CHAPTER 4. UTILITY SERVICES–METHODOLOGY NOTE

I. MOTIVATION

By providing essential services—electricity, water, and digital connectivity—utilities play an important role in supporting economic and social development. Without these services, businesses cannot function, and households cannot lead quality lives. Yet, more than 30 percent of businesses globally identify electricity supply as a major constraint to their operations, according to the World Bank Enterprise Surveys.[1] Disruptions in electricity supply impair firm productivity, revenues, and economic growth.[2] Similarly, inadequate water supply can lead to decreased firm productivity, deterioration of machinery, and reduced profits.[3]

Access to affordable and reliable internet is another critical element in today's digitalized world, where the use of digital technologies improves productivity.[4] However, as of 2021, just over 15 percent of people globally had fixed broadband subscriptions, and only 1.4 percent in the least developed countries.[5] The provision of basic utility services should be effective, affordable, and reliable. Facilitating timely access to such services at a reasonable cost and in an environmentally sustainable manner is instrumental for economic growth.[6]

The effectiveness of regulatory frameworks, good governance, transparency, and operational efficiency of utility services are pivotal elements of a good business environment.[7] An effective regulatory framework, for example, is a fundamental steppingstone for the provision of high-quality utility services. In addition to regulatory effectiveness, the quality, reliability, and sustainability of these services are vital and should be maintained through monitoring the quality of service supply and connection safety;[8] Interoperability through agency coordination and digitalization of utilities can also help improve the quality of public services and the customer experience and reduce the environmental impact by optimizing resource use.

In this context, the Utility Services topic measures the effectiveness of regulatory frameworks, and the quality of governance and transparency of service delivery mechanisms, as well as the operational efficiency of providing electricity, water, and internet services. The measures capture firms' experiences with either public or private utilities. In particular, the topic measures commercial electricity and water connections. For the internet, the topic focuses only on high-speed fixed broadband internet connections, given more intense data usage by firms.

II. INDICATORS

The Utility Services topic measures indicators related to the provision of service connections and the subsequent service supply for three key utilities—electricity, water, and internet—across the three different dimensions, here referred to as pillars. The first pillar assesses the effectiveness of regulation pertaining to electricity, water, and internet services, covering de jure features of a regulatory framework that are necessary for the efficient deployment of connections, reliable service, safety, and environmental sustainability of provision and use of utility services. The second pillar measures the quality of governance and transparency in the provision of utility services, thus assessing the de facto provision of utility services. The third pillar measures the time and cost required to obtain electricity, water, and internet connections and the cost of utility service (operational efficiency), as well as the reliability of utility service supply. Each pillar is divided into categories—defined by common features that inform the grouping into a particular category—and each category is further divided into subcategories. Each subcategory consists of several indicators, each of which may, in turn, consist of several components. Relevant points are assigned to each indicator and subsequently aggregated to obtain the number of points for each subcategory, category, and pillar. Table 1 summarizes all three pillars and their respective categories for the three areas measured: Electricity, Water, and Internet.

Table 1. Summary Table of all Three Pillars for the Utility Services Topic

Pillar I—Quality of Regulations on Utility Services (33 indicators)	
1.1	**Electricity (10 indicators)**
1.1.1	Regulatory Monitoring of Tariffs and Service Quality (2 indicators)
1.1.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms (2 indicators)
1.1.3	Regulations on Safety of Electricity Connections (3 indicators)
1.1.4	Environmental Sustainability (3 indicators)
1.2	**Water (12 indicators)**
1.2.1	Regulatory Monitoring of Tariffs and Service Quality (2 indicators)
1.2.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms (2 indicators)
1.2.3	Regulations on Safety of Water Connections (3 indicators)
1.2.4	Environmental Sustainability (5 indicators)
1.3	**Internet (11 indicators)**
1.3.1	Regulatory Monitoring of Tariffs and Service Quality (2 indicators)
1.3.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms (4 indicators)
1.3.3	Regulations on Safety of Internet Connections (3 indicators)
1.3.4	Environmental Sustainability (2 indicators)
Pillar II—Quality of the Governance and Transparency of Utility Services (43 indicators)	
2.1	**Electricity (15 indicators)**
2.1.1	Digital Services and Interoperability (4 indicators)
2.1.2	Monitoring of Service Supply (includes gender and environment) (3 indicators)
2.1.3	Availability of Information and Transparency (6 indicators)
2.1.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms (2 indicators)
2.2	**Water (15 indicators)**
2.2.1	Digital Services and Interoperability (4 indicators)
2.2.2	Monitoring of Service Supply (includes gender and environment) (3 indicators)
2.2.3	Availability of Information and Transparency (6 indicators)
2.2.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms (2 indicators)
2.3	**Internet (13 indicators)**
2.3.1	Digital Services and Interoperability (4 indicators)
2.3.2	Monitoring of Service Supply (includes gender and environment) (2 indicators)
2.3.3	Availability of Information and Transparency (5 indicators)
2.3.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms (2 indicators)
Pillar III—Operational Efficiency of Utility Service Provision (9 indicators)	
3.1	**Electricity (3 indicators)**
3.1.1	Affordability (1 indicator)
3.1.2	Time to Obtain a Connection (1 indicator)
3.1.3	Reliability of Supply (1 indicator)
3.2	**Water (3 indicators)**
3.2.1	Affordability (1 indicator)
3.2.2	Time to Obtain a Connection (1 indicator)
3.2.3	Reliability of Supply (1 indicator)
3.3	**Internet (3 indicators)**
3.3.1	Affordability (1 indicator)
3.3.2	Time to Obtain a Connection (1 indicator)
3.3.3	Reliability of Supply (1 indicator)

1. PILLAR I. QUALITY OF REGULATIONS ON UTILITY SERVICES

Table 2 shows the structure for Pillar I, Quality of Regulations on Utility Services. Each of this pillar's subcategories will be discussed in more detail as they relate to each of the three areas measured: Electricity, Water, and Internet.

Table 2. Pillar I–Quality of Regulations on Utility Services

1.1	**Electricity**
1.1.1	Regulatory Monitoring of Tariffs and Service Quality
1.1.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms
1.1.3	Regulations on Safety of Electricity Connections
1.1.4	Environmental Sustainability
1.2	**Water**
1.2.1	Regulatory Monitoring of Tariffs and Service Quality
1.2.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms
1.2.3	Regulations on Safety of Water Connections
1.2.4	Environmental Sustainability
1.3	**Internet**
1.3.1	Regulatory Monitoring of Tariffs and Service Quality
1.3.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms
1.3.3	Regulations on Safety of Internet Connections
1.3.4	Environmental Sustainability

Each subcategory is divided into several indicators, each of which may, in turn, have several components.

1.1.1, 1.2.1, 1.3.1 Regulatory Monitoring of Tariffs and Service Quality (Electricity, Water and Internet)

The reliable provision of utility services has been linked to the presence of strong regulatory systems. Regulatory agencies are key to improving sector performance and consumer outcomes, such as quality and affordability.[9] Where regulators work well, they enable the efficient management of electricity, water, and internet services.[10] In particular, setting and reviewing tariffs is central to the protection of consumers and investors. Similarly, developing standards and monitoring the quality of the service supplied is essential to ensuring adequate provision of service.[11] Because competitive market structure across all the digital infrastructure supply chain benefits consumers by lowering prices and raising service quality, regulators should also prevent anticompetitive practices.[12] Therefore, Subcategories 1.1.1, 1.2.1, and 1.3.1–Regulatory Monitoring of Tariffs and Service Quality comprise six indicators: two for Electricity (Subcategory 1.1.1) (table 3), two for Water (Subcategory 1.2.1) (table 4), and two for Internet (Subcategory 1.3.1) (table 5).

Table 3. Subcategory 1.1.1–Regulatory Monitoring of Tariffs and Service Quality (Electricity)

	Indicators	Components
1	Monitoring of Tariffs	Regulator has the final decision-making power in setting/approving tariffs
2	Monitoring of Service Quality	i) Setting standards to ensure the quality of electricity service supply ii) Monitoring standards to ensure the quality of electricity service supply

Table 4. Subcategory 1.2.1–Regulatory Monitoring of Tariffs and Service Quality (Water)

	Indicators	Components
1	Monitoring of Tariffs	Regulator has the final decision-making power in setting/approving tariffs
2	Monitoring of Service Quality	i) Setting standards to ensure the quality of water service supply ii) Monitoring standards to ensure the quality of water service supply

Table 5. Subcategory 1.3.1–Regulatory Monitoring of Tariffs and Service Quality (Internet)

	Indicators	Components
1	Monitoring of Tariffs	i) Monitoring of wholesale connectivity tariffs ii) Monitoring of interconnection agreements iii) Investigations for anticompetitive practices iv) Fines for anticompetitive practices
2	Monitoring of Service Quality	i) Setting standards to ensure the quality of internet service ii) Monitoring standards to ensure the quality of internet service

1.1.2, 1.2.2, 1.3.2 Utility Infrastructure Sharing and Quality Assurance Mechanisms (Electricity, Water, and Internet)

Utility infrastructure—such as poles, ducts, or pipes—tends to be expensive and requires a long time to construct. In this regard, regulations and standards promoting sharing the same infrastructure among different utility providers, including those encouraging common excavation plans or "dig once" policies, enhance interoperability and lessen the time and cost to receive a utility connection. Similarly, time limits for approvals of agencies involved in the utility connection process improve the predictability of administrative processes. [13] Furthermore, regulations that facilitate access to government or privately owned infrastructure result in more efficient and faster broadband network expansion. [14] In addition, regulations that promote infrastructure sharing among telecom connectivity service providers improve broadband affordability and access. [15]

Service interruptions and delays in service restoration are disruptive and costly to businesses as well as local economies. Hence, established mechanisms on quality assurance help protect consumers from inadequate utility service supply and hold utilities accountable, with utilities facing penalties when failing to meet minimum performance standards. [16] Established quality standards coupled with a system of incentives to compel utilities to meet the set standards help ensure the quality of electricity, water, and internet service provision. [17] Therefore, Subcategories 1.1.2, 1.2.2, and 1.3.2–Utility Infrastructure Sharing and Quality Assurance Mechanisms comprise eight indicators: two for Electricity (Subcategory 1.1.2) (table 6), two for Water (Subcategory 1.2.2) (table 7), and four for Internet (Subcategory 1.3.2) (table 8).

Table 6. Subcategory 1.1.2–Utility Infrastructure Sharing and Quality Assurance Mechanisms (Electricity)

	Indicators	Components
1	Joint Planning and Construction	i) Provisions on adherence to common excavation plans or "dig once" policies ii) Timelines for approval processes
2	Mechanisms on Service Quality Assurance	Existence in the regulatory framework of sanctions and/or remedies such as compensations or penalties paid by service provider to discourage supply disruption

Table 7. Subcategory 1.2.2–Utility Infrastructure Sharing and Quality Assurance Mechanisms (Water)

	Indicators	Components
1	Joint Planning and Construction	i) Provisions on adherence to common excavation plans or "dig once" policies ii) Timelines for approval processes
2	Mechanisms on Service Quality Assurance	Existence in the regulatory framework of sanctions and/or remedies such as compensations or penalties paid by service provider to discourage supply disruption

Table 8. Subcategory 1.3.2–Utility Infrastructure Sharing and Quality Assurance Mechanisms (Internet)

	Indicators	Components
1	Joint Planning and Construction	i) Provisions on adherence to common excavation plans or "dig once" policies ii) Timelines for approval processes
2	Rights of Way	i) Regulations on equal access to government-owned infrastructure ii) Regulations on rights of way for digital infrastructure service providers
3	Open Infrastructure	i) Passive or active infrastructure sharing between broadband operators ii) Utility partnerships for infrastructure sharing (such as leasing excess capacity of fiber optic infrastructure or other voluntary market arrangements) iii) Local loop unbundling and line access iv) Asymmetric regulations for dominant carriers, such as price-caps or rate-of-return regulations and remedial actions if negotiated solutions are not reached
4	Mechanisms on Service Quality Assurance	Existence in the regulatory framework of financial deterrence mechanisms such as compensations or penalties paid by service provider to discourage supply disruption

1.1.3, 1.2.3, 1.3.3 Regulations on Safety of Utility Connections (Electricity, Water, and Internet)
Professional certification reduces uncertainty and sets minimum quality standards.[18] A robust system of qualification and licensing for professionals involved in construction is important to ensure a higher degree of compliance with codes and regulations.[19] Similarly, in the electricity sector, the importance of engineer qualifications to protect public health, welfare, and safety is well recognized.[20] It is crucial to ensure that electricity connections and installation of water supply pipes comply with regulations, as failure to adhere to the set processes can result in public health hazards.[21]

Inspections can certify that installations are compliant with safety and quality standards.[22] Construction defects can be expensive to repair, and they can cause investor uncertainty.

Sound liability policies facilitate more transparent agreements that reflect responsibilities and attributions among the involved parties.[23] Clear and transparent liability regimes provide assurance that risks will be managed, adequately remediated, and compensated in case of an accident.[24] Internet liability regimes that mandate safeguards to prevent personal data protection breaches are vital elements for creating an enabling environment for digital transactions with limited cyber vulnerabilities.[25]

Broadband connections do not generally pose physical safety risks analogous to water and electricity connections. The adoption and use of digital technologies by firms, however, does depend on the reliability of a digital ecosystem. This is made possible through regulatory oversight, effective security measures, and robust state capacity to respond to cyberthreats. For this reason, cybersecurity safeguards and capabilities are needed to protect online data and communications as well as to ensure network resilience.[26]

Therefore, Subcategories 1.1.3, 1.2.3, and 1.3.3–Safety of Utility Connections comprise nine indicators: three for Electricity (Subcategory 1.1.3) (table 9), three for Water (Subcategory 1.2.3) (table 10), and four for Internet (Subcategory 1.3.3) (table 11).

Table 9. Subcategory 1.1.3–Regulations on Safety of Electricity Connections

	Indicators	Components
1	Professional Certifications	A combination of the requirements (two or more) to ensure professional qualification of practitioners performing installations is assessed.
2	Inspection Regimes	i) Internal installation works ii) External installation works are of adequate quality and comply with the regulation *For each of these two components, the indicators assess whether there is either a requirement for the connection works to be carried out by certified contractors who attest to the quality of internal and external installations or a legal obligation to conduct a third-party inspection*
3	Liability Regimes	Liability of the parties besides investors (such as engineer/company that designed the plans for the connection professional or agency that conducted technical inspections; or the professional or company that performed installation works) in cases of faults discovered when the connection was in use

Table 10. Subcategory 1.2.3–Regulations on Safety of Water Connections

	Indicators	Components
1	Professional Certifications	A combination of the requirements (two or more) to ensure professional qualification of practitioners performing installations is assessed.
2	Inspection Regimes	i) Internal installation works ii) External installation works are of adequate quality and comply with the regulation *For each of these two components, the indicators assess whether there is either a requirement for the connection works to be carried out by certified contractors who attest to the quality of internal and external installations or a legal obligation to conduct a third-party inspection*

3	Liability Regimes	Liability of the parties besides investors (such as engineer/company that designed the plans for the connection professional or agency that conducted technical inspections; or the professional or company that performed installation works) in cases of faults discovered when the connection was in use

Table 11. Subcategory 1.3.3–Regulations on Safety of Internet Connections

	Indicators	Components
1	Liability Regimes	i) Liability and a legal right to pursue compensation for personal data protection breaches ii) Provisions on data breach incident reporting
2	Cybersecurity Coordination	i) Carrying out risk-assessment strategies ii) Carrying out cybersecurity audits, drills, exercises, or trainings iii) Leading collective efforts against cyber threats iv) Enforcing cybersecurity laws and regulations
3	Cybersecurity Safeguards	i) Cybersecurity protection or minimum standards and safeguards ii) Computer Security Incident Response Teams

1.1.4, 1.2.4, 1.3.4 Environmental Sustainability (Electricity, Water, and Internet)

Power generation is a major source of air pollution; hence, it is imperative to reduce the levels of pollutants from the combustion of fossil fuels that are released into the atmosphere.[27] Similarly, doubling the global rate of energy efficiency has been established as a key target by the United Nations 2030 Sustainable Development Agenda sustainable development.[28] Standards for sustainable transmission and distribution, including smart meter roll-out programs and smart grid technologies, can facilitate efficient operation of network systems, minimizing costs and environmental impact.[29] Requirements to switch to energy-efficient appliances, and to use energy-efficiency labelling fortify sustainable practices.[30] In turn, enforcement and deterrence mechanisms ensure compliance with the set standards, while financial and nonfinancial incentives increase adoption rates of energy efficiency practices.[31]

Improving water quality, increasing water-use efficiency and safe water reuse are imperative to sustainable development.[32] Efficient water supply and use may be achieved, inter alia, through smart meters that allow to rapidly identify and repair water leakages. Water demand management practices include measures to promote the use of water-efficient appliances, including through labeling programs.[33] Enforcement and deterrence mechanisms ensure compliance with these standards. Furthermore, financial incentives, such as tax credits or subsidized interest rates, and nonfinancial incentives, such as awareness raising initiatives, facilitate adherence to water-saving practices and adoption of water-efficient technologies.[34] Further, before being discharged to surface waters or land, wastewater should be isolated and treated. To this end, wastewater treatment requirements, such as the minimum type of treatment to be provided and maximum emission limits, are of paramount importance. In addition, legal wastewater management frameworks should be administered by a central authority, promoting an integrated approach to permitting for wastewater discharge.[35] Recognizing wastewater as a resource, it should be reused and recycled whenever possible.[36]

The information and communication technology (ICT) sector is a large consumer of energy and is responsible for approximately 2.8 percent of global greenhouse gases.[37] Although environmental sustainability of provision of Internet services in most jurisdictions is still underregulated, the sector is under increasing pressure to adopt energy efficiency standards. The most energy-intensive subsectors that enable Internet traffic are already adopting internationally recognized standards to offset carbon emissions.

Therefore, Subcategories 1.1.4, 1.2.4, and 1.3.4–Environmental Sustainability comprise ten indicators: three for Electricity (Subcategory 1.1.4) (table 12), five for Water (Subcategory 1.2.4) (table 13), and two for Internet (Subcategory 1.3.4) (table 14).

Table 12. Subcategory 1.1.4–Environmental Sustainability (Electricity)

	Indicators	Components
1	Environmental Sustainability of Electricity Provision	i) Environmental standards for electricity generation ii) Enforcement of environmental standards for electricity generation iii) Environmental standards for electricity transmission and distribution iv) Enforcement of standards for electricity transmission and distribution
2	Environmental Sustainability of Electricity Use	i) Requirements for businesses to adhere to energy-saving practices ii) Enforcement mechanisms to foster businesses' compliance with energy-saving standards
3	Incentives to Adopt Energy-Saving Practices	Financial and nonfinancial incentives for businesses to adopt energy-saving practices

Table 13. Subcategory 1.2.4–Environmental Sustainability (Water)

	Indicators	Components
1	Environmental Sustainability and Quality of Water Provision	i) Standards for water quality ii) Enforcement of standards for water quality iii) Environmental standards for efficient water supply iv) Enforcement standards for water supply efficiency
2	Environmental Sustainability of Water Use	i) Requirements for businesses to adhere to water-saving practices ii) Enforcement mechanism to foster businesses' compliance with water-saving standards
3	Incentives to Adopt Water-Saving Practices	i) Financial incentives for businesses to adopt water-saving practices ii) Nonfinancial incentives for businesses to adopt water-saving practices
4	Sustainability of Wastewater Treatment	i) Existence of entity regulating wastewater discharge ii) Wastewater treatment standards that require to isolate wastewater
5	Wastewater Reuse	Regulation on wastewater reuse, such as guidelines for the use of reclaimed water, effluent quality limits and treatment process/type

Table 14. Subcategory 1.3.4–Environmental Sustainability (Internet)

	Indicators	Components
1	Environmental Reporting or Disclosure Standards for Digital Connectivity Infrastructure	Mandatory or voluntary environmental reporting or disclosure standards for digital connectivity infrastructure and data infrastructure
2	Emissions and Energy Efficiency of Infrastructure	National targets for emissions or energy efficiency of electronic communication networks, including data centers

2. PILLAR II. QUALITY OF THE GOVERNANCE AND TRANSPARENCY OF UTILITY SERVICES

Table 15 shows the structure for Pillar II, the Quality of the Governance and Transparency of Utility Services. Each of this pillar's subcategories will be discussed in more detail as they relate to each of the three areas measured: Electricity, Water, and Internet.

Table 15. Pillar II–Quality of the Governance and Transparency of Utility Services

2.1	**Electricity (15 indicators)**
2.1.1	Digital Services and Interoperability (4 indicators)
2.1.2	Monitoring of Service Supply (includes gender and environment) (3 indicators)
2.1.3	Availability of Information and Transparency (6 indicators)
2.1.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms (2 indicators)
2.2	**Water (15 indicators)**
2.2.1	Digital Services and Interoperability (4 indicators)
2.2.2	Monitoring of Service Supply (includes gender and environment) (3 indicators)
2.2.3	Availability of Information and Transparency (6 indicators)
2.2.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms (2 indicators)
2.3	**Internet (13 indicators)**
2.3.1	Digital Services and Interoperability (4 indicators)

2.3.2	Monitoring of Service Supply (includes gender and environment) (2 indicators)
2.3.3	Availability of Information and Transparency (5 indicators)
2.3.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms (2 indicators)

Each subcategory is divided into several indicators, each of which may, in turn, have several components.

2.1.1, 2.2.1, 2.3.1 Digital Services and Interoperability (Electricity, Water, and Internet)
Online applications for utility services enhance customer experience of receiving electricity, water, and internet connections, eliminating the need for in-person visits. The ability to track and review online applications also improves service quality, transparency, and customer experience. Digitalization of utility applications improves public administration and government efficiency as well as lowers corruption.[38] Web-based platforms for making online payments for utility services enhance efficiency and cost-effectiveness. Digital platforms also reduce delays associated with applying for new connections and payment of monthly fees.[39]

Interoperability of utility systems facilitates the process of issuing new connections across electricity, water, and internet services. A shared infrastructure database allows for identification of previously established infrastructure networks prior to starting new projects.[40] In addition, an online unified platform with information about planned infrastructure works is essential for effective coordination of network expansion.[41] The presence of a web-based system or agency to facilitate agency coordination for excavation permit applications and approvals expedites information exchange and connection processes.[42]

Therefore, Subcategories 2.1.1, 2.2.1, and 2.3.1–Digital Services and Interoperability comprise twelve indicators: four for Electricity (Subcategory 2.1.1) (table 16), four for Water (Subcategory 2.2.1) (table 17), and four for Internet (Subcategory 2.3.1) (table 18).

Table 16. Subcategory 2.1.1–Digital Services and Interoperability (Electricity)

	Indicators	Components
1	Electronic Application	i) The availability of online application for new commercial connections ii) The availability of online tracking of the applications
2	Electronic Payment	i) The possibility of paying online the fee for a new connection ii) The possibility of paying online for monthly tariffs
3	Information on Existing Infrastructure and Planned Works	i) The existence of a national/local infrastructure databases of existing infrastructure networks (such as "dial before you dig" or GIS) of different utilities ii) A database for submitting the information about the planned works
4	Coordination Mechanisms for Excavation Permits	The existence of a web-based system or the agency in place that facilitates coordination for excavation permit applications and approvals

Note: GIS = Geographic Information System.

Table 17. Subcategory 2.2.1–Digital Services and Interoperability (Water)

	Indicators	Components
1	Electronic Application	i) The availability of online application for new commercial connections ii) The availability of online tracking of the applications
2	Electronic Payment	i) The possibility of paying online the fee for a new connection ii) The possibility of paying online for monthly tariffs
3	Information on Existing Infrastructure and Planned Works	i) The existence of a local infrastructure databases of existing infrastructure networks (such as "dial before you dig" or GIS) of different utilities ii) A database for submitting the information about the planned works
4	Coordination Mechanisms for Excavation Permits	The existence of a web-based system or the agency in place that facilitates coordination for excavation permit applications and approvals

Note: GIS = Geographic Information System.

Table 18. Subcategory 2.3.1–Digital Services and Interoperability (Internet)

	Indicators	Components
1	Electronic Application	i) The availability of online application for new commercial connections ii) The availability of online tracking of the applications
2	Electronic Payment	i) The possibility of paying online the fee for a new connection ii) The possibility of paying online for monthly tariffs
3	Information on Existing Infrastructure and Planned Works	i) The existence of a national/local infrastructure databases of existing infrastructure networks (such as "dial before you dig" or GIS) of different utilities ii) A database for submitting the information about the planned works
4	Coordination Mechanisms for Excavation Permits	The existence of a web-based system or the agency in place that facilitates coordination for excavation permit applications and approvals

Note: GIS = Geographic Information System.

2.1.2, 2.2.2, 2.3.2 Monitoring of Service Supply (includes gender and environment) (Electricity, Water, and Internet)

Measuring data on quality of provision of public services helps to establish "what works" in achieving the set objectives, to identify functional competences, and to enhance public accountability.[43] Reliability of electricity supply can be monitored through the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI).[44] Reliability of water supply can be monitored by measuring average hours of service per day or number of customers with interrupted supply.[45] Water quality can be maintained through regular monitoring of percentage of water receiving chemical treatment as well as percentage of water unsuitable for consumption.[46] Quality of the internet supply can be monitored through average download and upload speeds or latency times.[47]

Environmental sustainability of electricity supply can be monitored through a percentage of energy used from renewable sources. Environmental sustainability of water supply can be assessed through monitoring the percentage of disposal of sludge from the water treatment or percentage of wastewater that has been reused, amongst others.[48]

Sex-disaggregated data promote gender parity, allowing service providers to identify areas where opportunities for women lag behind.[49] Sex-disaggregated customer survey results enable utilities to analyze issues of customer satisfaction from a gender-specific perspective, identifying potential bottlenecks and obstacles faced by female customers or women entrepreneurs.[50] Therefore, Subcategories 2.1.2, 2.2.2, and 2.3.2–Monitoring of Service Supply (includes gender and environment) comprise eight indicators: three for Electricity (Subcategory 2.1.2) (table 19), three for Water (Subcategory 2.2.2) (table 20), and two for Internet (Subcategory 2.3.2) (table 21).

Table 19. Subcategory 2.1.2–Monitoring of Service Supply (includes gender and environment) (Electricity)

	Indicators	Components
1	Reliability and Quality of Electricity Supply	Monitoring of the duration and frequency of electricity outage
2	Environmental Sustainability of Electricity Supply	Existence of KPIs on sustainability of electricity supply
3	Access to Electricity for Women Entrepreneurs	Sex-disaggregated customer survey results, including consumer satisfaction surveys, and complaint submissions

Note: KPI = Key Performance Indicator.

Table 20. Subcategory 2.2.2–Monitoring of Service Supply (includes gender and environment) (Water)

	Indicators	Components

1	Reliability and Quality of Water Supply	i) Monitoring of the reliability of water supply ii) Monitoring of the parameters on the quality of water
2	Environmental Sustainability of Water Supply	Existence of KPIs on sustainability of water supply
3	Access to Water for Women Entrepreneurs	Sex-disaggregated customer survey results, including consumer satisfaction surveys, and complaint submissions

Note: KPI = Key Performance Indicator.

Table 21. Subcategory 2.3.2–Monitoring of Service Supply (includes gender and environment) (Internet)

	Indicators	Components
1	Reliability and Quality of Internet Supply	Existence of KPIs on the reliability and quality of internet service
2	Access to Internet for Women Entrepreneurs	Sex-disaggregated customer survey results, including consumer satisfaction surveys, and complaint submissions

Note: KPI = Key Performance Indicator.

2.1.3, 2.2.3, 2.3.3 Availability of Information and Transparency (Electricity, Water, and Internet)

Transparency in the provision of utility services is crucial for reducing transaction costs and improving predictability to users, as well as fostering accountability among utility service providers.[51] Online information on documents, requirements, time limits, and fee schedules to obtain a utility connection allows businesses to better understand the processes. Lack of such information may lead to incomplete applications, unnecessary back-and-forth with the utility, and higher rejection rates. Transparency of regulatory information, such as fee schedules, is associated with greater regulatory efficiency, lower compliance costs, and a better overall regulatory environment.[52]

Online availability of tariffs, advance notification of tariff changes, and transparency of tariff determination mechanisms are three important elements of transparent service provision that allow firms to calculate costs, anticipate expenses, and, thus, plan operations efficiently. When tariffs and tariff changes lack transparency, end users may overpay for services or choose a service that does not meet their needs.[53] Furthermore, transparency of the billing system and formula prescribing how end-user tariffs are set enable businesses to contest charges, if necessary.[54]

Public availability of planned outages or their notifications to customers improves predictability of service provision.[55] Internet interruptions adversely impact both businesses and customers.[56] Similarly, unpredictable electricity and water services may lead to spoilage and damaged inventory, thereby posing financial risks to business.[57] Transparency of planned outages contributes to a more predictable business environment. Availability of information on the entity in charge of managing complaints, documents and steps required to file a complaint, as well as criteria for filing complaints, are important accountability elements.[58]

Furthermore, regular monitoring and publishing of utility performance KPIs improves service predictability and transparency.[59] End users should be able to compare a utility's actual performance against the performance goals set in its accountability framework.[60] Therefore, Subcategories 2.1.3, 2.2.3, and 2.3.3–Availability of Information and Transparency comprise seventeen indicators: six for Electricity (Subcategory 2.1.3) (table 22), six for Water (Subcategory 2.2.3) (table 23), and five for Internet (Subcategory 2.3.3) (table 24).

Table 22. Subcategory 2.1.3–Availability of Information and Transparency (Electricity)

	Indicators	Components
1	Connection Requirements	i) The required documents ii) Procedures

		iii) Connection cost iv) Stipulated connection time standards
2	Tariffs and Tariff Setting	i) Tariffs are published online ii) Customers are notified in advance of tariff changes at least one bulling cycle in advance iii) Tariff-setting formula calculating the monthly tariff is publicly available
3	Planned Outages	Planned outages are available online or communicated to customers
4	Complaint Mechanisms	i) Entity in charge of managing the complaints ii) Required documents iii) Steps necessary to make a complaint iv) Criteria or scope of complaint mechanism
5	Service Quality Indicators	Online availability of KPIs on duration and frequency of electricity outages
6	Environmental Sustainability Indicators	Online availability of KPIs on environmental sustainability of electricity

Note: KPI = Key Performance Indicator.

Table 23. Subcategory 2.2.3–Availability of Information and Transparency (Water)

	Indicators	Components
1	Connection Requirements	i) The required documents ii) Procedures iii) Connection cost iv) Stipulated connection time standards
2	Tariffs and Tariff Setting	i) Tariffs are published online ii) Customers are notified in advance of tariff changes at least one bulling cycle in advance iii) Tariff-setting formula calculating the monthly tariff is publicly available
3	Planned Outages	Planned outages are available online or communicated to customers
4	Complaint Mechanisms	i) Entity in charge of managing the complaints ii) Required documents iii) Steps necessary to make a complaint iv) Criteria or scope of complaint mechanism
5	Service Quality Indicators	Online availability of indicators on reliability and quality of water services.
6	Environmental Sustainability Indicators	Online availability of KPIs on environmental sustainability of water supply

Note: KPI = Key Performance Indicator.

Table 24. Subcategory 2.3.3–Availability of Information and Transparency (Internet)

	Indicators	Components
1	Connection Requirements	i) The required documents ii) Procedures iii) Connection cost iv) Stipulated connection time standards
2	Tariffs and Tariff Setting	i) Tariffs are published online ii) Customers are notified in advance of tariff changes at least one bulling cycle in advance iii) Tariff-setting formula calculating the monthly tariff is publicly available.
3	Planned Outages	Planned outages are available online or communicated to customers
4	Complaint Mechanisms	i) Entity in charge of managing the complaints ii) Required documents iii) Steps necessary to make a complaint iv) Criteria or scope of complaint mechanism
5	Service Quality Indicators	Online availability of KPIs on reliability and quality of Internet supply

Note: KPI = Key Performance Indicator.

2.1.4, 2.2.4, 2.3.4 Enforcement of Safety Regulations and Consumer Protection Mechanisms (Electricity, Water, and Internet)

The way in which regulations are implemented and enforced determines if a regulatory system is working as intended.[61] To ensure safety of utility connections as per the regulatory framework, quality checks that certify electricity and water installations must be implemented in practice, either through third-party

inspections or by hiring certified contractors. Similarly, implementation of cybersecurity measures and safeguards is necessary for firms to safely undertake digital activities and e-transactions. Given that even brief security breaches can negatively affect businesses, there is a clear need for strong safety measures.[62]

Furthermore, existence of an independent complaint mechanism contributes to the enforcement of regulations, benefiting businesses by allowing them to report inadequate service supply and escalate complaints and appeals.[63] In addition, it benefits businesses by allowing them to report inadequate service supply. A strong complaint mechanism enables resolution of issues without engaging in costly and lengthy dispute resolution processes. Having an independent complaint mechanism is also important for escalating complaints and appeals if needed. Therefore, Subcategories 2.1.4, 2.2.4, and 2.3.4–Enforcement of Safety Regulations and Consumer Protection Mechanisms comprise six indicators: two for Electricity (Subcategory 2.1.4) (table 25), two for Water (Subcategory 2.2.4) (table 26), and two for Internet (Subcategory 2.3.4) (table 27).

Table 25. Subcategory 2.1.4–Enforcement of Safety Regulations and Consumer Protection Mechanisms (Electricity)

	Indicators	Components
1	Implementation of Inspections for Electricity Connections	i) Internal installations works ii) External installations works *For each of these two components, the indicator assesses whether the connection works are carried out by certified contractors who attest to the quality of installation or if a third-party inspection is implemented in practice*
2	Independent Complaint Mechanism	The existence of complaint mechanism independent from the utility to escalate complaints

Table 26. Subcategory 2.2.4–Enforcement of Safety Regulations and Consumer Protection Mechanisms (Water)

	Indicators	Components
1	Implementation of Inspections for Water Connections	i) Internal installations works ii) External installations works *For each of these two components, the indicator assesses whether the connection works are carried out by certified contractors who attest to the quality of installation or if a third-party inspection is implemented in practice*
2	Independent Complaint Mechanism	The existence of complaint mechanism independent from the utility to escalate complaints

Table 27. Subcategory 2.3.4–Enforcement of Safety Regulations and Consumer Protection Mechanisms (Internet)

	Indicators	Components
1	Cybersecurity Protocols	i) Reporting of cybersecurity breaches ii) Response to reported cyberattacks or cybersecurity breaches iii) Cybersecurity incident response drills, trainings, or exercise iv) Cybersecurity audits
2	Independent Complaint Mechanism	The existence of complaint mechanism independent from the utility to escalate complaints

3. PILLAR III. OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION

Table 14 shows the structure for Pillar III, the Operational Efficiency of Utility Service Provision. Each of this pillar's subcategories will be discussed in more detail as they relate to each of the three areas measured: Electricity, Water, and Internet.

Table 28. Pillar III–Operational Efficiency of Utility Service Provision

3. 1	Electricity
3.1.1	Affordability

3.1.2	Time to Obtain a Connection
3.1.3	Reliability of Supply
3.2	**Water**
3.2.1	Affordability
3.2.2	Time to Obtain a Connection
3.2.3	Reliability of Supply
3.3	**Internet**
3.3.1	Affordability
3.3.2	Time to Obtain a Connection
3.3.3	Reliability of Supply

3.1.1, 3.2.1, 3.3.1 Affordability (Electricity, Water, and Internet)

Expensive processes of obtaining utility connections and tariffs are burdensome and can impact firms. High service commissions, contribution charges, taxes, and costly monthly bills discourage applicants from obtaining utility connections and cost-efficient utility services.[64] By contrast, a less expensive utility connection process is associated with better firm performance, particularly in industries with high electricity needs.[65] For instance, energy tariffs affect firms' productivity and consumption levels.[66] In addition, the efficient pricing of energy tariffs impacts firms' investment decisions, which can reduce environmental footprint and improve social welfare.[67] Moreover, in today's digital age, the internet is a fundamental resource for conducting business, and lower internet costs can significantly reduce operating costs, allowing businesses to allocate resources to other growth-oriented initiatives.[68] Therefore, Subcategories 3.1.1, 3.2.1, and 3.3.1–Affordability comprise three indicators, one for each of the Electricity (Subcategory 3.1.1) (table 29), Water (Subcategory 3.2.1) (table 30), and Internet (Subcategory 3.3.1) (table 31).

Table 29. Subcategory 3.1.1–Affordability (Electricity)

	Indicators	Components
1	Cost of Connection and Cost of Service (Electricity)	i) The cost to obtain a new connection ii) Monthly cost of utility service

Table 30. Subcategory 3.2.1–Affordability (Water)

	Indicators	Components
1	Cost of Connection and Cost of Service (Water)	i) The cost to obtain a new connection ii) Monthly cost of utility service

Table 31. Subcategory 3.3.1–Affordability (Internet)

	Indicators	Components
1	Cost of Connection and Cost of Service (Internet)	i) The cost to obtain a new connection ii) Monthly cost of utility service

3.1.2, 3.2.2, 3.3.2 Time to Obtain a Connection (Electricity, Water, and Internet)

It is important for businesses to receive utility services in a timely manner to jumpstart their operations or productions. Delays in obtaining permits could lead to higher transaction costs and fewer connections.[69] A straightforward process that requires less time to receive an electricity connection positively impacts firm revenues, lowers connection rates, and limits bribes.[70] Therefore, Subcategories 3.1.2, 3.2.2, and 3.3.2–Time to Obtain a Connection comprise three indicators, one for each of the Electricity (Subcategory 3.1.2) (table 32), Water (Subcategory 3.2.2) (table 33), and Internet (Subcategory 3.3.2) (table 34).

Table 32. Subcategory 3.1.2–Time to Obtain a Connection (Electricity)

	Indicators	Components
1	Time to Obtain an Electricity Connection	The period in calendar days between the completed and submitted application and the connection provision

Table 33. Subcategory 3.2.2–Time to Obtain a Connection (Water)

	Indicators	Components
1	Time to Obtain a Water Connection	The period in calendar days between the completed and submitted application and the connection provision

Table 34. Subcategory 3.3.2–Time to Obtain a Connection (Internet)

	Indicators	Components
1	Time to Obtain an Internet Connection	The period in calendar days between the completed and submitted application and the connection provision

3.1.3, 3.2.3, 3.3.3 Reliability of Supply (Electricity, Water, and Internet)

Economies that do not monitor electricity outages tend to experience high instances of electricity interruptions.[71] Reliability of utility services also impacts end-user behavior. Reliable electricity services enable predictable production processes and business planning as well as boost firms' productivity.[72] Similarly, reliable water services benefit a wide range of firms as they depend on a steady water supply for heating, cooling, cleaning, or using water as production input.[73] Quality of Internet services is another critical element for businesses. Service disruptions, as well as other issues, such as high latency, throughput, jitter, or recovery times, lead to firms losing a competitive edge in their industries. Interruptions of Internet supply also impede firms' ability to expand customer base, use data-intensive applications, or engage with clients and suppliers.[74] Therefore, Subcategories 3.1.3, 3.2.3, and 3.3.3–Reliability of Utility Services comprise three indicators, one for each of the Electricity (Subcategory 3.1.3) (table 35), Water (Subcategory 3.2.3) (table 36), and Internet (Subcategory 3.3.3) (table 37).

Table 35. Subcategory 3.1.3–Reliability of Supply (Electricity)

	Indicators	Components
1	Reliability of Electricity Supply	i) Number of power outages experienced by firms in a typical month ii) Average duration of outages iii) Losses due to electrical outages as a percentage of annual sales iv) Percentage of firms owning or sharing a generator

Table 36. Subcategory 3.2.3–Reliability of Supply (Water)

	Indicators	Components
1	Reliability of Water Supply	Percentage of firms not experiencing water insufficiencies

Table 37. Subcategory 3.3.3–Reliability of Supply (Internet)

	Indicators	Components
1	Reliability of Internet Supply	Percentage of firms not experiencing internet disruptions

III. DATA SOURCES

4.1 Data Collection Sources

The data for Pillar I and Pillar II are collected through consultations with private-sector experts. Private sector experts include lawyers working in the areas of Electricity, Water, and Internet, as well as practitioners, such as construction companies, contractors, engineers, energy and water specialists, broadband technicians, network architects, and engineers. In Pillar III, affordability data are collected through consultations with private sector experts, while data on the time to obtain a connection and on the reliability of supply are collected through Enterprise Surveys. Enterprise Surveys provide representative data on time to receive utility connections, on service disruptions and associated losses experienced by businesses in practice. A representative sample of companies captures variation of user experience within each economy. Businesses with different characteristics, such as size, region, and sector participate in the surveys. For more details on the collection of data by the Enterprise Surveys, please refer to the Overview

chapter of this Methodology Handbook. For Pillar III, for indicators whose data are collected through consultations with private sector experts, broad parameters are defined (described in section IV) to ensure data comparability across economies.

4.2 Screening and Selection of Experts

The Utility Services topic has three questionnaires, one for each utility: Electricity, Water, and Internet. Each questionnaire targets experts in their respective areas of expertise. A screener questionnaire is used to assist the selection of experts receiving the Utility Services topic questionnaires based on a set of criteria (table 38).

Table 38. Screener Questionnaire and Respondent Criteria

Relevant Experts' Professions	
Electricity	Construction companies, contractors, engineers, lawyers, academia (professors, lecturers and/or researchers), energy consultants, policy analysts, management and strategy consultants, etc.
Water	Construction companies, contractors, engineers, lawyers, academia (professors, lecturers and/or researchers), water specialists, policy analysts, management and strategy consultants, etc.
Internet	Broadband technicians, network architects, network engineers, information technology project managers, software development, IT directors/managers, help desk/hardware technicians, ICT policy experts, lawyers, academia (professors, lecturers and/or researchers), regulatory compliance specialists, policy analysts, management and strategy consultants, etc.
Relevant Areas of Specialization	
Electricity	Civil engineering, construction contracting, electrical engineering, electrical installations, energy and environmental policy, environment/energy transition / sustainable and clean energy, electricity/energy consulting, construction / environmental / energy law
Water	Civil engineering, construction contracting, chemical engineering, water installations, sanitary or environmental engineering, water resources management, regulation of water and wastewater services, water and wastewater infrastructure projects, construction / environmental law
Internet	Telecommunication engineering, broadband installations, IT systems administration, IT security/cybersecurity, IT hardware maintenance and administration, Web/software developing, network design/infrastructure, digital transformation/digital economy, ICT Policy/Advocacy, ICT law/regulatory compliance (infrastructure- investment/ownership/licensing), ICT law/regulatory compliance (commercial disputes/regulator disputes), ICT law/regulatory compliance (cybersecurity/liability/data protection and privacy/consumer protection/ cross-border data flows/digital commerce law), digital trade policy
Assessment of Experts' Knowledge and Experience Related to Commercial Electricity, Water and Internet Connections and Associated Regulations, Services, and Processes	
Electricity	Experience with submitting applications for electricity connections to the utility, carrying out electricity installation in new commercial buildings, submitting payment for electricity services, carrying out inspections of electricity connections; knowledge of commercial electricity tariffs; engagement with complaint mechanism for electricity services; knowledge of the regulations governing inspections for electricity connections, the regulations on quality of electricity supply, as well as the environmental standards related to electricity provision and use
Water	Experience with submitting applications for water connections to the utility, carrying out water installations in new commercial buildings, submitting payment for water services, carrying out inspections of water connections; knowledge of commercial water tariffs; engagement with complaint mechanism for water services, knowledge of the regulations governing inspections for water connections, and the regulations on quality of water supply and safety of water connection, as well as the environmental standards related to water provision and wastewater
Internet	Experience with broadband installation to new buildings, network maintenance and management, quality of service monitoring and network traffic analysis, quality of service complaints and resolution, energy-efficient networking and environmental standards related to provision of internet services, cybersecurity management and analytics, cybersecurity policy and compliance, invoice management and payments for broadband services, negotiation of contracts for new broadband connection agreements, negotiation of contracts for new broadband infrastructure agreements (spectrum, rights of way management, infrastructure sharing, utility partnership or interconnection agreements), broadband competition, compensation or consumer complaint disputes, digital trade

Note: ICT = Information and Communication Technology; IT = Information Technology.

Thus, the information provided in the screener questionnaires allows the team to better understand the experts' professions, areas of expertise related to commercial Electricity, Water, and Internet connections and related regulations, services, and processes.

IV. PARAMETERS

To ensure comparability of the data from expert consultations across economies, the Utility Services topic uses general and specific parameters. A parameter refers to an assumption about the characteristics of location, utility provider, and the specific characteristics of utility connection and service. Questionnaire respondents are presented with these parameters and assumptions and asked to evaluate a standardized scenario that permits comparability across locales, jurisdictions, and economies.

5.1 General Parameters

Electricity, Water, and Internet connections employ the same general parameter. In many economies, there are subnational jurisdictions that require a specific business location to be specified in order for experts to identify the relevant regulatory framework to be assessed.

5.1.1 Business Location

Justification:

Geographic location determines the availability of electricity, water, and internet connections, in addition to the type of connections and construction required. Different locations often have distinct infrastructure setups, regulatory frameworks, and resource availability, which impact the process and feasibility of obtaining utility services. For instance, geographic location determines the type of electricity connection: overhead versus underground, as well as the level of voltage (connection to high-, medium-, or low-voltage network). In the case of water connections, availability of a piped network depends on the location. For the internet, deployment of specific technologies and, ultimately, availability of high-speed internet also depend on location. These factors may affect the affordability or feasibility of utility services and the time and cost required to obtain new connections. Thus, business location is an essential parameter for assessing efficiency of utility service provision. The largest city is chosen based on the population size as detailed in the Overview chapter of this Methodology Handbook. This approach ensures that the assessment reflects the most common and impactful scenarios within an economy.

Application:

For Pillar I, the parameter is used in cases where regulations are not applicable at a national level, varying across states or regions. For the economies where regulations differ across states, regulations for the largest city are measured. For Pillar II, the parameter is used to determine the relevant utility service provider and is important for identifying a geographical area of provision of utility services. For Pillar III, the parameter is used to determine the complexity of the connection process as well as the associated costs.

5.2 Specific Parameters

Utility Services employs eight specific parameters. Many economies have multiple utility providers, and the assessment of the performance of utility service provision requires identifying the relevant provider. Therefore, to ensure accurate and relevant assessments, it is essential to establish consistent parameters across service providers. Utility-specific parameters are also necessary to ensure that estimates specific to the connection, such as information on the cost to obtain utility connections provided by experts, are comparable across economies. Utility connections can vary widely depending on the type, usage, or size of the connection. In order to specify the type of connection that the dataset intends to capture, parameters of

load capacity, electricity; water consumption, length of connection, pipe diameter; and download/upload speed are designed for electricity, water, and internet connections, respectively.

5.2.1 Utility–Largest Utility Provider

Justification:

In some cities, there could be one or several utility providers. The Utility Services topic aims to capture the most common practice; hence, the largest utility provider in the largest city is considered (in terms of customers served or market share). In the case of internet connections, amid a competitive market of Internet Service Providers (ISPs), the largest ISP (in terms of market share in the largest city) that offers high-speed fixed broadband packages (minimum of 10 Mbps [Megabits per second] download speed) is selected, as their pricing and service levels set the benchmark for the industry.

Application:

The parameter of the largest utility provider in the largest city is relevant to all measures of Pillar II, as provision of utility services varies depending on the utility. The parameter does not apply to the indicator on System for Excavation Permit Approval, where the existence of infrastructure management system would typically be available for all utilities. The parameter also does not apply to the indicator of tariff transparency, in cases where tariffs are published on regulatory agency websites. Pillar III applies this parameter to assess how the largest provider's pricing and operational efficiency impact businesses. For the internet, different packages are typically offered by ISPs. These packages vary in terms of download speed and costs, and this variation can significantly affect a business's operation. This is why it is crucial to set the largest utility provider as a parameter, as it directly influences the availability, affordability, and quality of internet services accessible to businesses.

5.2.2 Electricity–Load capacity

Justification:

For electricity, a specific parameter of load capacity is used for cost indicators. The load capacity is used as a unit of measurement; it determines how much power is used and where it is used. This information is important for electricity providers and power suppliers to set electricity tariffs. In addition, load capacity impacts affordability of electrical connection and work completion timeframes. For example, depending on a load capacity, an electrical contractor would be able to estimate whether a transformer is needed or not, as well as the type of a transformer, if required. Installation or construction of a transformer is one of the costliest investments. In addition, the rationale behind setting a fixed load capacity ensures data comparability across all surveyed economies. The Utility Services topic assumes two scenarios of the load capacity i) a larger electricity connection of 180 kVA and ii) a smaller electricity connection of 60 kVA.

Application:

- 180 kVA load capacity: The load capacity of 180 kVA corresponds to connections of the firms that rely on electricity for production and business operations and use electricity more intensively than the basic level. For example, an average industry-specific facility (such as a cold storage warehouse) uses up to four times more electricity than a conventional business office.[75] Some of the examples of businesses with a capacity of around 180 kVA include commercial (industry-specific) buildings with an average capacity of 177 kVA; small retail malls with 181 kVA capacity load; or indoor agribusiness facilities with 181 kVA.[76]

  An illustrative breakdown of 180 kVA capacity is as follows:[77]

  - Lighting (30 kW [kilo watts])–accounts for at least 15% of the total energy consumption in commercial buildings
  - PCs and data servers (10 kW)
  - Security systems (10 kW)
  - Heating/cooling (HVAC systems)–2 tons AC (20 kW)

- Industry-specific equipment (example: 10 refrigerators/10 freezers) (80 kW)
- An additional 30 kw is needed for power upgrades

- 60 kVA: The load capacity of 60 kVA corresponds to connections of the firms that operate in sectors that require moderate but consistent power usage. The subscribed capacity of 60 kVA can refer to SMEs operating in services sector, such as a retail shop, non-refrigerated storage facility or an education center.[78]
- This parameter is used for cost of electricity connections.

5.2.3 Electricity–Consumption

Justification:

To make the data on monthly tariffs comparable across economies, electricity consumption of a business is used as a unit of measurement. Electricity consumption reflects the intensity of a firm's reliance on electricity and is required to calculate the applicable tariff. The Utility Services topic assumes the electricity monthly consumption of 34,560 kWh.

Application:

- T 34,560 kWh: Electricity consumption is correlated with load capacity. For the warehouse with the subscribed capacity of 180 kVA that operates 8 hours a day for 30 days a month, with equipment utilized at 80% of capacity on average, with a power factor of 1 (1 kVA = 1 kW), the monthly energy consumption will be 34,560 kWh, and the hourly consumption 144 kWh (34,560 kWh/30 days/8 hours).

5.2.4 Electricity–Length of Connection

Justification:

Distance to the distribution line determines material and labor cost. Utility fee schedules may also differentiate lengths to the source. The cost of materials and labor may constitute a significant share of connection cost; therefore, the distance cannot be regarded as insignificant. The Utility Services topic assumes two scenarios of the distance to the distribution main: i) for a larger electricity connection of 75 meters and ii) for a simpler electricity connection of 10 meters.

Application:

- 75 meters: The length of 75 meters corresponds to the more complex connection case, wherein the location of the premises of the company would require extending the cables from the electricity distribution main. For example, in more rural or less developed districts of the city, the spacing between poles can reach 75 meters or more, depending on the terrain and infrastructure needs. The distance of 75 meters is informed by the data from the Subnational B-Ready project, that covered six economies and 40 cities. In 38% of these cities, experts reported that the most common distance from the main distribution line to the connection falls within the 51-99 meter range, making it the most prevalent range.
- 10 meters: The connection length of 10 meters corresponds to the simplest connection case. For example, a commercial district within the city wherein the network is well developed and the connection points are readily available within the short distance, assumed to be 10 meters.

5.2.5 Water–Pipe Diameter

Justification:

The pipe diameter directly affects water connection costs, as larger diameter pipes lead to increased material and installation expenses due to their size and complexity. To standardize the comparison of water connection costs across economies, the assessment uses two scenarios for pipe diameters: i) 1/2 inch (21 mm) and ii) 1 inch (33 mm). This distinction effectively captures the typical variations in water demand and usage based on enterprise size, ensuring a relevant and comparable evaluation of connection costs.

Application:
For new connections, the 1/2-inch (21 mm) diameter pipe is applicable to smaller businesses with lower water needs, while the 1-inch (33 mm) diameter pipe suits medium-sized businesses. These diameter parameters correspond to globally standardized small service connections, which are typically offered by water utilities for small or medium-sized businesses. Since these connection sizes are commonly available in all economies, information about their costs is often transparently available online, increasing the likelihood that experts can provide accurate responses. In contrast, larger service connections may require clients to request custom quotes from the water utility.

5.2.6 Water–Distance from Water Mains

Justification:
The distance from the water mains affects connection costs as greater distances require materials and labor to extend the pipe network or develop additional infrastructure, leading to higher installation expenses. Conversely, shorter distances typically involve lower costs due to reduced material needs and simpler installation processes. The parameter of 5 meters from the water mains was chosen to standardize connection costs, providing a uniform basis for evaluating connection expenses.

Application:
The 5-meter distance from the water mains is applied to assess connection costs for businesses where the proximity to existing infrastructure is relatively short and straightforward. This standard distance is used to represent typical urban settings, facilitating a consistent and comparable assessment of costs for new commercial water connections across different regions and economies.

5.2.7 Water–Consumption

Justification:
Water consumption levels impact service costs through tiered tariff structures, where more intense usage often results in higher rates per unit of consumption. To enable comparison of service costs across economies, two scenarios for monthly consumption levels are chosen: i) 20 cubic meters, and ii) 1,000 cubic meters. These levels cover a range of water usage from low to medium, ensuring a comprehensive assessment of ongoing service expenses.

Application:
The two scenarios for monthly water consumption – 1,000 cubic meters and 20 cubic meters – are used to assess the impact of varying water usage levels on service costs. The 1,000 cubic meters scenario typically represents water consumption levels associated with medium-sized commercial operations. Under increasing block tariff (IBT) structures, such consumption levels might fall into higher tariff blocks, leading to increased service expenses. In contrast, the 20 cubic meters scenario represents lower consumption more common in smaller businesses or facilities, typically resulting in lower tariff rates and reduced service costs. These scenarios facilitate a comprehensive analysis of how different usage levels influence overall service expenses and provide a representative overview for most business needs.

5.2.8 Internet–Speed

Justification:
Internet connections are usually categorized and priced based on the data usage and speed requirements. Typically, firms have higher data usage and internet speed requirements than households. For example, a call center with more than 10 employees uploading and downloading data simultaneously may require a speed at least 12 times faster than a small physical commercial establishment with 3 to 5 employees.

A minimum of 10 Mbps is usually required by firms that have medium data usage requirements, such as those that operate in the education, e-commerce, construction, or basic manufacturing sectors.[79] In this

regard, for the cost of connection questions, the Utility Services topic focuses on businesses with medium internet data use. For example, a business with 5 employees that email, exchange files, use cloud-based software (for inventory management, financial accounting, and paying taxes and payroll), and videoconference simultaneously. Such a business could have 10 devices (PCs, tablets, TVs) connected through a small local network and host a website server. This parameter also ensures data representativeness and comparability.

In order to ensure comparability of the cost of internet service, three ranges of download speed are considered: i) between 10 Mbps and 30 Mbps, ii) between 30 and 100 Mbps, and iii) more than 100 Mbps.

Application:
A range of connection "packages" or "bundles" are usually available to firms in most markets.[80] Higher internet speeds allow firms to access more advanced digital functionalities such as file transfers, video conferencing, and cloud-based software and applications.

V. TOPIC SCORING

The Utility Services topic has three pillars: Pillar I – Quality of Regulations on Utility Services; Pillar II – Quality of the Governance and Transparency of Utility Services; and Pillar III – Operational Efficiency of Utility Service Provision. The total points for each pillar are further rescaled to values from 0 to 100 and subsequently aggregated into the total topic score. Each pillar contributes one-third to the total topic score. Table 39 shows the scoring for the Utility Services topic. The scores distinguish between benefits to the firm (captured as firm flexibility points) and benefits to society's broader interests (captured as social benefits points). For further scoring details, please see Annex A, which complements this section.

Table 39. Aggregate Scoring Overview

Pillar	Title	Number of Indicators	Score			Rescaled Points (0–100)	Weight
			Firm Flexibility Points	Social Benefits Points	Total Points		
I	Quality of Regulations on Utility Services	33	25	33	58	100	0.33
II	Quality of the Governance and Transparency of Utility Services	43	39	43	82	100	0.33
III	Operational Efficiency of Utility Service Provision	9	100	n/a	100	100	0.33

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent).

6.1 Pillar I – Quality of Regulations on Utility Services

Pillar I covers 33 indicators with a total score of 58 points (25 points on firm flexibility and 33 points on social benefits) (table 40). The scoring for each category under this pillar is as follows:

6.1.1 *Electricity* has 10 indicators with a total maximum score of 18 points (8 points on firm flexibility and 10 points on social benefits). Specifically, the *Regulatory Monitoring of Tariffs and Service Quality* Subcategory has 2 indicators; the *Utility Infrastructure Sharing and Quality Assurance Mechanisms* Subcategory has 2 indicators; the *Regulations on Safety of Electricity Connections* Subcategory has 3 indicators, and *Environmental Sustainability* has 3 indicators.

6.1.2 *Water* has 12 indicators with a total maximum score of 20 points (8 points on firm flexibility and 12 points on social benefits). Specifically, the *Regulatory Monitoring of Tariffs and Service Quality* Subcategory has 2 indicators; the *Utility Infrastructure Sharing and Quality Assurance*

Mechanisms Subcategory has 2 indicators; the *Regulations on Safety of Water Connections* Subcategory has 3 indicators, and *Environmental Sustainability* has 5 indicators.

6.1.3 *Internet* has 11 indicators with a total maximum score of 20 points (9 points on firm flexibility and 11 points on social benefits). Specifically, the *Regulatory Monitoring of Tariffs and Service Quality* Subcategory has 2 indicators; the *Utility Infrastructure Sharing and Quality Assurance Mechanisms* Subcategory has 4 indicators; the *Regulations on Safety of Internet Connections* Subcategory has 3 indicators, and *Environmental Sustainability* has 2 indicators.

A regulatory framework that ensures regulatory monitoring, efficiency of connection processes, adequate quality of service supply and promotes the safety of connections benefits both firms (firm flexibility) and society/customers (social benefits). Hence, across Electricity, Water, and Internet, equal points are assigned to firm flexibility and social benefits in *Regulatory Monitoring of Tariffs and Service Quality*, *Utility Infrastructure Sharing and Quality Assurance Mechanisms*, and *Regulations on Safety of Utility Connections* Subcategories. For *Environmental Sustainability* Subcategories, the positive impact on society is derived from enhanced environmental sustainability and improved adherence to environmental standards. Most of the measures under *Environmental Sustainability* Subcategories have either a neutral impact on firms, wherein requirements are imposed on other actors (such as utilities and data centers), or an ambiguous impact and hence are not scored.

Table 40. Aggregate Scoring Pillar I

Pillar I – Quality of Regulations on Utility Services		No. of Indicators	FFP	SBP	Total Points	Rescaled Points
1.1	**Electricity**	**10**	**8**	**10**	**18**	**33.33**
1.1.1	Regulatory Monitoring of Tariffs and Service Quality	2	2	2	4	8.33
1.1.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms	2	2	2	4	8.33
1.1.3	Regulations on Safety of Electricity Connections	3	3	3	6	8.33
1.1.4	Environmental Sustainability	3	1	3	4	8.33
1.2	**Water**	**12**	**8**	**12**	**20**	**33.33**
1.2.1	Regulatory Monitoring of Tariffs and Service Quality	2	2	2	4	8.33
1.2.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms	2	2	2	4	8.33
1.2.3	Regulations on Safety of Water Connections	3	3	3	6	8.33
1.2.4	Environmental Sustainability	5	1	5	6	8.33
1.3	**Internet**	**11**	**9**	**11**	**20**	**33.33**
1.3.1	Regulatory Monitoring of Tariffs and Service Quality	2	2	2	4	8.33
1.3.2	Utility Infrastructure Sharing and Quality Assurance Mechanisms	4	4	4	8	13.33
1.3.3	Regulations on Safety of Internet Connections	3	3	3	6	8.33
1.3.4	Environmental Sustainability	2	n/a	2	2	3.33
	Total	**33**	**25**	**33**	**58**	**100.00**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

6.2 Pillar II–Quality of the Governance and Transparency of Utility Services

Pillar II covers 43 indicators with a total score of 82 points (39 points on firm flexibility and 43 points on social benefits) (table 41). The scoring for each category under the pillar is as follows:

6.2.1 *Electricity* has 15 indicators with a total maximum score of 28 points (13 points on firm flexibility and 15 points on social benefits). Specifically, the *Digital Services and Interoperability* Subcategory has 4 indicators; the *Monitoring of Service Supply (includes gender and environment)* Subcategory has 3 indicators; the *Availability of Information and Transparency* Subcategory has 6

indicators and the *Enforcement of Safety Regulations and Consumer Protection Mechanisms* Subcategory has 2 indicators.

6.2.2 *Water* has 15 indicators with a total maximum score of 28 points (13 points on firm flexibility and 15 points on social benefits). Specifically, the *Digital Services and Interoperability* Subcategory has 4 indicators; the *Monitoring of Service Supply (includes gender and environment)* Subcategory has 3 indicators; the *Availability of Information and Transparency* Subcategory has 6 indicators and the *Enforcement of Safety Regulations and Consumer Protection Mechanisms* has 2 indicators.

6.2.3 *Internet* has 13 indicators with a total maximum score of 26 points (13 points on firm flexibility and 13 points on social benefits). Specifically, the *Digital Services and Interoperability* Subcategory has 4 indicators; the *Monitoring of Service Supply (includes gender and environment)* Subcategory has 2 indicators; the *Availability of Information and Transparency* Subcategory has 5 indicators; and the *Enforcement of Safety Regulations and Consumer Protection Mechanisms* has 2 indicators.

A regulatory framework that promotes digital services and interoperability of utility services benefits both firms (firm flexibility) and society (social benefits). Hence, across Electricity, Water, and Internet, equal points are assigned to both categories. A regulatory framework that ensures transparency of utility services benefits both firms (firm flexibility) and society (social benefits). Monitoring is equally important. Thus, the score for the most part is allocated equally between firm flexibility and social benefits, except for the measures on KPIs to monitor the environmental sustainability of electricity and water supply. These measures do not directly impact firms and, thus, are scored on social benefits only. The enforcement of regulations including the implementation of inspections in water and electricity, cybersecurity protocols in internet, and the existence of independent complaint mechanisms improve public safety and accountability, extending benefits to firms and society as a whole. Hence, equal points are assigned in this subcategory across Water, Electricity, and Internet.

Table 41. Aggregate Scoring Pillar II

Pillar II–Public Services: Quality of Governance and Transparency of Utility Services		**No. of Indicators**	**FFP**	**SBP**	**Total Points**	**Rescaled Points**
2.1	**Electricity**	**15**	**13**	**15**	**28**	**33.33**
2.1.1	Digital Services and Interoperability	4	4	4	8	8.33
2.1.2	Monitoring of Service Supply (includes gender and environment)	3	2	3	5	8.33
2.1.3	Availability of Information and Transparency	6	5	6	11	8.33
2.1.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms	2	2	2	4	8.33
2.2	**Water**	**15**	**13**	**15**	**28**	**33.33**
2.2.1	Digital Services and Interoperability	4	4	4	8	8.33
2.2.2	Monitoring of Service Supply (includes gender and environment)	3	2	3	5	8.33
2.2.3	Availability of Information and Transparency	6	5	6	11	8.33
2.2.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms	2	2	2	4	8.33
2.3	**Internet**	**13**	**13**	**13**	**26**	**33.33**
2.3.1	Digital Services and Interoperability	4	4	4	8	8.33
2.3.2	Monitoring of Service Supply (includes gender and environment)	2	2	2	4	8.33
2.3.3	Availability of Information and Transparency	5	5	5	10	8.33
2.3.4	Enforcement of Safety Regulations and Consumer Protection Mechanisms	2	2	2	4	8.33
	Total	**43**	**39**	**43**	**82**	**100.00**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point; KPI = Key Performance Indicator.

6.3 Pillar III–Operational Efficiency of Utility Service Provision

Pillar III covers 9 indicators with points ranging from 0 to 100 (table 42). The points under this pillar are assigned to firm flexibility only, as the indicators measure the outcomes of service provision to firms. For example, long times to obtain electricity, water, and internet connections as well as service disruptions have adverse impacts on firms, thus hampering firm flexibility.

6.3.1 *Electricity* has 3 indicators with a total maximum score of 33.33 points. Specifically, the *Affordability* Subcategory has 1 indicator, the *Time to Obtain a Connection* Subcategory has 1 indicator, and the *Reliability of Supply* Subcategory has 1 indicator.

6.3.2 *Water* has 3 indicators with a total maximum score of 33.33 points. Specifically, the *Affordability* Subcategory has 1 indicator, the *Time to Obtain a Connection* Subcategory has 1 indicator, and the *Reliability of Supply* Subcategory has 1 indicator.

6.3.3 *Internet* has 3 indicators with a total maximum score of 33.33 points. Specifically, the *Affordability* Subcategory has 1 indicator, the *Time to Obtain a Connection* Subcategory has 1 indicator, and the *Reliability of Supply* Subcategory has 1 indicator.

Table 42. Aggregate Scoring Pillar III

Pillar III–Operational Efficiency of Utility Service Provision		**No. of Indicators**	**Rescaled Points**
3.1	**Electricity**	**3**	**33.33**
3.1.1	Affordability	1	11.11
3.1.2	Time to Obtain a Connection	1	11.11
3.1.3	Reliability of Supply	1	11.11
3.2	**Water**	**3**	**33.33**
3.2.1	Affordability	1	11.11
3.2.2	Time to Obtain a Connection	1	11.11
3.2.3	Reliability of Supply	1	11.11
3.3	**Internet**	**3**	**33.33**
3.3.1	Affordability	1	11.11
3.3.2	Time to Obtain a Connection	1	11.11
3.3.3	Reliability of Supply	1	11.11
	Total	**9**	**100.00**

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ANNEX A. UTILITIES SERVICES–SCORING SHEET

This document outlines the scoring approach for the Utility Services topic. For every indicator, a Firm Flexibility Point (FFP) and/or a Social Benefits Point (SBP) are assigned, along with a clarification on the detailed scoring for each such indicator and a note on the relevant background literature.

PILLAR I–QUALITY OF REGULATIONS ON UTILITY SERVICES					
1.1 ELECTRICITY					
1.1.1 Regulatory Monitoring of Tariffs and Service Quality					
Indicators	**FFP**	**SBP**	**Total Points**	**Rescaled Points**	**Background Literature**
Monitoring of Tariffs	1	1	2	4.17	AfDB (2021); Brown et al. (2006); Cubbin and Stern (2006); Rana et al. (2022); Foster and Rana (2020); OECD (2021a); Pérez-Arriaga et al. (2017); World Bank (2019)
Monitoring of Service Quality	1	1	2	4.17	AfDB (2021); Brown et al. (2006); Cubbin and Stern (2006); Rana et al. (2022); Foster and Rana (2020); OECD (2021a); Pérez-Arriaga et al. (2017); World Bank (2019)
Total Points for Subcategory 1.1.1	2	2	4	8.33	
1.1.2 Utility Infrastructure Sharing and Quality Assurance Mechanisms					
Joint Planning and Construction	1	1	2	4.17	Martínez Garza Fernández et al. (2020); OECD (2003, 2012); RWI (n.d.)
Mechanisms on Service Quality Assurance	1	1	2	4.17	Costello (2012); Foster and Rana (2020)
Total Points for Subcategory 1.1.2	2	2	4	8.33	
1.1.3 Regulations on Safety of Electricity Connections					
Professional Certifications	1	1	2	2.78	IFC, World Bank, and MIGA (2013); IEEE (2022); ISSA (n.d); Leland (1979)
Inspection Regimes	1	1	2	2.78	Boyne et al. (2002); IEC (2016); IFC, World Bank, and MIGA (2013); World Bank (2017b)
Liability Regimes	1	1	2	2.78	IFC, World Bank, and MIGA (2013); Wilson et al. (2009)
Total Points for Subcategory 1.1.3	3	3	6	8.33	

1.1.4 Environmental Sustainability					
Environmental Sustainability of Electricity Provision	n/a	1	1	2.08	Banerjee et al. (2017); Barreira et al. (2017); Gonzalez (2022); OECD (2009, 2015); Sinton et al. (2017); UN (2015); UNEP (n.d.)
Environmental Sustainability of Electricity Use	n/a	1	1	2.08	AfDB (2021); Barreira et al. (2017); Geller et al. (2006); IEA (2008); OECD (2009); UNEP (n.d.)
Incentives to Adopt Energy-Saving Practices	1	1	2	4.17	Barreira et al. (2017); De la Rue du Can et al. (2014); Geller et al. (2006); UNEP (n.d.)
Total Points for Subcategory 1.1.4	1	3	4	8.33	
Total Points for Category 1.1	**8**	**10**	**18**	**33.33**	
1.2 WATER					
1.2.1 Regulatory Monitoring of Tariffs and Service Quality					
Monitoring of Tariffs	1	1	2	4.17	AfDB (2021); Brown et al. (2006); Cubbin and Stern (2006); Foster and Rana (2020); OECD (2021a); Pérez-Arriaga et al. (2017); World Bank (2019)
Monitoring of Service Quality	1	1	2	4.17	Brown et al. (2006); Foster and Rana (2020); OECD (2021a); Pérez-Arriaga et al. (2017); World Bank (2019)
Total Points for Subcategory 1.2.1	2	2	4	8.33	
1.2.2 Utility Infrastructure Sharing and Quality Assurance Mechanisms					
Joint Planning and Construction	1	1	2	4.17	Martínez Garza Fernández et al. (2020); OECD (2003, 2012); RWI (n.d.)
Mechanisms on Service Quality Assurance	1	1	2	4.17	Foste and Rana (2020); Molinos-Senante and R. Sala-Garrido (2017)
Total Points for Subcategory 1.2.2	2	2	4	8.33	
1.2.3 Regulations on Safety of Water Connections					
Professional Certifications	1	1	2	2.78	Alegre et al. (2006) ; Leland (1979)
Inspection Regimes	1	1	2	2.78	Boyne et al. (2002); IFC, World Bank, and MIGA (2013); World Bank (2017b)
Liability Regimes	1	1	2	2.78	IFC, World Bank, and MIGA (2013); Wilson et al. (2009)
Total Points for Subcategory 1.2.3	3	3	6	8.33	

1.2.4 Environmental Sustainability					
Environmental Sustainability and Quality of Water Provision	n/a	1	1	1.39	Alegre et al. (2006); Britton, (2013); Danilenko et al. (2014); OECDa; OECD (2009); Pinto et al. (2017); UN (2015); WHO (2017)
Environmental Sustainability of Water Use	n/a	1	1	1.39	Fan et al. (2019); OECD (2009); Pinto et al. (2017); Colorado WaterWise (n.d.)
Incentives to Adopt Water-Saving Practices	1	1	2	2.78	OECD (2011, 2021b); Onyenankeya, Onyenankeya, and Osunkunle (2021)
Sustainability of Wastewater Treatment	n/a	1	1	1.39	Corcoran et al. (2010) ; UNEP (2015)
Wastewater Reuse	n/a	1	1	1.39	Corcoran et al. (2010); EU (2020); IWA (2018)
Total Points for Subcategory 1.2.4	1	5	6	8.33	
Total Points for Category 1.2	**8**	**12**	**20**	**33.33**	
1.3 INTERNET					
1.3.1 Regulatory Monitoring of Tariffs and Service Quality					
Monitoring of Tariffs	1	1	2	4.17	ITU and World Bank (2020); Kelly and Rossotto (2012); World Bank Group (2018)
Monitoring of Service Quality	1	1	2	4.17	ITU and World Bank (2020); Kelly and Rossotto (2012); World Bank Group (2018)
Total Points for Subcategory 1.3.1	2	2	4	8.33	
1.3.2 Utility Infrastructure Sharing and Quality Assurance Mechanisms					
Joint Planning and Construction	1	1	2	3.33	Martínez Garza Fernández et al. (2020); OECD (2003, 2012); RWI (n.d.)
Rights of Way	1	1	2	3.33	ITU and World Bank (2020); OECD (2008, 2018)
Open Infrastructure	1	1	2	3.33	ITU and UNESCO (2021); ITU and World Bank (2020); OECD (2008, 2018)
Mechanisms on Service Quality Assurance	1	1	2	3.33	ITU (2017); ITU and the World Bank (2020)
Total Points for Subcategory 1.3.2	4	4	8	13.33	
1.3.3 Regulations on Safety of Internet Connections					
Liability Regimes	1	1	2	2.78	EU Council (2016); ITU (2018); OECD (2013a); World Bank (2017a)
Cybersecurity Coordination	1	1	2	2.78	ITU (2018); World Bank (2016, 2017a, 2021b)
Cybersecurity Safeguards	1	1	2	2.78	ITU (2018); World Bank (2016, 2017a, 2021b)
Total Points for Subcategory 1.3.3	3	3	6	8.33	

1.3.4 Environmental Sustainability					
Environmental Reporting or Disclosure Standards for Digital Connectivity Infrastructure	n/a	1	1	1.67	Belkhir and Elmeligi (2018); ITU and World Benchmarking Alliance (2022)
Emissions and Energy Efficiency of Infrastructure	n/a	1	1	1.67	ITU and World Benchmarking Alliance (2022)
Total Points for Subcategory 1.3.4	n/a	2	2	3.33	
Total Points for Category 1.3	**9**	**11**	**20**	**33.33**	
Total Points for Pillar I	**25**	**33**	**58**	**100.00**	

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent). FFP = Firm Flexibility Point; SBP = Social Benefits Point.

PILLAR II–QUALITY OF THE GOVERNANCE AND TRANSPARENCY OF UTILITY SERVICES					
2.1 ELECTRICITY					
2.1.1 Digital Services and Interoperability					
Indicators	**FFP**	**SBP**	**Total Points**	**Rescaled Points**	**Background Literature**
Electronic Application	1	1	2	2.08	Ha (2022); Katz (2017)
Electronic Payment	1	1	2	2.08	Popa and Prostean (2013)
Information on Existing Infrastructure and Planned Works	1	1	2	2.08	ITU (2019); OGC et al. (2018); UNESCAP (2019)
Coordination Mechanisms for Excavation Permits	1	1	2	2.08	FPISC (2017); IFC, World Bank, and MIGA (2013); UNESCAP (2019); Yu, Zhang, and Li (2013)
Total Points for Subcategory 2.1.1	4	4	8	8.33	
2.1.2 Monitoring of Service Supply (includes gender and environment)					
Reliability and Quality of Electricity Supply	1	1	2	3.33	AfDB (2021); Banerjee et al. (2017); Bird (2005); IEEE (2004)
Environmental Sustainability of Electricity Supply	n/a	1	1	1.67	Hristov and Chirico (2019)
Access to Electricity for Women Entrepreneurs	1	1	2	3.33	ADB (2012); Pangare et al. (2019)
Total Points for Subcategory 2.1.2	2	3	5	8.33	
2.1.3 Availability of Information and Transparency					
Connection Requirements	1	1	2	1.51	Balabanyan (2021); ECRB (2021); Geginat and Saltane (2014)
Tariffs and Tariff Settings	1	1	2	1.51	Balabanyan (2021); Body of European Regulators for Electronic Communications (2009); Foster and Rana (2020)
Planned Outages	1	1	2	1.51	Balabanyan (2021); ECRB (2021); Liberty Mutual (2022)
Complaint Mechanisms	1	1	2	1.51	Transparency International (2016); ECRB (2018)
Service Quality Indicators	1	1	2	1.51	Banerjee et al. (2017); World Bank (2021a)
Environmental Sustainability Indicators	n/a	1	1	0.76	Kelly and Rossotto (2012)
Total Points for Subcategory 2.1.3	5	6	11	8.33	
2.1.4 Enforcement of Safety Regulations and Consumer Protection Mechanisms					

Implementation of Inspections for Electricity Connections	1	1	2	4.17	IFC, World Bank, and MIGA (2013); OECD (2018); Scaddan (2011)
Independent Complaint Mechanism	1	1	2	4.17	Transparency International (2016); ECRB (2018)
Total Points for Subcategory 2.1.4	2	2	4	8.33	
Total Points for Category 2.1	**13**	**15**	**28**	**33.33**	
2.2 WATER					
2.2.1 Digital Services and Interoperability					
Electronic Application	1	1	2	2.08	Ha (2022); Katz (2017)
Electronic Payment	1	1	2	2.08	Popa and Prostean (2013)
Information on Existing Infrastructure and Planned Works	1	1	2	2.08	ITU (2019); OGC et al. (2018); UNESCAP (2019)
Coordination Mechanisms for Excavation Permits	1	1	2	2.08	FPISC (2017); IFC, World Bank, and MIGA (2013); UNESCAP (2019); Yu, Zhang, and Li (2013)
Total Points for Subcategory 2.2.1	4	4	8	8.33	
2.2.2 Monitoring of Service Supply (includes gender and environment)					
Reliability and Quality of Water Supply	1	1	2	3.33	Alegre et al. (2006); Danilenko et al. (2014); Hristov (2019); IBNET (n.d.); WAREG-European Water Regulators (2017); OECDb; OECD (2015); UNECE and WHO (2019)
Environmental Sustainability of Water Supply	n/a	1	1	1.67	Alegre et al. (2006); Hristov and Chirico (2019)
Access to Water for Women Entrepreneurs	1	1	2	3.33	ADB (2012); Pangare et al. (2019)
Total Points for Subcategory 2.2.2	2	3	5	8.33	
2.2.3 Availability of Information and Transparency					
Connection Requirements	1	1	2	1.51	Balabanyan (2021); Geginat and Saltane (2014); World Bank (2017b)
Tariffs and Tariff Settings	1	1	2	1.51	Balabanyan (2021); Body of European Regulators for Electronic Communications (2009)
Planned Outages	1	1	2	1.51	Balabanyan (2021); Mwitirehe, Cheruiyot, and Ruranga (2022)
Complaint Mechanisms	1	1	2	1.51	Transparency International (2016)
Service Quality Indicators	1	1	2	1.51	WAREG-European Water Regulators (2017)
Environmental Sustainability Indicators	n/a	1	1	0.76	Kelly and Rossotto (2012)
Total Points for Subcategory 2.2.3	5	6	11	8.33	
2.2.4 Enforcement of Safety Regulations and Consumer Protection Mechanisms					

Implementation of Inspections for Water Connections	1	1	2	4.17	IFC, World Bank, and MIGA (2013); OECD (2018); World Bank (2017b)
Independent Complaint Mechanism	1	1	2	4.17	Transparency International (2016)
Total Points for Subcategory 2.2.4	2	2	4	8.33	
Total Points for Category 2.2	**13**	**15**	**28**	**33.33**	
2.3 INTERNET					
2.3.1 Digital Services and Interoperability					
Electronic Application	1	1	2	2.08	Kelly and Rossotto (2012)
Electronic Payment	1	1	2	2.08	Popa and Prostean (2013)
Information on Existing Infrastructure and Planned Works	1	1	2	2.08	ITU (2019); OGC et al. (2018); UNESCAP (2019)
Coordination Mechanisms for Excavation Permits	1	1	2	2.08	FPISC (2017); IFC, World Bank, and MIGA (2013); UNESCAP (2019); Yu, Zhang, and Li (2013)
Total Points for Subcategory 2.3.1	4	4	8	8.33	
2.3.2 Monitoring of Service Supply (includes gender and environment)					
Reliability and Quality of Internet Supply	1	1	2	4.17	Kelly and Rossotto (2012)
Access to Internet for Women Entrepreneurs	1	1	2	4.17	ADB (2012); Pangare et al. (2019)
Total Points for Subcategory 2.3.2	2	2	4	8.33	
2.3.3 Availability of Information and Transparency					
Connection Requirements	1	1	2	1.67	Balabanyan (2021); Geginat and Saltane (2014)
Tariffs and Tariff Settings	1	1	2	1.67	Balabanyan (2021); Body of European Regulators for Electronic Communications (2009)
Planned Outages	1	1	2	1.67	Balabanyan (2021); Kelly and Rossotto (2012)
Complaint Mechanisms	1	1	2	1.67	Transparency International (2016)
Service Quality Indicators	1	1	2	1.67	Kelly and Rossotto (2012); WAREG-European Water Regulators (2017); World Bank (2021a); Chetty et al (2011); Chetty et al (2012)
Total Points for Subcategory 2.3.3	5	5	10	8.33	
2.3.4 Enforcement of Safety Regulations and Consumer Protection Mechanisms					
Cybersecurity Protocols	1	1	2	4.17	ITU (2018); Kelly and Rossotto (2012); World Bank (2017a)
Independent Complaint Mechanism	1	1	2	4.17	Transparency International (2016)
Total Points for Subcategory 2.3.4	2	2	4	8.33	

Total Points for Category 2.3	**13**	**13**	**26**	**33.33**	
Total Points for Pilar II	**39**	**43**	**82**	**100.00**	

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent). FFP = Firm Flexibility Point; SBP = Social Benefits Point. KPI = Key Performance Indicator.

PILLAR III–OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION					
3.1 ELECTRICITY					
3.1.1 Affordability					
Indicators	**FFP**	**SBP**	**Total Points**	**Rescaled Points**	**Background Literature**
Cost of Connection and Cost of Service	100	n/a	100	11.11	Abeberese (2017); Arlet (2017); Cecilia et al. (2011); Geginat and Ramalho (2015); IEA (2016); Iimi, Humphrey, and Melibaeva (2015); Lee et al. (2018)
Total points of Subcategory 3.1.1	100	n/a	100	11.11	
3.1.2 Time to Obtain a Connection					
Time to Obtain an Electricity Connection	100	n/a	100	11.11	Geginat and Ramalho (2015); Hamman (2014)
Total points of Subcategory 3.1.2	100	n/a	100	11.11	
3.1.3 Reliability of Supply					
Reliability of Electricity Supply	100	n/a	100	11.11	Alby, Dethier, and Straub (2013); Allcott (2016); Arlet (2017); Blimpo and Cosgrove-Davies (2019); Cole et al. (2018); Escribano et al. (2010); Fedderke and Bogetić (2006); Grimm et al. (2012); Karen, Mansur, and Wang (2015); Khandker et al. (2014); Kirubi et al. (2009)
Total points of Subcategory 3.1.3	100	n/a	100	11.11	
Total Points for Category 3.1	**100**	**n/a**	**100**	**33.33**	
3.2 WATER					
3.2.1 Affordability					
Cost of Connection and Cost of Service	100	n/a	100	11.11	Abeberese (2017); Arlet (2017); Cecilia et al. (2011); Frauendorfer (2008); Geginat and Ramalho (2015); IEA (2016); Lee et al. (2018)
Total points of Subcategory 3.2.1	100	n/a	100	11.11	
3.2.2 Time to Obtain a Connection					
Time to Obtain a Water Connection	100	n/a	100	11.11	Alegre et al. (2006); World Bank (2017b); Hamman (2014)
Total points of Subcategory 3.2.2	100	n/a	100	11.11	

3.2.3 Reliability of Supply					
Reliability of Water Supply	100	n/a	100	11.11	Chen (2019); Escribano (2010); Sjöstrand et al. (2021); World Bank (2017b)
Total points of Subcategory 3.2.3	100	n/a	100	11.11	
Total Points for Category 3.2	**100**	**n/a**	**100**	**33.33**	
3.3 INTERNET					
3.3.1 Affordability					
Cost of Connection and Cost of Service	100	n/a	100	11.11	Abeberese (2017); Arlet (2017); Cecilia et al. (2011); Geginat and Ramalho (2015); IEA (2016); ITU (2020); Kelly and Rossotto (2012); Lange (2017); Lee et al. (2018)
Total points of Subcategory 3.3.1	100	n/a	100	11.11	
3.3.2 Time to Obtain a Connection					
Time to Obtain an Internet Connection	100	n/a	100	11.11	Hamman (2014); ITU and the World Bank (2020); Kelly and Rossotto (2012)
Total points of Subcategory 3.3.2	100	n/a	100	11.11	
3.3.3 Reliability of Supply					
Reliability of Internet Supply	100	n/a	100	11.11	Ericsson (2013)
Total points of Subcategory 3.3.3	100	n/a	100	11.11	
Total Points for Category 3.3	**100**	**n/a**	**100**	**33.33**	
Total Points for Pillar III	**100**	**n/a**	**100**	**100.00**	

Note: n/a = not applicable – refers to the cases when the impact on firms or society is either ambiguous or nonexistent. FFP = Firm Flexibility Point; SBP = Social Benefits Point.

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ANNEX B. UTILITY SERVICES–ANNOTATED QUESTIONNAIRE

Annex B consists of a Glossary and Annotated Questionnaires for Utility Services (Electricity, Water, Internet). The Annotated Questionnaires provide the mapping between each indicator and the corresponding question(s).

Glossary

Access node switch: A network switch that connects the access layer of a network to subnets, which are made up of access devices like routers and IP devices.

Asymmetric regulation: A regulation that systematically favors new entrants, for example by dispossessing the incumbents for their benefit to make them on the market.

Backbone/backhaul infrastructure: The wholesale portions of the telecommunications network that comprise, respectively, the core network and the intermediate links (or middle mile) and that are used by internet service provider subnetworks to connect to the internet.

Bandwidth: The maximum amount of data an internet connection can handle at any moment, measured in Megabits per second (Mbps).

Block tariff: A tariff, wherein users pay different charges for different consumption levels. For example, if the consumption amounts to block 1+block 2+half of block 3, the customer will be charged: tariff 1*block 1 consumption + tariff 2*block 2 consumption + tariff3*(block 3 consumption)/2.

Cloud-based DDoS protection: A commercial cybersecurity service that is an alternative to on-premises cybersecurity meant to mitigate or avoid distributed denial of service (DDoS) attacks on network infrastructure.

Cybersecurity: The measures implemented to protect networks, devices, and data from unauthorized access or criminal use.

Deterrence mechanism: The process of discouraging an event or activity. Deterrence mechanisms may include fines or penalties, inspections, reporting requirements or public disclosure of violations.

"**Dig once" policy**: The approach that allows for the coordination between public works departments, public utility companies, and internet service providers to avoid the duplication of infrastructure or civil engineering works.

Effluent limitation: A restriction on the amount of a pollutant that can be released into a Water body.

Electricity/power outage: The loss of the electrical power from the power grid; occurs when there is equipment malfunction from the failure of adequate supply of power. If power outages are planned ("load shedding"), this is considered a power outage.

Energy efficiency requirements for electricity transmission and distribution: Standards and regulations for environmentally sustainable transportation of electricity (such as energy-efficiency requirements for electricity transmission and distribution utilities; requirement by law to roll-out smart meters to commercial customers free of charge; development of "smart grids").

Enforcement mechanism: Methods used to encourage compliance with regulations or laws.

Environmental standards for electricity generation: Standards and regulations for environmentally sustainable electric power generation (for example, energy efficiency requirements for electricity generation plants; percentage of total electricity generation to be met with renewables; requirements for reduction on emissions of local air pollutants for fossil fuel plants).

External installation/connection works: The connection works outside the private property premises.

Firm Flexibility Point (FFP): A way to score indicators if it affects the benefits or costs of running a business.

Fixed internet connection: A new connection or any change to an existing connection that requires an application. It includes cable modem internet connections, DSL internet connections of at least 256 Kbit/s or higher, fiber and other fixed broadband technology connections such as satellite broadband, Ethernet LANs, fixed-wireless access, Wireless Local Area Network, WiMAX, or others. It does not include internet access through mobile phone hot spots or Wi-Fi phone tethering.

FMIK: Frecuencia Media de Interrupción–medium frequency of interruptions for installed KVA (kilovolt-amperes).

Geographic Information System (GIS): The database containing geographic data (that is, descriptions of phenomena for which location is relevant), combined with software tools for managing, analyzing, and visualizing those data.

Internal installation/connection works: The connection works inside the private property premises.

Internet interruption/outage: The interruptions to internet services, both partial (such as slowdown in connections due to congestion, limited bandwidth, or high latency) and total disruptions (outage, blackout, or shutdown). It excludes disruptions caused by electricity outages.

Internet service provider: The company (public or private) that provides commercial internet connections and subsequent internet services.

Jitter: The variation in time from the moment a signal is transmitted to the moment it is received over a network connection.

Joint excavation: Joint planning or construction with different entities in digging channels in the ground for electricity, water, and internet providers to build structures and facilities underground to connect consumers to services (such installation includes cable, electrical/sewer/water/internet lines and conduit).

Key Performance Indicators (KPI): The quantifiable measure of performance over time for a specific objective.

KVA: Kilovolt-amperes.

kWh: Kilowatt hour

Last mile: The final leg of the network that connects the local points of presence to individual homes, businesses, or end-user devices.

Latency: The delays in data transfer due to unreliable networks.

LCU: Local currency unit.

Lit fiber: A high-speed internet service that uses thin strands of glass or plastic to transmit data as light pulses.

Load shedding: The deliberate shutdown of electric power in a part or parts of a power-distribution system, generally to prevent the failure of the entire system.

Local loop unbundling: Regulatory process through which multiple Internet Service Providers (ISPs) are allowed to install their software at the telephone exchange and provide a broadband service over existing network cables and other infrastructure.

m^3: Cubic meters.

Mbps: Megabits per second.

Planned outage: A deliberate interruption to a utility service that is scheduled in advance.

RAN Access: A major component of a wireless telecommunications system that connects individual devices to other parts of a network through a radio link.

Right of way: An easement granted by the property owner that gives the rights to cross the land and the provision by the property owner of reasonable use of the property to others, as long as it is not inconsistent with the use and enjoyment of the land by the owner.

SAIDI: The System Average Interruption Duration Index, a commonly used reliability index by electric power utilities. SAIDI estimates measure planned and unplanned outages, including load shedding.

SAIFI: The System Average Interruption Frequency Index, another commonly used reliability index by electric power utilities. SAIFI estimates measure planned and unplanned outages, including load shedding.

Smart grid: The electricity supply network that uses digital communications technology to detect and react to local changes in usage.

Smart meter: The electronic device that records information such as consumption of electric energy, voltage levels, current, and power factor.

Social Benefits Point (SBP): A way to score indicators if its effects go beyond the firm and extend to socially desirable areas, such as environmental protection, consumer protection and informational externalities.

SSL inspection: The process of intercepting and reviewing SSL-encrypted internet communication between the client and the server.

Third-party inspection: The water or electricity inspections of final electrical wiring or plumbing works, respectively, conducted by licensed and authorized professionals or agencies other than the one that did installation.

Time to obtain electricity connection: The period in days from the moment the application is submitted till the moment Electricity supply starts.

Time to obtain fixed broadband connection: The period in days between the completed and submitted application and the connection provision. This period includes the time to install the cable, fiber, or DSL when necessary.

Time to obtain water connection: The period in days from the moment the application is submitted till the moment water supply starts.

TTIK: The total time of interruption for installed KVA.

Volume-differentiated tariff: Tariff, where the entire consumption is charged on the rate of the block where the customer's total consumption lies. For example, if the user's consumption lies in block 3, the customer will be charged the amount of (block 1+block 2+block 3/2) consumption * tariff of block 3.

Water insufficiency/interruption/outage: An incident of insufficient water pressure or water supply from the water grid, whenever there is equipment failure or cessation of production operations due to the lack or reduction of water supply.

ELECTRICITY QUESTIONNAIRE

The tables that follow present all indicators (including their components, if applicable) under each pillar, with a reference to the corresponding question number in parenthesis. The questions are listed before each table for ease of reference.

For Y/N questions, the Y response accounts for the score and is considered as the good practice, unless otherwise indicated with the sign "Y/N; N – good practice".

In the tables that follow, "AND" means all referenced questions must have a good practice response to obtain a score on the indicator.

In the tables that follow, "OR" means one or more referenced questions must have a good practice response to obtain a score on the indicator.

Certain questions are marked as "not scored," which indicates that they do not affect the score in any way. The purpose of these questions is to further inform and refine the questions design for subsequent years of the rollout phase, as needed, as well as to substantiate and provide further information for the scored questions.

PILLAR I–QUALITY OF REGULATIONS ON UTILITY SERVICES (ELECTRICITY)	
Parameters	
Business Location	The largest (most populous) city in the economy. For all questions in Pillar I, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.

1.1.1. REGULATORY MONITORING OF TARIFFS AND SERVICE QUALITY

1. **Is there a regulatory agency overseeing the electricity sector?** (Y/N) *(not scored)*
   Y → provide response to questions 2, 3, and 4.

2. **Per the regulatory framework, does the electricity regulator have final decision-making authority in the approval of electricity tariffs?** (Y/N)

3. **Per the regulatory framework, is the electricity regulator required to set performance standards to ensure service quality and the reliability of electricity services?** (Y/N)

4. **Per the regulatory framework, is the electricity regulator required to monitor adherence to performance standards to ensure service quality and the reliability of electricity services?** (Y/N)

1.1.1 REGULATORY MONITORING OF TARIFFS AND SERVICE QUALITY			
Indicators	**FFP**	**SBP**	**Total Points**
Monitoring of Tariffs (2)	**1**	**1**	**2**
Monitoring of Service Quality	**1**	**1**	**2**
- Set performance standards (3)	0.5	0.5	1
- Monitor adherence to performance standards (4)	0.5	0.5	1
Total Points	**2**	**2**	**4**

1.1.2 UTILITY INFRASTRUCTURE SHARING AND QUALITY ASSURANCE MECHANISMS

5. **Are there regulatory provisions requiring coordination in the joint construction of infrastructure, such as electrical poles, overhead or underground cables, water pipes, and/or telephone wires?** (Y/N)

6. **Are there legally defined time limits for all concerned agencies to provide approval on joint construction of infrastructure?** (Y/N)

7. **Does the regulatory framework stipulate sanctions and/or remedies applicable to utilities to ensure reliable electricity supply (limit outages)?** (Y/N)

1.1.2 UTILITY INFRASTRUCTURE SHARING AND QUALITY ASSURANCE MECHANISMS			
Indicators	**FFP**	**SBP**	**Total Points**
Joint Planning and Construction	**1**	**1**	**2**
- Common excavation provisions (5)	0.5	0.5	1
- Timelines for approvals (6)	0.5	0.5	1
Mechanisms on Service Quality Assurance (7)	**1**	**1**	**2**
Total Points	**2**	**2**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

1.1.3 REGULATIONS ON SAFETY OF ELECTRICITY CONNECTIONS

8. **Per the regulatory framework, are professionals carrying out electricity installation works required to meet at least two of the conditions listed below?** (Y/N)
   - Minimum number of years of experience
   - Education qualification (for example, university degree in the relevant field)
   - Registered member of the national association of electricians or electrical engineers
   - Pass a qualification exam

9. **Per the regulatory framework, are internal electricity installations of all types, including low voltage, required to be carried out by a licensed professional/company?** (Y/N)

10. **Per the regulatory framework, is the company that carried out internal electricity installations required to inspect/certify the quality of installations of all types, including low voltage?** (Y/N)

11. **Per the regulatory framework, is a final inspection required to be carried out by a third party to ensure the quality of internal electricity installations of all types, including low voltage?** (Y/N)

12. **Per the regulatory framework, are external electricity installations of all types, including low voltage, required to be carried out by a licensed professional/company?** (Y/N)

13. **Per the regulatory framework, is the company that carried out external electricity installations required to inspect/certify the quality of installations of all types, including low voltage?** (Y/N)

14. **Per the regulatory framework, is a final inspection required to be carried out by a third party to ensure the quality of external electricity installations of all types, including low voltage?** (Y/N)

15. **Can any party (aside from the project investor or owner) involved in providing the electricity connection be held liable by law in case faults are discovered when the electricity connection is in use?** (Y/N)

1.1.3 REGULATIONS ON SAFETY OF UTILITY CONNECTIONS			
Indicators	**FFP**	**SBP**	**Total Points**
Professional Certifications (8)	**1**	**1**	**2**
Inspection Regimes - Internal installation works (11 OR (9 AND 10)) - External installation works (14 OR (12 AND 13)) *A score is assigned if 11 is selected OR both 9 and 10 are selected* *A score is assigned if 14 is selected OR both 12 and 13 are selected*	**1** 0.5 0.5	**1** 0.5 0.5	**2** 1 1
Liability Regimes (15)	**1**	**1**	**2**
Total Points	**3**	**3**	**6**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

1.1.4 ENVIRONMENTAL SUSTAINABILITY

16. **Does the regulatory framework set energy efficiency requirements for electricity generation?** (Y/N)

17. **Does the regulatory framework set requirements for fossil fuel plants to reduce emissions of local air pollutants?** (Y/N)

18. **Does the regulatory framework stipulate any financial sanctions applicable to electricity generation plants for not meeting the requirements on energy efficiency or emissions reduction?** (Y/N)

19. **Does the regulatory framework set energy efficiency requirements on electricity transmission and distribution?** (Y/N)

20. **Does the regulatory framework stipulate requirements or incentives on the roll-out of smart meters to commercial customers?** (Y/N)

21. **Does the regulatory framework include requirements for the development of 'smart-grids'?** (Y/N)

22. **Does the regulatory framework stipulate any financial sanctions applicable to electricity transmission and distribution utilities for not meeting the requirements on energy efficiency, smart meters or 'smart-grids'?** (Y/N)

23. **Does the regulatory framework require businesses to switch to energy-efficient practices?** (Y/N)
    Y → provide response to question 24.

24. **Does the regulatory framework include any financial sanctions to businesses for not complying with energy-efficiency requirements?** (Y/N)

25. **Does the regulatory framework include any financial mechanisms to incentivize businesses to adopt energy-efficient practices or energy-efficient technology?** (Y/N)

26. Does the regulatory framework include any non-financial mechanisms to incentivize businesses to adopt energy-efficient practices or energy-efficient technology? (Y/N)

1.1.4 ENVIRONMENTAL SUSTAINABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Environmental Sustainability of Electricity Provision	**n/a**	**1**	**1**
- Environmental standards for electricity generation (16 AND 17)	n/a	0.25	0.25
- Enforcement of environmental standards for generation (18)	n/a	0.25	0.25
- Environmental standards for electricity transmission and distribution (19 OR 20 OR 21)	n/a	0.25	0.25
- Enforcement of standards for transmission and distribution (22)	n/a	0.25	0.25
Environmental Sustainability of Electricity Use	**n/a**	**1**	**1**
- Requirements for businesses to adhere to energy-efficient practices (23)	n/a	0.5	0.5
- Enforcement mechanisms to foster businesses' compliance with energy-efficient requirements (24)	n/a	0.5	0.5
Incentives to Adopt Energy-Saving Practices	**1**	**1**	**2**
- Financial and nonfinancial incentives for businesses (25 AND 26) OR	1 OR	1 OR	2 OR
- Financial incentives for businesses (25)	0.5	0.5	1
Total Points	**1**	**3**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

PILLAR II–QUALITY OF THE GOVERNANCE AND TRANSPARENCY OF UTILITY SERVICES (ELECTRICITY)	
Parameters	
Business Location	The largest (most populous) city in the economy. For all questions in Pillar II, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.
Largest Utility Provider	The largest utility provider in the largest city is considered (in terms of customers served or market share). For all questions in Pillar II, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.

27. Is [LARGEST ELECTRICITY UTILITY PROVIDER] the largest electricity provider in [CITY]? (Y/N) *(not scored)*

2.1.1 DIGITAL SERVICES AND INTEROPERABILITY

28. Is it possible to apply for a new commercial electricity connection through a fully online process? (Y/N)

29. Is it possible to track online the status of the connection process for a new electricity connection? (Y/N)

30. Is it possible to pay the fee for a new electricity connection through electronic payment methods? (Y/N)

31. Is it possible to pay for the monthly electricity bill through electronic payment methods? (Y/N)

32. **Is there a publicly available national or local infrastructure database (for example, a GIS database) that shows the existing electricity distribution network?** (Y/N)

33. **Is there a shared database for the network lines of multiple utilities, such as electricity, water, and internet?** (Y/N)

34. **Is there a publicly available online platform with information about planned works on utility networks that are carried out in [CITY]?** (Y/N)

Are any of the following coordinating mechanisms in place to facilitate collaboration between agencies on excavation permit applications? (questions 35 and 36)

35. **An online platform to coordinate excavation permits** (Y/N)

36. **An agency or office in charge of coordination** (Y/N)

2.1.1 DIGITAL SERVICES AND INTEROPERABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Electronic Application	**1**	**1**	**2**
- Electronic application for new electricity connection (28)	0.5	0.5	1
- Online tracking for electricity connection process (29)	0.5	0.5	1
Electronic Payment (30 AND 31)	**1**	**1**	**2**
Information on Existing Infrastructure and Planned Works	**1**	**1**	**2**
- National/Local infrastructure database for multiple utilities/ electricity distribution networks (32 OR 33)	0.5	0.5	1
- Platform with the Information on the Planned Works on Utility Networks (34)	0.5	0.5	1
Coordination Mechanisms for Excavation Permits	**1**	**1**	**2**
- An online platform (35) OR	1 OR	1 OR	2 OR
- A coordinating agency (36)	0.5	0.5	1
A score of 1 is assigned if 35 is selected; a score of 0.5 is assigned if only 36 is selected			
Total Points	**4**	**4**	**8**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.1.2 MONITORING OF SERVICE SUPPLY (includes gender and environment)

37. **Are electricity outages (duration and frequency) monitored by the largest electricity utility in [CITY]?** (Y/N)

38. **Are there Key Performance Indicators (KPIs) to monitor the environmental sustainability of electricity supply?** (Y/N)

39. **Does the largest electricity utility in [CITY] publish sex-disaggregated customer surveys (for example, in order to measure the quality of services provided by the utility from the perspective of women-owned businesses)?** (Y/N)

2.1.2 MONITORING OF SERVICE SUPPLY (includes gender and environment)			
Indicators	**FFP**	**SBP**	**Total Points**
Reliability and Quality of Electricity Supply (37)	**1**	**1**	**2**
Sustainability of Electricity Supply (38)	**n/a**	**1**	**1**
Access to Electricity for Women Entrepreneurs (39)	**1**	**1**	**2**
Total Points	**2**	**3**	**5**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.1.3 AVAILABILITY OF INFORMATION AND TRANSPARENCY

For new commercial electricity connections, can you find the following information online? (questions 40 through 43)

40. List of documents required for obtaining a new commercial electricity connection (Y/N)

41. Required steps to get a new commercial electricity connection (for example, application submission, payment of fees, site inspection, etc.) (Y/N)

42. Estimated total cost charged by utility for a new electricity connection (Y/N)

43. Estimated connection time standards (Y/N)

44. Are the current electricity tariffs available online? (Y/N)

45. Are changes in electricity tariffs communicated to the customers at least one billing cycle in advance? (For example, published in the press or on a website, through letters, bills, emails, and/or SMS) (Y/N)

46. Are the components that are included in the total amount of the utility bill explained to the customer? (For example, published online or in a customer bill) (Y/N)

47. Are planned power outages communicated to customers in advance either through public announcements or direct communication? (Y/N)

48. Is there a complaint mechanism at the level of the electricity utility to report issues with the provided electricity services (for example, incorrect billing or issues with the electric supply)? (Y/N) *(not scored)*

Y → provide response to questions 49, 50, 51, 52.

Is the following information available online to guide customers to file a complaint about their electricity service under the complaint mechanism of the electricity utility? (questions 49 through 52)

49. Where to file a complaint (Y/N)

50. The list of documents necessary to file a complaint (Y/N)

51. The type of issues that can be reported in a complaint (Y/N)

52. Information on the steps that are part of the complaint process: (Y/N)

53. **Are the indicators on duration and frequency of electricity outages published online at least once a year?** (Y/N)

54. **Are the Key Performance Indicators (KPIs) to monitor the environmental sustainability of electricity supply published online at least once a year?** (Y/N)

2.1.3 AVAILABILITY OF INFORMATION AND TRANSPARENCY			
Indicators	**FFP**	**SBP**	**Total Points**
Connection Requirements	**1**	**1**	**2**
- Required documents (40)	0.25	0.25	0.5
- Required procedures (41)	0.25	0.25	0.5
- Connection cost (42)	0.25	0.25	0.5
- Stipulated connection time standards (43)	0.25	0.25	0.5
Tariffs and Tariff Setting - Tariffs are published online (44) AND - Customers are notified in advance of tariff changes (45) AND - Tariff setting formula is publicly available (46)	**1**	**1**	**2**
Planned Outages (47)	**1**	**1**	**2**
Complaint Mechanisms	**1**	**1**	**2**
- Information on the entity in charge of complaints (49)	0.25	0.25	0.5
- Documents necessary to make a complaint (50)	0.25	0.25	0.5
- Criteria/scope of complaint mechanism (51)	0.25	0.25	0.5
- Steps necessary to make a complaint (52)	0.25	0.25	0.5
Service Quality Indicators (53)	**1**	**1**	**2**
Environmental Sustainability Indicators (54)	**n/a**	**1**	**1**
Total Points	**5**	**6**	**11**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.1.4 ENFORCEMENT OF SAFETY REGULATIONS AND CONSUMER PROTECTION MECHANISMS

55. **Are internal electricity installation works of all types, including low voltage, always carried out by a licensed professional or company in practice?** (Y/N)

56. **Does the company or licensed professional that performed internal electricity installation works, always verify the quality of the installation of all types, including low voltage?** (Y/N)

57. **Is there a quality check or final inspection by a third party to ensure the quality and safety of internal electricity installations of all types, including low voltage?** (Y/N)

58. **Are external electricity installation works of all types, including low voltage, always carried out by a licensed professional or company in practice?** (Y/N)

59. **Does the licensed professional or company that performed external electricity installation works always check and verify the quality of works of all types, including low voltage?** (Y/N)

60. **Is there a quality check or final inspection by a third party to ensure the quality and safety of external electricity installations of all types, including low voltage?** (Y/N)

61. Is there a complaint mechanism independent from the electricity utility to escalate complaints? (Y/N)

2.1.4 ENFORCEMENT OF SAFETY REGULATIONS AND CONSUMER PROTECTION MECHANISMS			
Indicators	**FFP**	**SBP**	**Total Points**
Implementation of Inspections for Electricity Connections - Internal installation works ([55 AND 56] OR 57) - External installation works ([58 AND 59] OR 60) *A score is assigned if 57 is selected OR both 55 and 56 are selected* *A score is assigned if 60 is selected OR both 58 and 59 are selected*	**1** 0.5 0.5	**1** 0.5 0.5	**2** 1 1
Independent Complaint Mechanism (61)	**1**	**1**	**2**
Total Points	**2**	**2**	**4**

PILLAR III–OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION (ELECTRICITY)

The scores for Pillar III indicators that are based on firm level data are calculated using the Normal Cumulative Density Function (CDF) transformation method on a scale of 0 to 100, where 0 and 100 represent the lowest and highest possible scores, respectively. The best and worst performers are identified based on the 5th and 95th percentiles of the collected data.

Data for Pillar III on the Operational Efficiency of Utility Service Provision are collected through expert consultations (questions 62-64) and firm-level surveys (questions 65-69). Data collected through expert consultations use the following parameters:

PILLAR III–OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION (ELECTRICITY)	
Parameters	
Business Location	The largest (most populous) city in the economy. For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.
Largest Utility Provider	The largest utility provider in the largest city is considered (in terms of customers served or market share). For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.
Load Capacity: **i) 180kvA** **ii) 60 kvA**	A specific parameter of load capacity is used to obtain comparable data on the cost of connection. The load capacity is used as a unit of measurement; it determines how much power is used and where it is used. For questions on cost of connection, the experts will be asked to provide their response accounting for this specific parameter.
Length of Connection: **i) 75 meters** **ii) 10 meters**	A specific parameter of the length of electricity connection is used to obtain comparable data on the cost of connection. Distance to the distribution line determines material and labor cost. Utility fee schedules may also differentiate lengths to the source. For questions on cost of connection, the experts will be asked to provide their response accounting for this specific parameter.
Electricity Consumption: **34,560 kWh**	A specific parameter of electricity consumption is used to obtain comparable data on the monthly tariff. Electricity consumption reflects the intensity of a firm's reliance on electricity and is required to calculate the

	applicable tariff. For questions on cost of service, the experts will be asked to provide their response accounting for this specific parameter.

3.1.1 AFFORDABILITY

62. For an electricity connection of 60 kVA/60 kW (for example, a shop or a non-refrigerated storage facility) in [CITY], with a distance of 10 meters from the main distribution line, please provide the approximate average cost to obtain a new electricity connection, including all cost items (local currency)

63. For an electricity connection of 180 kVA/180 kW (for example, a small retail mall or a restaurant) in [CITY], with a distance of 75 meters from the main distribution line, please provide the approximate average cost to obtain a new electricity connection, including all cost items (local currency)

64. What would be the total estimated monthly bill based on the applicable tariff for a commercial establishment consuming 34,560 kWh (load capacity of 180 kVA/180 kW)?

3.1.1 AFFORDABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Cost of Connection and Cost of Service - Cost of Connection (62 AND 63) - Cost of Service (64) *Scoring scenarios will be determined depending on the variance of cost estimates delivered*	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

3.1.2 TIME TO OBTAIN A CONNECTION

65. How many days did it take to obtain electrical connection from the day of the application to the day the service was received?

3.1.2 TIME TO OBTAIN A CONNECTION			
Indicators	**FFP**	**SBP**	**Total Points**
Time to Obtain an Electricity Connection (65)	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

3.1.3 RELIABILITY OF SUPPLY

66. Number of outages: In a typical month, how many power outages did this establishment experience?

67. Duration of outages: How long did these power outages last on average?

68. Losses due to outages: Please estimate the losses that resulted from power outages either as a percentage of sales or in local currency

69. Over the course of fiscal year, did this establishment own or share a generator?

3.1.3 RELIABILITY OF SUPPLY			
Indicators	**FFP**	**SBP**	**Total Points**
Reliability of Electricity Supply	**100 (100%)**	**n/a**	**100 (100%)**
- Average frequency of power outages (66)	25 (25%)	n/a	25 (25%)
- Average duration of power outages (67)	25 (25%)	n/a	25 (25%)
- Losses due to outages as a percentage of annual sales (68)	25 (25%)	n/a	25 (25%)
- Percentage of firms owning or sharing a generator (69)	25 (25%)	n/a	25 (25%)
Total Points	**100**	**n/a**	**100**

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent).
FFP = Firm Flexibility Point; SBP = Social Benefits Point.

WATER QUESTIONNAIRE

The tables that follow present all indicators (including their components, if applicable) under each pillar, with a reference to the corresponding question number in parenthesis. The questions are listed before each table for ease of reference.

For Y/N questions, the Y response accounts for the score and is considered as the good practice, unless otherwise indicated with the sign "Y/N; N – good practice".

In the tables that follow, "AND" means all referenced questions must have a good practice response to obtain a score on the indicator.

In the tables that follow, "OR" means one or more referenced questions must have a good practice response to obtain a score on the indicator.

Certain questions are marked as "not scored," which indicates that they do not affect the score in any way. The purpose of these questions is to further inform and refine the questions design for subsequent years of the rollout phase, as needed, as well as to substantiate and provide further information for the scored questions.

PILLAR I–QUALITY OF REGULATIONS ON UTILITY SERVICES (WATER)	
Parameters	
Business Location	The largest (most populous) city in the economy. The parameter is used in cases where regulations may not be applicable at a national level and vary across states or regions. Geographical location determines availability of water connections, as well as the type of connections and construction required. For Pillar I, if regulations differ across states within an economy, the experts will be asked to provide information regarding the regulations of the largest city.

1.2.1 REGULATORY MONITORING OF TARIFFS AND SERVICE QUALITY

1. **Is there a regulatory agency overseeing the water sector?** (Y/N) *(not scored)*
   Y → provide response to questions 2, 3, and 4.

2. **Per the regulatory framework, does the water regulator have a final decision-making authority in the approval of water tariffs?** (Y/N)

3. **Per the regulatory framework, is the water regulator required to set performance standards to ensure service quality and the reliability of water services?** (Y/N)

4. **Per the regulatory framework, is the water regulator required to monitor adherence to performance standards to ensure service quality and the reliability of water services?** (Y/N)

1.2.1 REGULATORY MONITORING OF TARIFFS AND SERVICE QUALITY			
Indicators	**FFP**	**SBP**	**Total Points**
Monitoring of Tariffs (2)	**1**	**1**	**2**
Monitoring of Service Quality	**1**	**1**	**2**

- Set performance standards (3)	0.5	0.5	1
- Monitor adherence to performance standards (4)	0.5	0.5	1
Total Points	**2**	**2**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

1.2.2 UTILITY INFRASTRUCTURE SHARING AND QUALITY ASSURANCE MECHANISMS

5. **Are there regulatory provisions requiring coordination in the joint construction of infrastructure, such as electrical poles, overhead or underground cables, water pipes, and/or telephone wires?** (Y/N)

6. **Are there legally defined time limits for all concerned agencies to provide approvals on joint construction of infrastructure?** (Y/N)

7. **Does the regulatory framework stipulate sanctions, and/or remedies applicable to utilities to ensure reliable water supply (limit insufficiencies)?** (Y/N)

1.2.2 UTILITY INFRASTRUCTURE SHARING AND QUALITY ASSURANCE MECHANISMS			
Indicators	**FFP**	**SBP**	**Total Points**
Joint Planning and Construction	**1**	**1**	**2**
- Common excavation provisions (5)	0.5	0.5	1
- Timelines for approvals (6)	0.5	0.5	1
Mechanisms on Service Quality Assurance (7)	**1**	**1**	**2**
Total Points	**2**	**2**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

1.2.3 REGULATIONS ON SAFETY OF WATER CONNECTIONS

8. **Per the regulatory framework, are professionals carrying out water installation works required to meet at least two of the conditions listed below?** (Y/N)
   - Minimum number of years of experience
   - Education qualification (i.e. university degree in the relevant field)
   - Registered member of the national association of engineers
   - Pass a qualification exam

9. **Per the regulatory framework, are internal water installations required to be carried out by a licensed professional/company?** (Y/N)

10. **Per the regulatory framework, is the company that carries out internal water installations required to inspect/certify the quality of the installation?** (Y/N)

11. **Per the regulatory framework, is a final inspection required to be carried out by a third party to ensure the quality of internal water installations?** (Y/N)

12. **Per the regulatory framework, are external water installations required to be carried out by a licensed professional/company?** (Y/N)

13. **Per the regulatory framework, is the company that carries out external water installations required to inspect/ certify the quality of the installation?** (Y/N)

14. **Per the regulatory framework, is a final inspection required to be carried out by a third party to ensure the quality of external water installations?** (Y/N)

15. **Can any party (aside from the project investor or owner) involved in providing the water connection be held liable by law in case faults are discovered when the water connection is in use?** (Y/N)

1.2.3 REGULATIONS ON SAFETY OF WATER CONNECTIONS			
Indicators	**FFP**	**SBP**	**Total Points**
Professional Certifications (8)	**1**	**1**	**2**
Inspection Regimes	**1**	**1**	**2**
- Internal installation works (11 OR (9 AND 10))	0.5	0.5	1
- External installation works (14 OR (12 AND 13))	0.5	0.5	1
A score is assigned if 11 is selected OR both 9 and 10 are selected			
A score is assigned if 14 is selected OR both 12 and 13 are selected			
Liability Regimes (15)	**1**	**1**	**2**
Total Points	**3**	**3**	**6**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

1.2.4 ENVIRONMENTAL SUSTAINABILITY

Does the regulatory framework set requirements to carry out the following tests, at the consumer tap, to ascertain water quality standards are met for end user consumption (questions 16 through 19):

16. **Aesthetic tests (e.g., taste, odor, appearance)** (Y/N)

17. **Microbiological parameters' tests** (Y/N)

18. **Physical-chemical tests** (Y/N)

19. **Radiological tests** (Y/N)

20. **Does the regulatory framework stipulate any financial sanctions imposed on water utilities to ensure compliance with water quality standards?** (Y/N)

21. **Does the regulatory framework set targets or requirements for water utilities to increase efficiency in water provision by reducing water losses?** (Y/N)

22. **Does the regulatory framework stipulate any financial sanctions imposed on water utilities to ensure compliance with targets or requirements aimed at reducing water losses?** (Y/N)

23. **Does the regulatory framework require businesses to adopt practices that ensure efficient water use?** (Y/N)

24. **Does the regulatory framework include any financial sanctions to businesses for not complying with water-efficiency requirements?** (Y/N)

25. **Does the regulatory framework include any financial mechanisms to incentivize businesses to adopt water-saving practices or water-efficient technology?** (Y/N)

26. **Does the regulatory framework include any non-financial mechanisms to incentivize businesses to adopt water-saving practices or water-efficient technology?** (Y/N)

27. **Is there a regulatory agency responsible for regulating wastewater discharge to the local sewerage system?** (Y/N)

28. **Are there any legal requirements for wastewater to be treated before it is discharged to water bodies or land (such as discharge limits, and/or pretreatment conditions for discharges)?** (Y/N)

29. **Does the regulatory framework establish rules on wastewater reuse (such as guidelines for the use of reclaimed water, effluent quality limits and/or treatment process/type)?** (Y/N)

1.2.4 ENVIRONMENTAL SUSTAINABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Environmental Sustainability and Quality of Water Provision	**n/a**	**1**	**1**
- Environmental standards for water quality (16 AND 17 AND 18 AND 19)	n/a	0.25	0.25
- Enforcement of environmental standards for water quality (20)	n/a	0.25	0.25
- Environmental standards for efficient water supply (21)	n/a	0.25	0.25
- Enforcement of standards for water supply efficiency (22)	n/a	0.25	0.25
Environmental Sustainability of Water Use	**n/a**	**1**	**1**
- Requirements for businesses to adhere to efficient water use practices (23)	n/a	0.5	0.5
- Enforcement mechanisms to foster businesses' compliance with water efficiency requirements (24)	n/a	0.5	0.5
Incentives to Adopt Water-Saving Practices	**1**	**1**	**2**
- Financial and non-financial incentives for businesses (25 AND 26) OR	1 OR	1 OR	OR
- Financial incentives for businesses (25)	0.5	0.5	1
Sustainability of Wastewater Treatment	**n/a**	**1**	**1**
- Existence of entity regulating wastewater discharge (27)	n/a	0.5	0.5
- Wastewater treatment requirements (28)	n/a	0.5	0.5
Wastewater Reuse (29)	**n/a**	**1**	**1**
Total Points	**1**	**5**	**6**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

PILLAR II–QUALITY OF THE GOVERNANCE AND TRANSPARENCY OF UTILITY SERVICES (WATER)	
Parameters	
Business Location	The largest (most populous) city in the economy. For all questions in Pillar II, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.
Largest Utility Provider	The largest utility provider in the largest city is considered (in terms of customers served or market share). For all questions in Pillar II, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.

30. **Is [LARGEST UTILITY PROVIDER] the largest water utility provider in [CITY]?** (Y/N) *(not scored)*

2.2.1 DIGITAL SERVICES AND INTEROPERABILITY

31. **Is it possible to apply for a new commercial water connection through a fully online process?** (Y/N)

32. **Is it possible to track online the status of the connection process for a new water connection?** (Y/N)

33. **Is it possible to pay the fee for a new water connection through electronic payment methods?** (Y/N)

34. **Is it possible to pay for the monthly water bill through electronic payment methods?** (Y/N)

35. **Is there a local infrastructure database (for example, a GIS database) that shows the existing water distribution network?** (Y/N)

36. **Is there a shared database for the network lines of multiple utilities, such as electricity, water, and internet?** (Y/N)

37. **Is there a publicly available online platform with information about the planned works on utility networks that are carried out in [CITY]?** (Y/N)

Are any of the following coordinating mechanisms in place to facilitate collaboration between agencies on excavation permit applications? (questions 38 and 39)

38. **An online platform to coordinate excavation permits** (Y/N)

39. **An agency or office in charge of coordination:** (Y/N)

2.2.1 DIGITAL SERVICES AND INTEROPERABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Electronic Application	**1**	**1**	**2**
- Electronic application for new water connection (31)	0.5	0.5	1
- Online tracking for water connection process (32)	0.5	0.5	1
Electronic Payment (33 AND 34)	**1**	**1**	**2**
Information on Existing Infrastructure and Planned Works	**1**	**1**	**2**
- Local infrastructure database for multiple utilities/ water distribution networks (35 OR 36)	0.5	0.5	1
- Platform with the information on the planned works on utility networks (37)	0.5	0.5	1
Coordination Mechanisms for Excavation Permits	**1**	**1**	**2**
- Online platform (38) OR	1 OR	1 OR	OR
- A coordinating agency (39)	0.5	0.5	0.5
A score of 1 is assigned if 38 is selected; a score of 0.5 is assigned if only 39 is selected			
Total Points	**4**	**4**	**8**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.2.2 MONITORING OF SERVICE SUPPLY (includes gender and environment)

40. **Is the reliability of water supply (for example, continuity and pressure) monitored by the largest water utility in [CITY]?** (Y/N)

41. **Are parameters of water quality (for example, pH, biochemical oxygen demand, chemical oxygen demand, and lead) monitored?** (Y/N)

42. **Are there Key Performance Indicators (KPIs) to monitor the environmental sustainability of water supply?** (Y/N)

43. **Does the largest water utility in [CITY] publish sex-disaggregated customer surveys (for example, in order to measure the quality of services provided by the utility from the perspective of women owned businesses)?** (Y/N)

2.2.2 MONITORING OF SERVICE SUPPLY (includes gender and environment)			
Indicators	**FFP**	**SBP**	**Total Points**
Reliability and Quality of Water Supply (40 AND 41)	**1**	**1**	**2**
Environmental Sustainability of Water Supply (42)	**n/a**	**1**	**1**
Access to Water for Women Entrepreneurs (43)	**1**	**1**	**2**
Total Points	**2**	**3**	**5**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.2.3 AVAILABILITY OF INFORMATION AND TRANSPARENCY

For new commercial water connections, can you find the following information online? (questions 44 through 47)

44. **List of documents required for obtaining a new commercial water connection** (Y/N)

45. **Required steps to get a new commercial water connection (for example, application submission, payment of fees, site inspection, etc.)** (Y/N)

46. **Estimated total cost charged by utility for a new water connection** (Y/N)

47. **Estimated connection time standards** (Y/N)

48. **Are the current water tariffs available online?** (Y/N)

49. **Are changes in water tariffs communicated to customers at least one billing cycle in advance (for example, published in the press or on a website, through letters, bills, emails, and/or SMS)?** (Y/N)

50. **Are the components that are included in the total amount of the utility bill explained to the customer (for example, published online or in a customer bill)?** (Y/N)

51. **Are planned water outages communicated to customers in advance either through public announcements or direct communication?** (Y/N)

52. **Is there a complaint mechanism at the level of the water utility to report issues with the provided water services (for example, incorrect billing or issues with the water supply)?** (Y/N) *(not scored)*
    Y → proceed to the remaining questions.
    N → 0 points on questions 53 to 56.

Is the following information available online to guide customers to file a complaint about their water service under the complaint mechanism of the water utility? (Y/N) (questions 53 through 56)

53. **Where to file a complaint** (Y/N)

54. **The list of documents necessary to file a complaint** (Y/N)

55. **The kind of issues that can be reported in a complaint** (Y/N)

56. **Information on the steps that are part of the complaint process** (Y/N)

57. **Are the indicators on reliability of water supply published online at least once a year?** (Y/N)

58. **Are the indicators on quality of supplied water published online at least once a year?** (Y/N)

59. **Are the Key Performance Indicators (KPIs) to monitor the environmental sustainability of water supply published online at least once a year?** (Y/N)

2.2.3 AVAILABILITY OF INFORMATION AND TRANSPARENCY			
Indicators	**FFP**	**SBP**	**Total Points**
Connection Requirements	**1**	**1**	**2**
- Required documents (44)	0.25	0.25	0.5
- Required procedures (45)	0.25	0.25	0.5
- Connection cost (46)	0.25	0.25	0.5
- Stipulated connection time standards (47)	0.25	0.25	0.5
Tariffs and Tariff Setting	**1**	**1**	**2**
- Tariffs are published online (48) AND			
- Customers are notified in advance of tariff changes (49) AND			
- Tariff setting formula is publicly available (50)			
Planned Outages (51)	**1**	**1**	**2**
Complaint Mechanisms	**1**	**1**	**2**
- Information on the entity in charge of complaints (53)	0.25	0.25	0.5
- Documents necessary to make a complaint (54)	0.25	0.25	0.5
- Criteria/scope of complaint mechanism (55)	0.25	0.25	0.5
- Steps necessary to make a complaint (56)	0.25	0.25	0.5
Service Quality Indicators	**1**	**1**	**2**
- KPIs on reliability of water supply (57)	0.5	0.5	1
- KPIs on water quality (58)	0.5	0.5	1
Environmental Sustainability Indicators (59)	**n/a**	**1**	**1**
Total Points	**5**	**6**	**11**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.2.4 ENFORCEMENT OF SAFETY REGULATIONS AND CONSUMER PROTECTION MECHANISMS

60. **Are internal water installation works always carried out by a licensed professional or company in practice?** (Y/N)

61. **Does the company or licensed professional that performed internal water installations works always verify the quality of the installation?** (Y/N)

62. **Is there a quality check or final inspection by a third-party to ensure the quality and safety of internal water installation works?** (Y/N)

63. **Are external water installation works always carried out by a licensed professional or company in practice?** (Y/N)

64. **Does the licensed professional or company that performed external water installation works also always check and verify the quality of the works?** (Y/N)

65. **Is there a quality check or final inspection by a third party to ensure the quality and safety of external water installations works?** (Y/N)

66. **Is there a complaint mechanism independent from the water utility to escalate the complaints?** (Y/N)

2.2.4 ENFORCEMENT OF SAFETY REGULATIONS AND CONSUMER PROTECTION MECHANISMS			
Indicators	**FFP**	**SBP**	**Total Points**
Implementation of Inspections for Water Connections - Internal installation works ((60 AND 61) OR 62) - External installation works ((63 AND 64) OR 65) *A score is assigned if 62 is selected OR both 60 and 61 are selected.* *A score is assigned if 65 is selected OR both 63 and 64 are selected*	**1** 0.5 0.5	**1** 0.5 0.5	**2** 1 1
Independent Complaint Mechanism (66)	**1**	**1**	**2**
Total Points	**2**	**2**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

PILLAR III–OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION (WATER)

The scores for Pillar III indicators that are based on firm level data are calculated using the Normal Cumulative Density Function (CDF) transformation method on a scale of 0 to 100, where 0 and 100 represent the lowest and highest possible scores, respectively. The best and worst performers are identified based on the 5th and 95th percentiles of the collected data.

Data for Pillar III on the Operational Efficiency of Utility Service Provision are collected through expert consultations (questions 67-70) and firm-level surveys (questions 71 and 72). Data collected through expert consultations use the following parameters:

PILLAR III–OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION (WATER)	
Parameters	
Business Location	The largest (most populous) city in the economy. For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.
Largest Utility Provider	The largest utility provider in the largest city is considered (in terms of customers served or market share). For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.

Water – Pipe Diameter: **i) 1/2 inch (21 mm)** **ii) 1 inch (33 mm)**	A specific parameter of pipe diameter is used to obtain comparable data on the cost of connection. The pipe diameter directly affects water connection costs, as larger diameter pipes lead to increased material and installation expenses due to their size and complexity. For questions on cost of connection, the experts will be asked to provide their response accounting for this specific parameter.
Water Consumption: **i) 1000 cubic meters (220 000 gallons; 35 315 cubic feet;** **ii) 20 cubic meters (4400 gallons; 706 cubic feet)**	A specific parameter of water consumption is used to obtain comparable data on the monthly tariff. Water consumption reflects the intensity of a firm's reliance on water and is required to calculate the applicable tariff. For questions on cost of service, the experts will be asked to provide their response accounting for this specific parameter.
Distance from the Water Main: **5 meters**	A specific parameter of distance from the water main is used to obtain comparable data on the cost of connection. The distance from the water mains affects connection costs as greater distances require materials and labor to extend the pipe network or develop additional infrastructure, leading to higher installation expenses. For questions on cost of connection, the experts will be asked to provide their response accounting for this specific parameter.

3.2.1 AFFORDABILITY

What was the total cost in local currency to obtain that water connection, including application, permits, inspection fees, and all external connection works (exclude internal piping and connections)?

67. **Under the scenario of a small-size business, requiring a new water connection of 1/2 inch (21 mm) of diameter (or approximate dimension), with a distance of 5 meters from the water mains to the property line in a concrete footpath, please provide an estimate of the cost to obtain a new water connection in [CITY] (in local currency):**

68. **Under the scenario of a medium-size business requiring a new water connection of 1 inch (33 mm) of diameter (or approximate dimension), with a distance of 5 meters from the mains to the property line in a concrete footpath, please provide an estimate of the cost to obtain a new water connection in [CITY] (in local currency):**

69. **Please provide the total monthly amount paid for water and wastewater services, excluding all applicable taxes, for a commercial establishment (for example, a hotel) with a monthly consumption of 1000 cubic meters (220 000 gallons; 35 315 cubic feet) in [CITY] (in local currency).**

70. **Please provide the total monthly amount paid for water and wastewater services, excluding all applicable taxes, for a small commercial establishment with a monthly consumption of 20 cubic meters (4400 gallons; 706 cubic feet), in [CITY] (in local currency).**

3.2.1 AFFORDABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Cost of Connection and Cost of Service - Cost of Connection (67 AND 68) - Cost of Service (69 AND 70) *Scoring scenarios will be determined depending on the variance of cost estimates delivered*	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

3.2.2 TIME TO OBTAIN CONNECTION

71. How many days did it take to obtain water connection from the day of the application to the day the service was received?

3.2.2 TIME TO OBTAIN CONNECTION			
Indicators	**FFP**	**SBP**	**Total Points**
Time to Obtain a Water Connection (71)	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

3.2.3 RELIABILITY OF SUPPLY

72. Over fiscal year [Insert last complete fiscal year], did this establishment experience insufficient water supply?

3.2.3 RELIABILITY OF SUPPLY			
Indicators	**FFP**	**SBP**	**Total Points**
Reliability of Water Supply - Percentage of firms not experiencing water insufficiencies (72)	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent).
FFP = Firm Flexibility Point; SBP = Social Benefits Point.

INTERNET QUESTIONNAIRE

The tables that follow present all indicators (including their components, if applicable) under each pillar, with a reference to the corresponding question number in parenthesis. The questions are listed before each table for ease of reference.

For Y/N questions, the Y response accounts for the score and is considered as the good practice, unless otherwise indicated with the sign "Y/N; N – good practice".

In the tables that follow, "AND" means all referenced questions must have a good practice response to obtain a score on the indicator.

In the tables that follow, "OR" means one or more referenced questions must have a good practice response to obtain a score on the indicator.

Certain questions are marked as "not scored," which indicates that they do not affect the score in any way. The purpose of these questions is to further inform and refine the questions design for subsequent years of the rollout phase, as needed, as well as to substantiate and provide further information for the scored questions.

PILLAR I–QUALITY OF REGULATIONS ON UTILITY SERVICES (INTERNET)	
Parameters	
Business Location	The largest (most populous) city in the economy. The parameter is used in cases where regulations may not be applicable at a national level and vary across states or regions. Geographical location determines availability of internet connections, as well as the type of connections and construction required. For Pillar I, if regulations differ across states within an economy, the experts will be asked to provide information regarding the regulations of the largest city.

1.3.1 REGULATORY MONITORING OF TARIFFS AND SERVICE QUALITY

1. **Is there a regulatory agency overseeing internet operators and providers?** (Y/N) *(not scored)*
   Y → provide response to questions 2,3,4,5.

Per the regulatory framework, is the regulatory agency required to oversee the following: (questions 2 and 3)

2. **Wholesale connectivity tariffs** (Y/N)

3. **Interconnection agreements between internet service providers** (Y/N)

Per the regulatory framework, are there any government authorities required to carry out the following functions: (questions 4 and 5)

4. **Initiate investigations for anticompetitive practices** (Y/N)

5. **Impose fines for anticompetitive practices** (Y/N)

6. **Per the regulatory framework, is the internet regulator required to set performance standards to ensure service quality and the reliability of internet services?** (Y/N)

7. **Per the regulatory framework, is the internet regulator required to monitor adherence to performance standards to ensure service quality and the reliability of internet services?** (Y/N)

1.3.1 REGULATORY MONITORING OF TARIFFS AND SERVICE QUALITY			
Indicators	**FFP**	**SBP**	**Total Points**
Monitoring of Tariffs (2 AND 3 AND 4 AND 5)	**1**	**1**	**2**
Monitoring of Service Quality	**1**	**1**	**2**
- Setting performance standards (6)	0.5	0.5	1
- Monitoring of performance standards (7)	0.5	0.5	1
Total Points	**2**	**2**	**4**

1.3.2 UTILITY INFRASTRUCTURE SHARING AND QUALITY ASSURANCE MECHANISMS

8. **Are there regulatory provisions requiring coordination in the joint construction of infrastructure, such as electrical poles, overhead or underground cables, water pipes, and/or telephone wires?** (Y/N)

9. **Are there legally defined time limits for all concerned agencies to provide approval on joint construction of infrastructure?** (Y/N)

10. **Does the regulatory framework guarantee equal access to government-owned infrastructure for internet service operators and providers to build and maintain their networks?** (Y/N)

11. **Are there provisions regulating rights of way for internet service providers to install and maintain their equipment on public and private lands?** (Y/N)

12. **Are there regulatory provisions stipulating requirements for operators owning passive infrastructure to share access for the last mile with internet service providers?** (Y/N)

13. **Are there regulatory provisions stipulating requirements for operators owning active infrastructure to share access for the last mile with internet service providers?** (Y/N)

14. **Are there regulatory provisions guaranteeing both local loop unbundling and line access?** (Y/N)

15. **Does the regulatory framework allow utility partnerships for infrastructure sharing?** (Y/N)

16. **Are there asymmetric regulations for dominant operators or operators with significant market power that establish remedial actions?** (Y/N)

17. **Does the regulatory framework stipulate sanctions and/or remedies applicable to utilities to ensure reliable internet supply (limit internet service outages or slowdowns)?** (Y/N)

1.3.2 UTILITY INFRASTRUCTURE SHARING AND QUALITY ASSURANCE MECHANISMS			
Indicators	**FFP**	**SBP**	**Total Points**
Joint Planning and Construction	**1**	**1**	**2**
- Common excavation provisions (8)	0.5	0.5	1
- Timelines for approvals (9)	0.5	0.5	1

Rights of Way	**1**	**1**	**2**
- Regulation on equal access to government-owned infrastructure (10)	0.5	0.5	1
- Regulation on rights of way for digital infrastructure service providers (11)	0.5	0.5	1
Open Infrastructure	**1**	**1**	**2**
- Passive or active infrastructure sharing (12 or 13)	0.25	0.25	0.5
- Local loop unbundling and line access (14)	0.25	0.25	0.5
- Utility partnerships for infrastructure sharing (15)	0.25	0.25	0.5
- Asymmetric regulations for dominant carriers (16)	0.25	0.25	0.5
Mechanisms on Service Quality Assurance (17)	**1**	**1**	**2**
Total Points	**4**	**4**	**8**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point. ISP = Internet Service Provider.

1.3.3 REGULATIONS ON SAFETY OF INTERNET CONNECTIONS

18. **Does the regulatory framework stipulate liability for personal data protection breaches, including the right to pursue compensation?** (Y/N)

19. **Does the regulatory framework establish requirements on data breach incident reporting?** (Y/N)

20. **Is there an agency responsible for cybersecurity at national level?** (Y/N) *(not scored)*
    Y → provide response to questions 21 to 24.

21. **Per the regulatory framework, does the agency responsible for cybersecurity coordination at national level have the mandate to define and implement risk assessment strategies?** (Y/N)

22. **Per the regulatory framework, does the agency responsible for cybersecurity coordination at national level have the mandate to carry out security audits??** (Y/N)

23. **Does the regulatory framework establish procedures for the agency responsible for cybersecurity coordination at national level to lead collective response involving both public and private stakeholders in handling cybersecurity incidents?** (Y/N)

24. **Per the regulatory framework, does the agency responsible for cybersecurity coordination at national level have the mandate to enforce cybersecurity laws and regulations?** (Y/N)

25. **Does the regulatory framework establish mandatory cybersecurity standards and cybersecurity safeguards?** (Y/N)

26. **Does the regulatory framework require the establishment of at least one computer security incident response team responsible for handling cybersecurity incidents?** (Y/N)

1.3.3 REGULATIONS ON SAFETY OF INTERNET CONNECTIONS			
Indicators	**FFP**	**SBP**	**Total Points**
Liability Regimes	**1**	**1**	**2**
- Liability for personal data protection breaches (18)	0.5	0.5	1
- Data breach incident reporting (19)	0.5	0.5	1
Cybersecurity Coordination	**1**	**1**	**2**
- Mandate for risk-assessment strategies (21)	0.25	0.25	0.5
- Mandate for cybersecurity audits (22)	0.25	0.25	0.5

- Procedures for collective response against cyber incidents (23)	0.25	0.25	0.5
- Mandate to enforce cybersecurity laws and regulations (24)	0.25	0.25	0.5
Cybersecurity Safeguards	**1**	**1**	**2**
- Cybersecurity protection or minimum standards (25)	0.5	0.5	1
- Computer Security Incident Response Teams (26)	0.5	0.5	1
Total Points	**3**	**3**	**6**

1.3.4 ENVIRONMENTAL SUSTAINABILITY

27. Does the regulatory framework include any environmental reporting or disclosure standards for digital connectivity infrastructure? (Y/N)

28. Does the regulatory framework establish any national targets for emissions or energy efficiency of digital connectivity infrastructure (data centers included)? (Y/N)

1.3.4 ENVIRONMENTAL SUSTAINABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Environmental Reporting or Disclosure Standards for Digital Connectivity Infrastructure (27)	**n/a**	**1**	**1**
Emissions and Energy Efficiency of Infrastructure (28)	**n/a**	**1**	**1**
Total Points	**n/a**	**2**	**2**

PILLAR II–QUALITY OF THE GOVERNANCE AND TRANSPARENCY OF UTILITY SERVICES (INTERNET)	
Parameters	
Business Location	The largest (most populous) city in the economy. For all questions in Pillar II, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.
Largest Utility Provider	The largest fixed broadband internet service provider in the largest city is considered by market share or number of all customers served. For all questions in Pillar II, the experts will be asked to provide their response accounting for this specific parameter unless specified otherwise in the question per se.

29. Is the largest fixed internet service provider in [CITY] the following: [largest utility provider]? *(not scored)* (Y/N)

2.3.1 DIGITAL SERVICES AND INTEROPERABILITY

30. Is it possible to apply for a new commercial internet connection through a fully online process? (Y/N)

31. Is it possible to track online the status of the connection process for a new commercial internet connection? (Y/N)

32. Is it possible to pay the connection fee for a new fixed broadband connection through electronic payment methods? (Y/N)

33. **Is it possible to pay the monthly internet bill through electronic payment methods?** (Y/N)

34. **Is there a publicly available national or local infrastructure database (for example, a GIS database) that shows the existing internet distribution network?** (Y/N)

35. **Is there a shared database for the network lines of multiple utilities, such as electricity, water, and internet?** (Y/N)

36. **Is there a publicly available online platform with information about planned works on utility networks that are carried out in [CITY]?** (Y/N)

Are any of the following coordinating mechanisms in place to facilitate collaboration among agencies for excavation permit applications? (questions 37 and 38)

37. **An online platform to coordinate excavation permits** (Y/N)

38. **An agency or office in charge of coordination of excavation permits** (Y/N)

2.3.1 DIGITAL SERVICES AND INTEROPERABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Electronic Application	**1**	**1**	**2**
- Electronic application for new internet connection (30)	0.5	0.5	1
- Online tracking application for internet connection (31)	0.5	0.5	1
Electronic Payment (32 AND 33)	**1**	**1**	**2**
Information on Existing Infrastructure and Planned Works	**1**	**1**	**2**
- National/Local infrastructure database for multiple utilities/ internet service provider networks (34 OR 35)	0.5	0.5	1
- Platform with the information on the planned works on utility networks (36)	0.5	0.5	1
Coordination Mechanisms for Excavation Permits	**1**	**1**	**2**
- Online platform (37) OR	OR	OR	OR
- A coordinating agency or office (38) OR	0.5	0.5	1
A score of 1 is assigned if 37 is selected; a score of 0.5 is assigned if only 38 is selected			
Total Points	**4**	**4**	**8**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.3.2 MONITORING OF SERVICE SUPPLY (includes gender and environment)

39. **Are there any Key Performance Indicators to monitor reliability and quality of internet supply (for example, download/upload speed, latency, minimum uptimes, throughput, jitter, recovery time etc.)? (**Y/N)

40. **Does the largest internet service provider in [CITY] publish sex-disaggregated customer surveys (for example, in order to measure quality of services provided by the utility from the perspective of women-owned businesses)?** (Y/N)

2.3.2 MONITORING OF SERVICE SUPPLY (includes gender and environment)			
Indicators	**FFP**	**SBP**	**Total Points**

Reliability and Quality of Internet Supply (39)	**1**	**1**	**2**
Access to Internet for Women Entrepreneurs (40)	**1**	**1**	**2**
Total Points	**2**	**2**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

2.3.3 AVAILABILITY OF INFORMATION AND TRANSPARENCY

For new commercial internet connections, can you find the following information online? (questions 41 through 44)

41. **List of documents required to get a new commercial internet connection** (Y/N)

42. **Required steps to get a new commercial internet connection (for example, application submission, payment of fees, site inspection, etc.)** (Y/N)

43. **Estimated total cost charged by utility for a new commercial internet connection** (Y/N)

44. **Connection time estimates** (Y/N)

45. **Are the monthly internet tariffs for commercial customers available online?** (Y/N)

46. **Are changes in monthly internet tariffs communicated to customers at least one billing cycle in advance (for example, as published in the press, regulations, on a website, through letters, bills, and/or emails)?** (Y/N)

47. **Are the components that are included in the total amount of the internet bill explained to the customer (for example, published online or in a customer bill)?** (Y/N)

48. **Are planned internet outages communicated to customers in advance either through public announcements or direct communication?** (Y/N)

49. **Is there a complaint mechanism at the level of internet service provider to report issues with the provided internet services (for example, incorrect billing or issues with the internet supply)?** (not scored)
    Y → provide response to questions 50 to 53.

Is the following information available online to guide customers to file a complaint about their internet service under the complaint mechanism of the internet service provider? (questions 50 through 53)

50. **Where to file the complaint** (Y/N)

51. **The list of documents necessary to file a complaint** (Y/N)

52. **The type of issues that can be reported in a complaint** (Y/N)

53. **Information on the steps that are part of the complaint process** (Y/N)

54. **Are the indicators on reliability and quality of internet supply published online at least once a year?** (Y/N)

2.3.3 AVAILABILITY OF INFORMATION AND TRANSPARENCY			
Indicators	**FFP**	**SBP**	**Total Points**
Connection Requirements	**1**	**1**	**2**
- Required documents (41)	0.25	0.25	0.5
- Required procedures (42)	0.25	0.25	0.5
- Connection cost (43)	0.25	0.25	0.5
- Stipulated connection time standards (44)	0.25	0.25	0.5
Tariffs and Tariff Settings	**1**	**1**	**2**
- Tariffs are published online (45) AND			
- Customers are notified in advance of tariff changes (46) AND			
- Tariff setting formula is publicly available (47)			
Planned Outages (48)	**1**	**1**	**2**
Complaint Mechanisms	**1**	**1**	**2**
- Information on the entity in charge of complaints (50)	0.25	0.25	0.5
- Documents necessary to make a complaint (51)	0.25	0.25	0.5
- Criteria/scope of complaint mechanism (52)	0.25	0.25	0.5
- Steps necessary to make a complaint (53)	0.25	0.25	0.5
Service Quality Indicators (54)	**1**	**1**	**2**
Total Points	**5**	**5**	**10**

2.3.4 ENFORCEMENT OF SAFETY REGULATIONS AND CONSUMER PROTECTION MECHANISMS

Does the authority responsible for cybersecurity coordination carry out the following in practice? (questions 55 through 58)

55. **Cybersecurity risk-assessments** (Y/N)

56. **Cybersecurity audits** (Y/N)

57. **Coordination of collective response involving both public and private stakeholders in handling cybersecurity incidents** (Y/N)

58. **Enforcement of cybersecurity laws and regulations** (Y/N)

59. **Is there at least one operational computer security incident response team responsible for handling cybersecurity incidents?** (Y/N)

60. **Is there a complaint mechanism independent from the internet service provider to escalate complaints?** (Y/N)

2.3.4 ENFORCEMENT OF SAFETY REGULATIONS AND CONSUMER PROTECTION MECHANISMS			
Indicators	**FFP**	**SBP**	**Total Points**
Cybersecurity Protocols	**1**	**1**	**2**
- Cybersecurity risk-assessments (55)	0.2	0.2	0.2
- Cybersecurity audits (56)	0.2	0.2	0.2
- Leading collective efforts against cyber incidents (57)	0.2	0.2	0.2
- Enforcement of cybersecurity laws and regulations (58)	0.2	0.2	0.2
- Computer Security Incident Response Teams (59)	0.2	0.2	0.2

Independent Complaint Mechanism (60)	**1**	**1**	**2**
Total Points	**2**	**2**	**4**

Note: FFP = Firm Flexibility Point; SBP = Social Benefits Point.

PILLAR III–OPERATIONAL EFFICIENCY OF UTILITY SERVICE PROVISION (INTERNET)

The scores for Pillar III indicators that are based on firm-level data are calculated using the Normal Cumulative Density Function (CDF) transformation method on a scale of 0 to 100, where 0 and 100 represent the lowest and highest possible scores, respectively. The best and worst performers are identified based on the 5th and 95th percentiles of the collected data.

Data for Pillar III on the Operational Efficiency of Utility Service Provision are collected through expert consultations (questions 61-65) and firm-level surveys (questions 66 and 67). Data collected through expert consultations use using the following parameters:

Parameters	
Business Location	The largest (most populous) city in the economy. Geographical location determines availability of electricity, water, and internet connections, in addition to the type of connections and construction required. For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.
Largest Utility Provider	The largest utility provider in the largest city is considered (in terms of customers served or market share). For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.
Speed: **10 Mbit/s** **10 Mbit/s to 30 Mbit/s;** **30 Mbit/s to 100 Mbit/s;** **More than 100 Mbit/s**	Speed (measured in bandwidth): The parameter will apply to all questions in Pillar 3. Internet connection is achieved through a last mile connectivity of either DSL, fiber optics, or cable, whichever is the most common technology which meets the minimum parameters at the lowest cost. Internet connections through 4G or 5G antennas or direct to satellite links are only considered when they are the most prevalent option for local businesses. For questions on cost of connection and cost of service, the experts will be asked to provide their response accounting for this specific parameter.

3.3.1 AFFORDABILITY

61. Is the installation service cost billed separately from the internet service cost by the largest internet service provider in [CITY]? (Y/N)

62. Under the scenario of a business requiring a broadband internet connection with a minimum 10 Mbps of download speed in an existing building, please provide an estimate of the least expensive cost to obtain a new internet connection from the largest internet service provider in [CITY] (exclude Value Added Tax, if applicable):

63. Does the largest internet service provider in [CITY] offer fixed internet package(s) with a download speed of at least 10 Mbit/s but less than 30 Mbit/s? (Y/N)

64. Does the largest internet service provider in [CITY] offer fixed internet package(s) with a download speed of at least 30 Mbit/s but less than 100 Mbit/s? (Y/N)

65. Does the largest internet service provider in [CITY] offer a fixed internet package(s) with a download speed equal to or above 100 Mbit/s? (Y/N)

3.3.1 AFFORDABILITY			
Indicators	**FFP**	**SBP**	**Total Points**
Cost of Internet Connection and Service - Cost of Connection (61 OR 62) - Cost of Service (63, 64 AND 65) *Scoring scenarios will be determined depending on the variance of cost estimates delivered*	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent). FFP = Firm Flexibility Point; SBP = Social Benefits Point.

3.3.2 TIME TO OBTAIN A CONNECTION

66. How many days did it take to obtain the internet connection from the day of the application until the service was received?

3.3.2 TIME TO OBTAIN A CONNECTION			
Indicators	**FFP**	**SBP**	**Total Points**
Time to Obtain an Internet Connection (66)	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent). FFP = Firm Flexibility Point; SBP = Social Benefits Point.

3.3.3 RELIABILITY OF SUPPLY

67. Over fiscal year, did this establishment experience any disruptions to its internet connection, including complete downtime and connection slowdowns (please exclude disruptions that are directly due to power outages)?

3.3.3 RELIABILITY OF SUPPLY			
Indicators	**FFP**	**SBP**	**Total Points**
Reliability of Internet Supply (67)	**100 (100%)**	**n/a**	**100 (100%)**
Total Points	**100**	**n/a**	**100**

Note: n/a = not applicable (refers to the cases when the impact on firms or society is either ambiguous or nonexistent). FFP = Firm Flexibility Point; SBP = Social Benefits Point.