariff filings, licensing, regulatory reporting, planning processes, public investment appraisal, utility operations and market transactions. The next step is to assign responsibility for publication, validation, updating and quality assurance.

Institution / actor	Indicative responsibility
Energy Regulation Board (ERB)	Lead on licensing data, tariff and cost-recovery data, network-use charges, regulatory reporting templates, market-performance indicators and publication rules for public-interest variables submitted by licensees.
Ministry of Energy	Lead on sector planning, IRP-related assumptions, market reform, generation mix, source of supplied electricity, policy coordination and publication of planning and market-structure data.
ZESCO / System Operator / Independent System Operator where applicable	Lead on operational datasets, network capacity, network utilisation, imports, dispatch, system losses, outages, customer migration, PPA/PSA summaries submitted for publication and realised operational performance data.
Ministry of Finance and National Planning	Lead on fiscal exposure, subsidy commitments, government support, public investment appraisal, affordability assessments, SOE financial exposure and links between electricity-sector obligations and public finances.
PACRA and ERB jointly	Coordinate legal ownership and beneficial ownership information for licence applicants and licence holders, including links between licences, shareholders, directors and beneficial owners.
IPPs, traders, suppliers, eligible consumers and project sponsors	Provide required project, licence, operational, ownership and market-participation data under licence conditions, Open Access rules, tariff filings, procurement processes or agreed reporting templates.
OPPI / relevant public investment planning authority	Support publication of investment endorsement, appraisal-stage assumptions and project-prioritisation information where these functions fall within its mandate.

Institutional responsibility should be documented through a publication protocol that identifies the data holder, data validator, publication institution, publication frequency, format and confidentiality treatment for each datapoint cluster.

9.5 Improving Accessibility, Quality and Reliability

The value of publication depends on accessibility, quality and reliability. Publishing information through occasional reports or narrative summaries is useful, but insufficient for market analysis and public scrutiny. The priority should be regular, structured and comparable data publication.

- Adopt standard data definitions for each datapoint in the Section 8 matrix.

- Publish data in downloadable and machine-readable formats, with accompanying narrative explanation where needed.
- Use consistent time periods, units, exchange-rate assumptions and source classifications.
- Create a publication calendar for monthly, quarterly, annual and event-based datasets.
- Maintain historical datasets to allow trend analysis.
- Link datasets through common identifiers for licences, projects, contracts, generators, traders and network users.
- Apply aggregation, redaction or standardised summary fields where commercially sensitive information is involved.
- Provide clear reasons where a datapoint cannot be published.
- Introduce independent data-quality review through ERB, CoST independent review or a multi-stakeholder validation process.
- Ensure that data publication is usable by regulators, investors, consumers, civil society, researchers and market participants.

These measures are important because publication alone will not address transparency risks if the data is irregular, incomplete, difficult to compare or not trusted by users. The aim should be decision-useful publication rather than the simple release of additional documents.

9.6 Sustainability and Long-Term Direction

The longer-term objective should be an institutionalised electricity-sector data-publication ecosystem. This should not be limited to a one-off dataset or report. It should become a recurring publication system that supports market development, tariff scrutiny, fiscal oversight, consumer protection and reliable electricity service delivery.

A next stage should refine and test the preliminary dataset in Section 8. This should include mapping each datapoint against existing CoST standards and extensions, validating definitions with data holders and users, assessing publication feasibility, confirming legal and confidentiality constraints, and piloting publication in Zambia. The same process should test whether the dataset has wider relevance for other countries and utilities undergoing similar transitions towards more market-oriented delivery systems.

The diagnostic therefore leaves Zambia with a practical opportunity to pioneer publication of electricity-market data that can improve fairness, efficiency, investment confidence, consumer protection and reliability.

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Annex I: Methodological note

This diagnostic used a targeted, policy-oriented methodology to identify and assess market-access and revenue-side data-publication gaps within Zambia's electricity sector. The approach was grounded in the proposition that commercially significant information asymmetries can affect procurement outcomes, pricing, investor confidence, fiscal oversight, market fairness, accountability and operational decision-making.

The study combined desk-based review, key informant interviews, institutional and market mapping, documentary analysis and dataset gap assessment. This allowed the analysis to compare formal data-holding obligations, actual publication practices and the practical institutional realities affecting data publication in Zambia's electricity sector.

The diagnostic focused not only on whether relevant datasets exist, but also on who holds them, whether they are publicly accessible, how they are published, whether they are structured and standardised, and whether they can support external scrutiny, market analysis and evidence-based decision-making. Particular attention was given to the distinction between appraisal-stage assumptions and realised operational performance. Appraisal-stage data helps explain why investments, tariffs, procurement decisions and financial commitments were justified before approval. Operational-stage data shows whether those assumptions held up once projects, contracts and market arrangements became operational.

The study also treated the source of supplied electricity as a revenue-side and service-delivery issue rather than as a broad climate-transition review. In this context, generation mix, imported electricity, dispatch and source-of-supply data are relevant because they affect procurement costs, reliability, tariff pressure, exposure to hydropower volatility and market decision-making.

Datasets were assessed against four criteria:

Criterion	Assessment question
Relevance	Does the dataset help illuminate significant integrity, efficiency, competition, accountability, fiscal-oversight or market-access risks?
Availability	Does the dataset exist, and which institution or market actor holds it?
Accessibility	Is the dataset publicly available, structured, standardised, regularly updated and usable for external analysis?
Reliability	Can the dataset be verified and used meaningfully for regulatory, market or public-interest analysis?

The study encountered several limitations, including commercial confidentiality constraints, fragmented institutional data ownership, inconsistent publication practices, limited access to certain PPA, PSA and bilateral supply datasets, and institutional sensitivity around commercially significant information. These limitations were mitigated through triangulation across documents and interviews, anonymised stakeholder engagement and reliance on aggregated analysis where detailed data could not be accessed.

Annex II: Detailed table of increase in electricity demand from the mining sector

MW	2020	2026	2030	2040	2050
Chambishi East 330/66kV	13	15	16	22	32
Chipata West 330/132kV	18	31	45	76	105
Chishimba Falls 3.3kV	1	1	1	3	4
Itezhi Tezhi 11kV	10	12	13	27	40
Kabwe 330/88kV	528	635	638	670	733
Kafue Gorge 330kV	0	0	0	0	0
Kafue Town 330/88kV	121	133	159	230	342
Kafue West 330kV	0	0	0	0	0
Kalumbila 330/33kV	106	163	161	161	163
Kansanshi	207	321	318	312	312
Kariba North 330/18/11kV	7	8	9	14	22
Kasama 330/66kV	30	36	41	71	106
Kitwe 330/220kV	454	475	493	638	857
Leopard's Hill 330/132/88kV	260	324	355	476	651
LSM FEZ 330/33kV	8	8	10	14	20
Luano 330/220kV	0	0	0	0	0
Lumwana 330/132/33kV	19	27	34	52	72
Lunzua 6.3kV	0	0	1	1	1
Lusaka West 330/132kV	398	482	496	375	524
Lusemfwa 66kV	2	2	2	4	6
Lusiwasi 330kV	4	4	4	9	12
Mpika 330/66kV	19	20	32	67	88
Msoro 330/66/11kV	12	13	21	43	60
Mulungushi 66/11kV	28	28	37	56	83
Muzuma 330/88kV	25	27	35	54	76
Nambala 330/220/33kV	63	68	70	68	51
NECL HFO Plant 11kV	3	3	4	4	6
Pensulo 330/66kV	24	29	31	49	71
Sesheke 220/66kV	1	1	1	2	3
Victoria Falls 220/66/33/11kV	58	70	79	128	192

Additional nodes					
Chambishi smelter	0	93	92	90	90
Manganese – Luapula	0	21	25	35	45
Manganese – Central	0	21	25	35	45
SXEW – CB	0	126	151	180	180
New mine - NW1	0	0	214	210	210
New mine - NW2	0	0	214	210	210
New mine – CB	0	0	61	60	60
New mine - NW3	0	0	0	210	210
New mine – Central	0	0	0	22	22
New mine - W1	0	0	0	22	22
New mine – N	0	0	0	22	22
New mine – Luapula	0	0	0	22	22
New mine – E	0	0	0	22	22
New mine – Muchinga	0	0	0	22	22
New mine – Mabiza	0	0	0	22	22
New mine – Kitumba	0	0	0	22	22
New mine – Kangaluwi	0	0	0	22	22
New mine – Dunrobin	0	0	0	22	22
New mine – Sasare	0	0	0	22	22
New mine - W2	0	0	0	22	22
Exports to DRC	69	150	250	500	500
Exports to Zimbabwe	69	150	250	500	500
Total	2,318	3,496	4,390	5,922	6,950