



GUIDANCE NOTE

**ELECTRICITY SECTOR RISK
ASSESSMENT**

September 2009

GUIDANCE NOTE: ELECTRICITY SECTOR RISK ASSESSMENT

I. INTRODUCTION

1. **Objectives.** This sector guidance note aims to heighten recognition of risks that can reduce the benefits from operations in the electricity sector.¹ It is intended for Asian Development Bank (ADB) staff involved in commissioning and/or undertaking governance risk assessments as required under ADB's *Second Governance and Anticorruption Action Plan (GACAP II)*. Risk, in the context of GACAP II, refers to the risk of reduced development effectiveness—that the development objectives of developing member countries (DMCs) and ADB will not be met, or will be adversely affected by poor governance, weakly performing institutions, or vulnerability to corruption.² This guidance note aims to (i) explain key electricity sector features and (ii) identify entry points for mapping risks to development effectiveness in the sector. Generic risks are presented for illustrative purposes, and are not meant to be exhaustive.

2. This sector guidance note supplements ADB's *Guidelines for Implementing GACAP II*. It does not replace the guidelines. The guidelines provide a risk management framework and map out the process for assessing, managing, and monitoring risks. This note is intended to help staff in tailoring the generic sector risk assessment terms of reference found in the guidelines (Appendix 4), to consider risk vulnerabilities specific to the electricity sector.

3. **Structure of the Guidance Note.** Section II describes the key features of the electricity sector.³ Section III outlines sector risks that include GACAP II priorities of public financial management, procurement, and combating corruption. These priorities can be assessed within frameworks of (i) institutional features (policy, laws, and regulations); (ii) organizational aspects (planning, financial management, procurement, and human resources); and (iii) operations (generation, transmission, distribution, and electricity supply or customer interface).

II. KEY FEATURES OF THE SECTOR

A. Functions

4. The electricity sector plays a key role in a country's development. Lack of electricity at the household level is correlated with low incomes, continued use of traditional (biomass) and less-productive energy sources, poor delivery of health and education services, degradation of natural resources, and indoor pollution. Even more serious shortfalls of electricity supply at the industry level are linked to disruption of economic activities, fewer job opportunities, and use of less-efficient and more-polluting, smaller power generation sets. Providing reliable, adequate, and affordable electricity is a major sector goal. Access to reliable electricity services is essential for inclusive economic growth, sustainable human development, and better delivery of education and health services. It also facilitates digital connectivity and communications that are

¹ It is a joint product of the Asian Development Bank's Governance Community of Practice and Energy Community of Practice.

² ADB. 2008. *Guidelines for Implementing ADB's GACAP II*. Manila. www.adb.org/Documents/Guidelines/GACAP-II-Guidelines.pdf.

³ The focus on electricity of this guidance note should not preclude a review of the overall energy sector in DMCs where electricity is linked to subsectors including coal, gas, and oil. Risk assessments are context-specific. Thus, tailoring them to specific situations is appropriate, given the diversity of DMC settings.

essential for empowerment of the people, increasing economic opportunities, and nurturing entrepreneurship. The efficient functioning of the electricity sector has a fundamental bearing on improved quality of life and poverty reduction.

5. The process of delivering electricity comprises a chain—(i) the transformation of the energy source (fossil fuels, renewable natural resources, or nuclear) into electricity (generation); (ii) transportation to large load centers and balancing supply with demand, since storage of large quantities of electricity is still unfeasible (transmission); (iii) a network to reliably connect and supply to end customers (distribution); and (iv) commercial transactions to recover the value of the service from end customers, since billing mostly follows consumption and the quantity cannot be regulated once a customer has been connected (supply). Supply is synonymous with customer interface. In most DMCs, the distribution company is responsible for both distribution network and commercial transactions (connections, end customer metering, billing, bill collection, and customer services). The electricity sector includes interdependent functions that are potentially competitive, such as generation and supply, and noncompetitive, such as provision of transmission and distribution networks.⁴

6. Fossil fuels have to be mined. Their production, preparation, storage, and transportation are normally managed by organizations outside the electricity sector. Renewable energy resources such as wind, hydropower, and solar are generally available at specific locations and at little cost, so the electricity sector takes responsibility for harnessing the resource for productive use. Biomass and biofuels are exceptions, which are commonly derived from waste products (e.g., stalk of agriculture produce or excretion of livestock) or require dedicated growing—forestry, plants, trees, and algae produce oils or carbohydrates that can be converted into alcohol—and production facilities for biofuels or electricity. Nuclear energy is subject to regulation and guidelines issued by the International Atomic Energy Agency. While the nuclear reactor uses very restricted technology, the associated steam turbine and electrical equipment are very similar to those used in the typical electricity sector. The management of a nuclear power plant is generally vested with specialized agencies outside the electricity sector because of the external monitoring, reporting, and inspection regimes.

7. Customers can choose to bypass the chain and produce their own electricity. This happens when reliability of grid supply is inadequate or the remote location tilts the economics in favor of a distributed generation system using a local renewable energy resource.

B. Institutional Features: Policy, Legal, and Regulatory Aspects

8. **Sector Policy of ADB.** Familiarity with ADB's sector policy is essential for ADB staff because it provides boundaries for potential actions and articulates sector goals. ADB's 2009 Energy Policy covers assistance for electricity, coal, oil, and gas supply and use. It has three pillars: (i) promoting energy efficiency and renewable energy; (ii) maximizing access to energy for all; and (iii) promoting sector reforms, capacity development, and governance.⁵ Policy pronouncements specific to electricity cover rural electrification, with special emphasis on remote communities that are less likely to be connected to the electricity grid, and support for subregional electricity trade to meet energy security. The policy promotes a framework for regional electricity trade, infrastructure, and removal of barriers to increased cooperation and

⁴ ADB and Public-Private Infrastructure Advisory Facility (PPIAF). 2005. *Electricity Sectors in CAREC Countries*. Manila. www.adb.org/Documents/Studies/Electricity-CAREC/default.asp.

⁵ ADB. 2009. *Energy Policy*. Manila. www.adb.org/Documents/Policies/Energy-Policy/Energy-Policy-2009.pdf.

trade. Moreover, it encourages the utilities to incorporate into their energy planning the key elements of integrated resource planning.

9. ADB's Energy Policy encourages the adoption of renewable energy sources for power generation. Oil-based power plants, nonetheless, will continue to be a major component of the electricity grids in some island economies. Financing support will continue for small, oil-based plants for island communities, remote areas, and sparsely populated areas where other options are not feasible. The policy supports (i) installation of modern transmission and distribution systems, (ii) upgrading of existing systems to reduce transmission and distribution losses, and (iii) enabling competition when open access is permitted by law. It requires sector investments to comply with ADB's safeguard policy statement⁶ covering the environment, involuntary resettlement, and indigenous peoples. It promotes private sector participation and independent and transparent regulation. It upholds the planning and implementation of projects that emphasize accountability, participation, predictability, and transparency. Capacity development is viewed as vital for promoting sector reforms and governance.

10. **DMC Electricity Policy.** In general, a DMC's electricity policy reflects resource endowments, demand growth estimates, sector goals, and how these goals are to be achieved. These policies generally support institutional strengthening to promote efficiency and conservation, expansion of access to reliable and affordable electricity supply, removal of market barriers to attract investments, and/or promotion of market-based resource allocation under a credible regulatory regime. Where surplus electricity is available, generating electricity for export to neighboring countries may be expressed as a policy to raise revenues for meeting development needs. Supporting these policies is a hierarchy of laws (federal and provincial) and associated implementing rules and regulations, technical and economic regulation, and regulator's resolutions or decisions.

11. **Laws and Associated Implementing Rules and Regulations.** Laws in the electricity sector normally cover three aspects: (i) the sector structure and institutions (who is responsible for various functions, what parts will be monopolies and what will be competitive, who will regulate); (ii) promoting renewable energy; and (iii) encouraging energy efficiency. When economic implications are large, there could be three separate but complementary laws, or one or more laws covering these aspects. Implementing rules and regulations that accompany these laws provide details on how to carry out the legislation. Clarity of implementing rules and regulations is essential for a predictable and stable sector environment.

12. **Regulation.** The government promulgates sector regulation through rule making. Regulation can be defined as technical and economic. Technical regulation addresses the safety aspects of electrical installations and electricity service provision. Economic regulation involves the core tasks of setting, monitoring, and enforcement of electricity prices to recover costs, and establishing minimum quality-of-service standards. Economic regulations specify access conditions to networks, set entry and exit requirements for participants, and establish investment obligations relative to existing and new customers.⁷

13. Knowledge of economic regulation is necessary for making investment decisions because the pay-back periods are relatively very long. Shutting down an electricity company is

⁶ ADB. 2009. *Safeguard Policy Statement*. Manila. www.adb.org/Documents/Policies/Safeguards/Safeguard-Policy-Statement-June2009.pdf

⁷ Brown, Ashley, Jon Stern, and Bernard Tenenbaum. 2006. *Handbook for Evaluating Infrastructure Regulatory Systems*. Washington, DC: The World Bank. <http://go.worldbank.org/I1L7GZD540>.

not an option as it can cause massive economic disturbances. However, ownership can be changed while maintaining electricity service. Regulations help promote stability, predictability, and economic rationality for sector stakeholders in key areas, including tariff setting, licensing of power plants and other infrastructure, setting service and efficiency standards, monitoring service quality, and resolution of disputes.

14. Balancing competing interests of customers and investors is fundamental to regulation.⁸ Customers want to pay low rates for electricity while investors want to maximize return on their investments. In the long run, poor regulation will hurt the sector. If it favors customers, the investment level will be low and future electricity supply will be threatened. If it tilts toward the investors, the tariffs will be high without commensurate levels of service and security of supply. Consequently, public understanding of regulatory issues and processes is essential. Transparency is fostered through (i) rules that prohibit off-the-record communications between the parties involved in regulatory processes, (ii) the obligation for the regulator to publish its decisions, and (iii) disclosure of data and other documentation used.⁹

15. Independent regulators promote the efficient use of capital and guard against monopoly pricing and politicization of tariffs.¹⁰ Key aspects of regulatory independence include (i) a clear legal mandate, which imbues the job of the regulator with security and stability; (ii) an autonomous agency structure that allows the regulator to act independently; (iii) appointment of regulatory officials based on merit and competence, with a fixed term of office (4–6 years in most countries) and tenure arrangements that allow for removal based on just cause; and (iv) financial freedom.

16. Larger countries and/or those with separate islands or geographically isolated regions may have both national- and provincial-level regulation. Regulation to support electrification can be complicated by the form of ownership and technology used, such as grid electrification (the extension of existing transmission and/or distribution grids) or off-grid electrification (the installation of decentralized facilities that are not connected to existing transmission and distribution grids). Off-grid technologies are increasingly applied to electrify remaining areas that are too remote or dispersed to be reached via grid extension. Decentralized business models may require decentralized regulation. Pursuit of economic efficiency could bring about greater convergence in delivery of services in the future, e.g., the distribution network could carry communication and internet connections that have a separate revenue stream without additional costs. The regulatory challenges will become greater when this happens.

17. Regulator's decisions involve resolution of disputes between parties. Resolutions based on informed decision making and fairness can strengthen public trust in the regulatory system.

C. Organizational Features

18. **Structure.** In the conventional electricity sector structure, a single entity manages generation, transmission, distribution, and supply. During the 1990s there was an effort to increase economic efficiency through unbundling and creating competition. Countries also

⁸ Nakhooda, Smita, Shantanu Dixit, and Navroz Dubash. 2007. *Empowering People: A Governance Analysis of Electricity*. Washington, DC: World Resources Institute. <http://pdf.wri.org/empoweringpeople.pdf>.

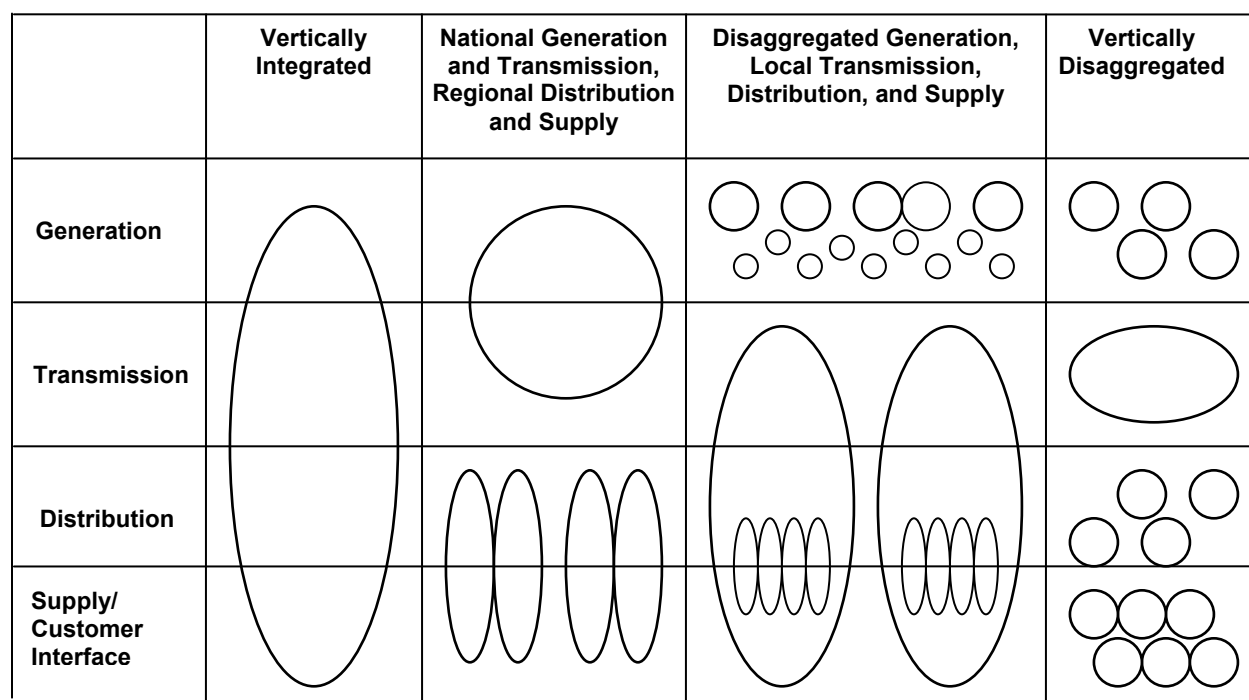
⁹ Besant-Jones, John. 2006. Reforming Power Markets in Developing Countries: What Have We Learned? *Energy and Mining Sector Board Discussion Paper No. 19* (September). Washington, DC: The World Bank. <http://go.worldbank.org/11L7GZD540>.

¹⁰ ADB. 2007. *Special Evaluation Study on Energy Policy 2000 Review: Energy Efficiency for a Better Future*. Manila. www.adb.org/Documents/SES/REG/SES-REG-2007-05/SES-REG-2007-05.asp.

privatized electricity assets to attract new investments and/or to enable the government to extract itself from commercial activities. The DMCs embarked on this path, but the progress has not been uniform.

19. The figure shows four sector structures: vertically integrated; national generation and transmission, regional distribution and supply; disaggregated generation, local transmission, distribution, and supply; and vertically disaggregated. Modified sector structures may also exist.

Electricity Sector Structures



Note: Each shape on the diagram represents a distinct electricity entity.

Source: Adapted from the World Bank. 2008. *Deterring Corruption and Improving Governance in the Electricity Sector: A Sourcebook*. Washington, DC. <http://go.worldbank.org/C2SBRGKQT0>.

- (i) **Vertically integrated**—A single (usually public) utility owns and operates all the generation, transmission, distribution, and supply. This is a traditional structure. It exists in Samoa and Tajikistan, among other countries.
- (ii) **National generation and transmission, regional distribution and supply**—One entity is responsible for planning and implementing all generation and transmission plants. This entity then provides electricity to a number of regional distributors, who deliver the electricity to end customers. Distribution companies are responsible for electricity supply, too. This is the current structure in Azerbaijan and Thailand. It existed in the Philippines before the government brought in competitive power markets and disaggregated systems.
- (iii) **Disaggregated generation, local transmission, distribution, and supply**—This describes the electricity sector structure in the People's Republic of China. Generation is divided into five national-level companies, a large number of provincial-level companies, and privately owned companies. Two companies that

manage transmission and distribution also own provincial-level distribution-cum-supply companies.

- (iv) **Vertically disaggregated**—Several companies generate electricity. There is a single national transmission company, a number of regional or local distribution companies, and several local supply companies. Vertically disaggregated structures exist in India, Kazakhstan, Kyrgyz Republic, Mongolia, and Philippines, among other countries.

20. **Planning.** Planning variations exist in the electricity sector. In countries where the state owns and operates electricity utilities, a comprehensive development plan may be in place. Political priorities and investor interests may influence planning. Ad hoc policy shifts may occur. Arrangements to meet shortages in electricity supply may involve the purchase of electricity from expensive sources, and provide decision makers with opportunities for rent seeking.

21. In a competitive electricity sector, market signals and projections of demand and supply guide the investment plans of electricity utilities. Planning is crucial for the utilities' continuing profitability and viability. Where a coordinated sector plan does not exist, a strategic plan may be needed to establish the role of government in setting overall development objectives. In sectors that are undergoing shifts from public sector to private sector ownership, measures may be required to ensure achievement of long-term electricity security objectives and optimal growth of generation, transmission, and distribution capacity.

22. **Financial Management.** Financial discipline in the sector allows electricity utilities to grow and generate a cash surplus. This is vital for meeting the requirements of new investment projects and for responding to rehabilitation needs. Weaknesses in the financial management system can pose risks to sector viability and sustainability. Setting electricity prices at levels that ensure cost recovery and promote efficiency, strengthening the collection of payments, and enforcing accountability for performance are important. In some DMCs, however, setting appropriate price levels may be difficult due to political interference and weak institutions.

23. **Procurement.** Procurement in the sector includes power generation plants; transmission and distribution facilities; supply of oil, electric meters, cables, and other items; vehicles and equipment; and services. Procurement is subject to the requirements of government and donors. Basic principles are transparent procurement processes, a level playing field, and award of contracts that represent the best value-for-money. Officials, bidders, and procurement agents, however, may find ways around well-designed rules to make illegal gains. Bidding documents may be ambiguous, technical and commercial requirements may favor a particular bidder, the bidding process and contract execution may be subjective or nontransparent, and schedules may be unrealistic. Collusive procurement may occur. Contractors or suppliers may try to cover the costs of corruption by providing substandard materials or workmanship, and/or bribe inspectors to obtain false certifications of quality and delivery.

24. **Human Resources.** Recruitment based on merit and competence is vital for efficient sector operations. Weak technical and management capacity impedes delivery of expected development outcomes. Running sector institutions requires management skills, technical knowledge, and governance capacity. Political interference and conflict of interest can occur in the appointment and promotion of senior-level officials with decision-making authority. Internal controls providing checks and balances mitigate risks associated with conflicts of interest and weak accountability.

D. Stakeholders

25. Key sector stakeholders include (i) policy makers and planners; (ii) sector regulator; (iii) electricity providers, primarily utility owners and management; (iv) suppliers of power plants, equipment, inputs, and services; (v) customers—large industrial and commercial customers, households, and government; (vi) development partners and investors; (vii) civil society organizations including nongovernment organizations, labor unions, industry and business associations, and media; and (viii) oversight entities responsible for enforcing laws and regulations such as the ombudsman, judiciary, and audit offices.

26. Stakeholder analysis is important in understanding sector governance. Sector governance tends to be more effective when there is (i) a *demand* for accountability from stakeholders; and (ii) a *supply* of governance, where actors in power share information, take decisions within a clearly defined regulatory framework and allocate resources transparently, offer space for participation, and are accountable for their actions.¹¹

27. Examining the formal and informal power relationships between stakeholders can help identify where risks to sector performance may lie. For example, political or vested interests may influence decision makers to favor sector investments that are not based on forecast of needs and other objective criteria. Financial resource allocation may be politically influenced and may not be aligned with sector plans. Appointments to the utility boards or senior management may be politically influenced, resulting in conflict of interest. Senior managers of the utilities may assign lucrative postings to compliant employees with the expectation of getting a share of their illegal earnings from suppliers who are awarded procurement contracts, bribes from customers for speedy services, etc.

III. SECTOR RISKS

28. **Understanding the Risk Environment and Identifying Risks.** The electricity sector's vulnerability to risks springs from the magnitude of its capital investments, potential for regulatory capture, and opportunities for discretionary decision making and rent seeking by stakeholders. Risk vulnerabilities exist in policy making, regulation, organizational management, and operations. The extent of risk and where these risks lie will differ under different sector structures.

29. The electricity sector is an interlocking system. Reducing risks from poor governance, institutional weaknesses, and lack of technical and managerial capacity in the sector requires an understanding of where the risks occur, what arrangements sustain them, and which systems and stakeholders can be strengthened to create an effective, systemic movement toward accountability and integrity in the sector.

30. Sector performance indicators provide first-order signals on sector risks. These include (i) electricity coverage, (ii) system losses, (iii) reserve margin and brownouts, (iv) reliability, (v) cross subsidies, (vi) collection ratio, and (vii) cost recovery (please refer to the glossary for a description of these terms).¹² These indicators may point to lack of investment in new capacity,

¹¹ European Commission. 2008. *Analysing and Addressing Governance in Sector Operations*. Luxembourg. www.nilsboesen.dk/uploads/docs/Sector%20Governance2008.pdf

¹² Pakistan's power sector performance, for example, is manifested in several indicators such as low coverage, chronic load shedding, below-cost tariff, circular debt, insolvent entities, and high losses, which are largely due to political interference and a weak regulator. The Philippines faced a similar sector performance in the past but succeeded in turning it around, albeit with higher costs. The take-or-pay clause in contracts with independent

a weak financial management system, inefficient business processes, poor sector oversight, and/or corruption. Low collection ratios can indicate a problem with the utility's commercial systems, or an absence of electric meters. The risk may be linked to capacity, or reluctance to use computerized systems, or it may be associated with corruption (for example, writing off debts, recording false payments, or failure to enforce collection, in exchange for side payments from customers). An adequate analysis of the situation is vital. Risks tend to be relatively more serious where lack of transparency is prevalent, accountability is absent, and decision making is discretionary. Risks can be identified at various stages. They need to be prioritized in terms of likelihood and seriousness. For details of a risk-based approach to governance assessment, please refer to www.adb.org/Documents/Guidelines/GACAP-II-Guidelines.pdf.

31. **Sector Risks.** The table below illustrates generic sector risks. It is intended to provide a framework for a systematic assessment of risks. Some of these risks may exist in the DMC sector being assessed; others may not. For GACAP II purposes, the actual risk assessment and the risk management plan will follow Appendix 8 in the GACAP II guidelines. If a corruption risk, for example, is identified in regulation (institutional dimension) and another corruption risk is identified in staff appointments (organizational dimension), both would be reported as corruption risks in the risk assessment.

Electricity Sector—Examples of Generic Risks

Dimension	Risks
1. Institutional Risks	
1.1 Policy	<p>Policies emphasize capital investment without regard for necessary improvements in the governance framework or the environment in which the electric utility operates. This undermines sustainability of sector investments.</p> <p>Large capital projects entail large-scale procurement, which creates vulnerability to leakages when transparent procurement processes are not used.</p> <p>Privatizing power utilities creates vulnerability to risks of a lack of public acceptance, undervaluation of publicly owned assets, higher cost of services to customers, and labor issues.</p> <p>Poorly informed DMC policies on renewable energy pose risks of nonsustainability and inability of DMCs to provide subsidies.</p>
1.2 Laws	<p>Noncompliance with the legal framework can undermine sector efficiency and predictability.</p>
1.3 Regulation	<p>Politicized regulation creates an imbalance between the needs of customers (desire to pay the lowest rate possible) and the industry (desire of investors to earn a return). This undermines the sector's financial viability.</p> <p>The lack of autonomy of the regulator (e.g., staff are appointed and paid by the government, the regulator's budget is part of the budget of another government entity, etc.) undermines independent regulation.</p> <p>Issuance by the sector regulator of licensing criteria for power plants is ad hoc. Altering the licensing criteria to suit particular interests compromises sector performance.</p> <p>Repetitive procedures for obtaining clearances have no time limit for the final decision. These can work against efficiency and provide opportunities for staff to ask for bribes.</p> <p>Civil society organizations and academia are not given opportunities to examine operational data. Lack of public information and outreach systems can create regulatory distrust.</p>
2. Organizational Risks	
2.1 Planning	<p>Political or vested interests determine sector investments and resource allocation. Lack of understanding of objective planning criteria, forecast of needs, or rates of return undermines sector investments.</p> <p>Under-assessed demand can create opportunities for future shortages and rent seeking, and justify "emergency" arrangements to purchase electricity from expensive sources.</p>

Dimension	Risks
2.2 Financial Management	<p>An overstated demand can justify the setting up of favored independent power producers.</p> <p>Lack of informed participation by customer groups, professional associations, and other civil society organizations in sector planning processes can weaken responsiveness of sector plans.</p> <p>The opaque financial position and technical performance of utilities can undermine willingness of potential investors to enter the sector.</p> <p>Insufficient financial management capacity (computerized planning, executing, monitoring, and reporting) in sector agencies and utility companies impair sector performance and optimal resource use.</p> <p>Nonalignment of budget priorities with investment plans makes service delivery suboptimal.</p> <p>Unpredictable budget execution leads to unplanned reallocations and reduces resources available for priority expenditures.</p> <p>Weak internal controls on revenue and expenditure management lead to diversion of funds to unauthorized uses.</p> <p>Weak accounting systems and record-keeping practices hamper provision of timely and adequate information on revenue streams, expenditure flows, liquidity, and debt levels or arrears.</p> <p>Lack of relevant external audits of sector agencies and utility companies weaken accountability.</p> <p>Noncoverage of long-term operating costs in the existing tariff structure undermines new investments, maintenance of power plants, and reliable electricity supply.</p> <p>A continuing debt overhang (payables of utility companies purchasing electricity exceed receivables) undermines the financial viability of distribution companies.</p>
2.3 Procurement	<p>The absence of competent engineers and procurement professionals undermines sound procurement planning in the sector.</p> <p>Tender documents focus on inputs rather than outputs. Technical specifications restrict participation and thereby favor particular contractors and/or technologies.</p>
(ii) Advertising	<p>Limiting the dissemination of information on procurement opportunities to well-connected private firms goes against competitive bidding and compromises procurement based on best-value or expertise.</p>

Dimension	Risks
(iii) Prequalification and bid submission	<p>Unexplained delays in the procurement process allow secret late bids or enable decision makers to canvass bidders in an attempt to extract bribes.</p> <p>Dividing large international competitive bidding packages into small ones restricts competition because foreign firms may be dissuaded from bidding.</p> <p>Potential investors who offer to conduct a feasibility study at no cost and submit unsolicited bids create inequitable opportunities to gain an inside track on contract rights.</p>
(iv) Bid evaluation	<p>Disqualification of bidders and/or selection of high-priced bidders without sufficient justification pose corruption risks.</p> <p>Large international procurements, especially in a recession, can pose corruption risks from firms that try to 'buy' such valuable contracts.</p>
(v) Award of contract	<p>Selection and award of contract to the lowest bidder, followed by change orders increasing the price, or changing the specifications, or reducing the quality or volume of goods and services can pose corruption risks.</p>
(vi) Contract management	<p>Officials accept or excuse poor-quality work, and then want to re-hire the same provider. Substandard services undermine sound resource uses.</p> <p>Irregularities in the award process, including kickbacks, pose risks to quality.</p> <p>Falsification of inspection certificates and quality tests poses corruption risks.</p> <p>Large contracts, signed with IPPs in an environment with weak watchdog institutions, provide opportunities to decision makers for making illegal gains.</p> <p>IPPs introduced as a response to crisis situations can be used to justify a deviation from least-cost investment plans and from normal procurement rules, and create an opportunity for corruption.</p> <p>Lack of public and private sector capacity to negotiate complex contracts can work against public interest.</p>
2.4 Human resources	<p>Evidence of conflict of interest with regard to staff appointments, especially senior-level appointments with decision-making authority for the sector, results in suboptimal sector performance.</p> <p>Nepotism and corruption allow promotion of unqualified personnel, which compromises responsive service delivery and creates an environment in which staff members have limited incentives to perform well.</p> <p>Low salaries of utility staff contribute to deteriorating staff quality, and can lead to the extraction of side payments for services rendered to customers.</p>

Dimension	Risks
3. Operations	
3.1 Generation	<p>Failure to maintain or rehabilitate power generation assets suggests poor asset management.</p> <p>Investor interest and/or historic preference lead to a bias toward new power generation projects.</p>
3.2 Transmission	<p>Lack of attention to transformer maintenance poses risks to a reliable electricity supply.</p> <p>Lack of attention to asset rehabilitation cycles contributes to losses and impairs efficiency.</p> <p>Non-adherence to commercial operations and procedures compromises efficient operations.</p> <p>The use of old-design electromechanical meters at the substations contributes to erratic readings and provides opportunities for corruption.</p>
3.3 Distribution	<p>Diversion of resources away from maintaining substations and distribution lines poses risks from asset deterioration and unreliable electricity supply.</p> <p>Tapping of distribution lines by customers and distribution utility staff undermines equitable access to electricity.</p>
3.4 Supply/Customer Interface	<p>New connection: Undue connection delays provide opportunities for utility staff to ask for bribes to install connections.</p> <p>Meter reading: Meter tampering and broken meter seals pose risks from inaccurate billing of used electricity and provide opportunities for corruption.</p> <p>Payment and correction of bills: A high incidence of billing disputes or bill corrections creates opportunities for bill collectors to extract side payments.</p> <p>Repair service: Poor maintenance of complaints records, undue delay in attending to complaints, and frequent burning of transformers undermine responsive service delivery.</p> <p>Meter installation and replacement: A high volume of complaints regarding quality of service and a high incidence of burnt meters undermine customer satisfaction.</p> <p>Disconnection: A high level of receivables and frequent defaults in bill payments weaken the financial liquidity of the electric utility.</p> <p>Reconnection: A high incidence of deviation from the standards of service compromises speedy reconnection and access to electricity.</p>

DMC = developing member country, IPP = independent power producer.

GLOSSARY

Bribe	Advance payment to an official or staff member in return for a promise to act in a certain way, such as awarding a supply contract to a particular firm or installing a connection within a particular time frame.
Capacity development	Unleashing, strengthening, and maintaining capacity over time. Capacity refers to the ability of people, organizations, and society to manage their affairs.
Collection ratio	Total revenue collected as a percentage of total revenue billed.
Competitive bidding	A selection process based on open and transparent advertisement of an item or service, which ensures that the best bidder wins according to qualifications, value, and other objective criteria.
Conflict of interest	Any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations.
Corruption	The abuse of public or private office for personal gain. Involves behavior on the part of officials in the public and private sectors, in which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed.
Corrupt practice	The offering, giving, receiving, or soliciting, directly or indirectly, anything of value to improperly influence the actions of another party.
Cost recovery	Getting back the cost of providing electricity services through fees or other explicit transfers of funds.
Cross subsidy	Transferring the burden of covering costs from one group of customers to another effectively favoring the latter. Typically, it costs less to serve large customers who draw power at a high voltage, and it costs more to extend grid supply to a few households in remote regions.
Electricity coverage	Total electricity connections as a percentage of the total number of households.
Financial management	A conglomeration of processes including accounting, financial reporting, internal controls, and audit.
Governance	The manner in which power is exercised in the management of a country's economic and social resources for development. It is synonymous with sound development management.
Institutions	Formal and informal rules that govern behavior and shape interactions of groups and organizations. Associated with policy, legal, and regulatory frameworks.

Organization	An entity consisting of structures, systems, and procedures and that is oriented to the pursuit of specified objectives.
Policy	A statement of a set of goals. A declaration of what is to be achieved.
Procurement	The process through which suppliers of goods and services are selected and contracted.
Reliability of the power system	The degree to which the performance of the power system results in power being delivered to customers within accepted standards and in the amount desired.
Reserve margin	Derived by computing the difference between the generating capacity available to serve an area and the expected peak demand, and then dividing this value by the peak demand. For example, if the generating capacity is 39,766 megawatts and the peak demand is 35,180 megawatts, the reserve margin is 13%. A low reserve margin leads to brownouts when availability of generation facilities is low for technical reasons.
Stakeholder	An individual, community, group, or organization with an interest in the outcome of an activity or intervention.
System losses	Refer to electricity that is either lost before it reaches the customer or that never gets billed to any customer. Losses can be technical losses (transmission and distribution losses) or commercial losses, through illegal connections or theft or under-recording of customers' consumption.