



INFRASTRUCTURE WORKING  
GROUP



## **Compendium of Quality Infrastructure Investment Indicators**

Developed for the G20

**July 2022**

## IMPORTANT NOTICE

This Compendium of Quality Infrastructure Indicators developed for the G20, provides a menu of voluntary, non-binding, non-prescriptive and customizable indicators. These indicators are for reference and information purpose, refer only to the individual infrastructure project, and *should not be perceived as project sustainability standards*. They allow countries to take into account national circumstances, local laws and regulation. The indicators are presented in such a way to be adaptable to different country circumstances, sectors, and approaches, in line with the voluntary and non-binding nature of the QII principles. The indicators are drawn from existing indicator frameworks that are already in use by some countries, International Organizations, Multilateral and Regional Development Banks. The Compendium provides a comprehensive menu of indicators that stakeholders can choose from on a voluntary basis; not all will be applicable to all projects in all contexts. The tiering system recognizes the uneven coverage for some indicators across countries. The Guidance Note is a collection of technical materials within a literature review.



## 1. Context & Background – The QII Principles

*The G20 has emphasized the importance of the quality of infrastructure investment, including in the Leaders' Communiqué at the 2016 Hangzhou Summit.* In June 2019, the G20 Finance Ministers and Central Bank Governors endorsed the G20 Principles for Quality Infrastructure Investment (QII), which are voluntary, non-binding principles that reflect a common strategic direction and aspiration for quality infrastructure investment. The 2019 G20 Osaka Leaders' Declaration states that these principles emphasize the importance of quality infrastructure investment to the G20's ongoing effort to help close the infrastructure gap.

*The G20 recognizes the need to tackle infrastructure investment shortfalls to promote growth, job creation, and productivity.* Infrastructure investment gap remains significant in both developed and emerging economies. To fill this financing gap, a diverse set of financing instruments and investors need to be mobilized. To this end, it is essential to identify elements that foster the development of infrastructure as an asset class as recognized by "The G20 Roadmap to Infrastructure as an Asset Class", endorsed by Finance Ministers and Central Bank Governors in March 2018.

*The QII principles promote an infrastructure development approach expected to deliver high benefits at low cost in the long run, in terms of contribution to sustainable growth and development, well-being, environment and ecosystems services conserved, enhanced economic activity, as well as financial sustainability.* Longevity of infrastructure and long run cost effectiveness matter as well: both social and economic returns on investment should be maximized in the long term. Given that positive infrastructure impacts create favorable investment opportunities in infrastructure as an asset class, alignment with QII principles is also deemed important in mobilizing capital and narrowing the infrastructure gap. The G20 QII principles encompass six dimensions summarized in Table 1.

**Table 1: QII Principles Overview**

QII Principle:	Summary:
Principle 1: <i>Maximizing the positive impact of infrastructure to achieve sustainable growth and development</i>	The <b>first</b> principle recognizes the role of quality infrastructure in setting off a virtuous circle of economic activities, and the importance of having sustainable development and connectivity at the core of developing infrastructure. This contributes to ensuring that infrastructure is broadly available, accessible, inclusive, and beneficial to all. Quality infrastructure investment also needs to be tailored to individual country conditions and consistent with local laws and regulations.

Principle 2: <i>Raising Economic efficiency in view of life-cycle cost</i>	The <b>second</b> principle highlights the significance of considering the life-cycle cost of infrastructure investments in ensuring efficiency. Quality infrastructure investment should attain value for money and remain affordable with respect to life-cycle costs.
Principle 3: <i>Integrating environmental considerations in infrastructure investments</i>	The <b>third</b> principle highlights the importance of environmental considerations for quality infrastructure. Both positive and negative impacts of infrastructure projects on ecosystems, biodiversity, climate, weather, and the use of resources should be internalized. Infrastructure projects should align with national strategies and nationally determined contributions for those countries determined to implement them, and with transitioning to long-term low emissions strategies, while being mindful of country circumstances. These environmental considerations should be entrenched in the entire life cycle of infrastructure projects. Ecosystem-based adaptation should be considered. The environmental impact of infrastructure investment should be made transparent to all stakeholders.
Principle 4: <i>Building resilience against natural disasters and other risks</i>	The <b>fourth</b> principle recognizes the growing importance of designing infrastructure that is resilient to natural and human-made risks. The increasing number and heightened magnitude of natural disasters, and slow onset of environmental changes, imply an urgent need to ensure long-term adaptability and build resilience of infrastructure against these risks.
Principle 5: <i>Integrating social considerations in infrastructure investment</i>	The <b>fifth</b> principles capture importance of social inclusiveness considerations in infrastructure investments. Infrastructure should be inclusive, enabling the economic participation and social inclusion of all. Economic and social impacts should be considered as an important component when assessing the quality of infrastructure investment and should be managed systematically throughout the project life cycle.
Principle 6: <i>Strengthening infrastructure governance</i>	The <b>sixth</b> principle focuses on governance, recognizing the need to have clear rules, robust institutions, and good governance in the public and the private sector, reflecting countries' relevant international commitments. This will mitigate various risks related to investment decision-making, thus encouraging private-sector participation. Capacity building is also key in ensuring informed decision-making and effectiveness of anti-corruption efforts. In addition, improved governance can be supported by good private sector practices, including responsible business conduct practices.

## 2. Rationale for QII Indicators

*As expressed in the G20 Principles for Quality Infrastructure Investment, infrastructure plays a key role in supporting sustainable development, inclusive economic growth, and employment, and in allowing all countries regardless of income to share economic prosperity.* Quality infrastructure investment can support resilient recovery from crises and create a virtuous cycle of economic activity, in which the positive spillover effects of infrastructure on jobs, productivity, and resource allocation stimulate further growth.

*Countries around the world are facing inadequate infrastructure and changing quality expectations.* New challenges are emerging from a growing investment gap, changing demand patterns and technological sophistication, climate change and COVID 19 socio economic recovery. Investment needs are putting pressure on public finances particularly in emerging markets and low-income countries, and countries need to generate efficiencies by improving the process of planning, designing, building, and operating infrastructure. Countries will also need to improve the quality of current spending and capabilities to raise finance for the many infrastructure projects they need to undertake. This calls for a change in paradigm in the way infrastructure is planned, financed and implemented.

*Efficiency, resilience, and sustainability considerations will systematically affect project preparation and design as well as budget allocation for maintenance.* This requires a modified investment approach that focuses on the long-term quality of infrastructure assets and their preservation through sustainable maintenance. Intentionality in the application of QII principles, in addition to mainstreaming and explicit consideration of these principles, will help implement such a modified investment approach. There are significant benefits to developing a common approach to assess investments' alignment with QII principles and measure their contribution to the targeted quality infrastructure outcomes. A common approach by all stakeholders (including private sector investors) involved in the development of quality infrastructure supports the harnessing of synergies in the implementation of QII principles, which are voluntary and non-binding.

*The use of indicators to complement adoption and support implementation of principles is common practice that recognizes that “what gets measured gets done”.* Examples include the Sustainable Development Goals (SDGs), the Operating Principles for Impact Management (or “impact principles”), and the DFI Harmonization Group. The global SDG indicators database provides a compendium of indicators to stakeholders to use to show progress towards the SDGs. The Operating Principles for Impact Management also relies on Impact Reporting and Investment Standards (IRIS) and the Global Impact Investing Rating System (GIIRS), among others, which have a menu of standard indicators. Investors can use this compendium of common indicators to assess and, if applicable, to track whether an investment contributes to social and environmental improvements. DFIs

have similarly consolidated Harmonized Indicators for Private Sector Operations (HIPSO) to support their framework for impact investing and measurement.

*In a similar vein, a compendium of voluntary and non-binding indicators can support implementation of the QII Principles, which are also voluntary and non-binding. To illustrate, the economic and technical longevity of infrastructure assets accounts for a large proportion of their economic and social benefits. An infrastructure project aligned with QII Principle 2 on economic efficiency and effectiveness over the project life cycle can thus rely on indicators such as expected economic rate of return, which quantifies a set of economic and social costs and benefits, to verify ex-ante its alignment to QII Principle 2. Such ex-ante assessments allow for optimized investment selection or design adjustments. The same indicator can be estimated ex-post as an impact measurement indicator if desired.*

*This Compendium presents a possible menu of voluntary, non-binding, non-prescriptive and customizable indicators. Such voluntary and non-binding indicators are intended to help, as appropriate, inform decision-making on the design, building, operation and maintenance of infrastructure assets, address information shortfalls that may be reducing investment in infrastructure and support increased fund flows to infrastructure projects. A balance between selecting the right key indicators and costs attached to them needs to be found, in order to generate the much-needed insights into projects, policies and investments' outcomes. A menu of indicators customizable to local country contexts enables countries to strike this balance.*

### **3. Development of the QII indicators**

*The QII indicators presented in this Compendium have been gathered from existing indicators that are already in use by countries, International Organizations, and Multilateral and Regional Development Banks. Care has been taken to select indicators that are adopted and recognized as widely as possible by countries. For example, several indicators have been mapped to the QII principles from national and regional sources such as national development banks (e.g. BNDES and DBSA), national and subnational government agencies, ministries, regulators, and infrastructure operators. Additional indicators were mapped from the DFI's Harmonized Indicators for Private Sector Operations (HIPSO) – which is a set of harmonized indicators adopted by 28 development finance institutions<sup>1</sup>. The exercise also relied on indicators mobilized from some G20*

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<sup>1</sup> These include Asian Development Bank (ADB), African Development Bank (AfDB), Belgian Investment Company for Developing Countries (BIO), Banque Ouest Africaine de Developpement (BOAD), Black Sea Trade and Development Bank (BSTDB), CDC Group, Compañía Española De Financiación Del Desarrollo (COFIDES), Deutsche Investitions- und Entwicklungsgesellschaft mbH (DEG), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Finnish Fund for Industrial Cooperation Ltd. (Finnfund), Netherlands Development Finance Company (FMO), Inter-

member countries by the Global Infrastructure Hub (GIH). The sustainability indicators are consistent with Green Bond Principles and associated indicators as well as other green taxonomies.

*The proposed QII indicators are grouped into six matrices composed of: (1) cross-cutting, (2) energy, (3) water & wastewater, (4) ICT, (5) transportation, and (6) urban infrastructure indicators.* The cross-cutting indicators matrix is composed of a set of indicators that are sector agnostic and can be applied across infrastructure sub-sectors even though their relevance is not universal. This is consistent with the menu-based approach adopted for the Compendium. The cross-cutting indicators matrix is intended to be complemented by the sector-specific QII indicator matrices which are tailored to capture sector-specific project attributes. All indicators in the matrices are organized by QII principle for ease of reference only.

*The six QII indicator matrices form a menu of voluntary, non-binding, non-prescriptive and customizable indicators that can be used at different stages of the project cycle.* Certain indicators will be more useful in influencing project design toward specific QII principles. Others will be useful for measuring or monitoring project level results that contribute to the QII principles. The distinction between design and outcome indicators is not mutually exclusive. For example, direct jobs created during construction, or domestic purchases are outcome indicators, but they are often a function of the project's design. Similarly, the same indicator can be a relevant measure for more than one QII principle. Indicators can also be tailored for both project objectives and country context. As the QII Indicators Matrix Compendium is meant to be a voluntary, non-binding menu-based tool, it is designed to accommodate these different needs.

*A tiering approach was adopted in the selection of the indicators, based on coverage by countries and data availability.* The focus was on “Tier 1” indicators which are conceptually clear with a recognized methodology and for which data would be readily available. “Tier 2” indicators have also been included in line with the menu-based approach. These indicators are conceptually clear with a recognized methodology but coverage across countries is uneven because data for these indicators may not be as easily available, or due to other constraints. All “Tier 2” indicators have been clearly labeled in the indicator matrices.

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American Development Bank (IDB), Inter-American Investment Corporation (IIC), Islamic Corporation for the Development of the Private Sector (ICD), International Finance Corporation (IFC), Investment Fund for Developing Countries (IFU), Multilateral Investment Guarantee Agency (MIGA), Norwegian Investment Fund for Developing Countries (Norfund), Oesterreichische Entwicklungsbank (OEeB), Overseas Private Investment Corporation (OPIC), The Private Infrastructure Development Group (PIDG) Trust, Société de Promotion et de Participation pour la Coopération Economique (PROPARCO), Swiss Investment Fund For Emerging Markets (SIFEM), and Swedfund International AB (Swedfund). See the [full list](#) of DFIs members of HIPSO.

*The compendium of QII indicator matrices presented in this document is accompanied by a detailed Guidance Note that provides the details of each indicator in the compendium for reference only. The Guidance Note provides for each indicator: (i) the definition and the source of each indicator; (ii) units of measurement; (iii) relevant links to reference sources; (iv) potential data sources for the indicator; and (v) lists some of the institutions that currently utilize the indicator. The institutions listed as utilizing the indicators are for illustrative purposes and are not exhaustive.*

#### **4. QII Indicators Application Guidelines**

*As with the G20 QII Principles, the indicators will remain voluntary, non-binding, non-prescriptive and customizable, and allow countries to consider national circumstances, local laws, and regulations. Therefore, the Compendium lists the indicators already in use by countries, international organizations, and regional and multilateral banks without prescribing benchmarks or thresholds. For any QII indicator, when there is domestic indicator from the country where the project locates which is in line with the nature of the QII indicator definition in the Guidance Note, the domestic indicator can replace the QII one.*

*The proposed indicators refer only to the individual infrastructure project, considered in a perspective of Maximizing sustainable growth and development (QII principle 1), and reflect key attributes of Economic efficiency (QII principle 2), Environmental considerations (QII principle 3), Resilience (QII principle 4), Social inclusion (QII principle 5) and Infrastructure governance (QII principle 6).*

*The QII indicators matrix is intended to be a list of metrics that countries could choose from so that countries can document the alignment of their investments with QII principles as appropriate and on a voluntary basis. The Compendium provides a menu of indicators from which stakeholders can select the indicator(s) that best capture the project's intended objectives. The selection of indicators should be informed by the project's objectives and tailored to the country context. Only a small subset of the indicators in the menu will be relevant for application by member countries on a voluntary basis to assess design and results from quality infrastructure investment.*

*Project design indicators of quality infrastructure are intended for use mainly in ex-ante assessments, while project results indicators can be relevant both in ex-ante and ex-post assessments undertaken during project implementation. For assessments, the design and results indicators may be applied by the project's public and private stakeholders including development financing institutions supporting it, as well as independent third parties, as long as these entities get prior consent from the national or local government in charge of the project, where this is required by national circumstances, local laws and regulation. Meanwhile, the compendium of QII indicators is not intended to be used for the purposes of ranking or rating. The assessment period for ex-post assessment of*



quality infrastructure results is customizable and could run from construction phase to the full life of the project.

**This section provides examples of the application of QII indicators to projects.**

*QII Principle 1: Maximizing the positive impact of infrastructure to achieve sustainable growth and development*

Quality infrastructure investment should maximize the positive economic, environmental, social, and development impact of infrastructure and create a virtuous circle of economic activities. For example, job creation, both direct and indirect, is an important contribution of many infrastructure projects. Projects with strong job creation effects can select **direct jobs supported during operation and maintenance** as an indicator from the cross-cutting QII indicators matrix to highlight this positive aspect and alignment with QII Principle 1. Infrastructure also has value deriving from the activities it supports, which can be channels for indirect and induced jobs and economic value creation. Efforts to measure such indirect and induced effects would provide a more complete picture of the positive impacts delivered by quality infrastructure investments.

Infrastructure also plays a critical role in supporting the SDGs. For example, energy projects that expand energy access through expansion of the electricity grid to previously underserved populations or extend the gas network to areas previously not covered can select “**number of new electricity or gas connections**” from the energy QII indicators matrix to highlight their contribution to SDG 7 and alignment with QII Principle 1.

*QII Principle 2: Raising economic efficiency in view of life-cycle cost*

Estimating the life-cycle economic costs and benefits of infrastructure projects is a central feature in project assessment to ensure resources are allocated efficiently, investment brings benefits to the country and improves the welfare of its citizens. Quality infrastructure projects should capture the net economic and social returns over the entire project life cycle, taking into consideration both positive and negative externalities. Such a comprehensive view is particularly helpful in ensuring efficiency of projects with strong social impacts that also depend on government support to fully cover costs, and those implemented under public private partnerships.

Financial performance is one measure that can be used to evaluate the project’s financial return and assess the ability of the project to generate adequate incremental cash flows to recover its financial costs (capital and operating costs). This assessment can be done ex-ante, forming part of the investment decision parameters. It can also be done ex-post by revisiting the approval assumptions and recalculating the financial return. The indicator that can be used in this assessment is the project-specific real financial internal rate of return (**IRR**). IRR is a widely established financial measure of the project’s relative financial attractiveness. Investors use it as a benchmark to compare projects, those with

the higher IRRs are considered financially more attractive<sup>2</sup>. This is an example of an indicator a project can pick from the compendium (cross-cutting QII indicators matrix) to showcase its contribution to QII Principle 2.

IRR captures only the benefits accruing to investors; however, quality infrastructure projects have benefits beyond investors to the overall economy and generate social value. Return to all stakeholders (i.e., return to society including all financiers) over the life of the project can be estimated through the economic rate of return (**ERR**). ERR estimates take into consideration quantifiable benefits and costs to wider stakeholders such as taxes/transfers paid to government, reduction in CO2 emissions, improvements in public health where there is a clear attributable and measurable channel for the project to lead to these benefits. Adjustments of financial cashflows using shadow prices for such costs and benefits allow the estimation of a project's economic cash flows and calculation of the project's ERR. This is a commonly used metric in monitoring and evaluation among institutions within countries (for example it is used by the Reserve Bank of India, Chile's National Public Investment System, New South Wales Infrastructure Investor Assurance Framework in Australia to name a few) as well as MDBs, including the Asian Development Bank<sup>3</sup> and InterAmerican Development Bank<sup>4</sup>. This is another example of an indicator a project can pick from the compendium (cross-cutting QII indicators matrix) to showcase its contribution to QII Principle 2.

### *QII Principle 3: Integrating environmental considerations in infrastructure investments*

Identification, assessment, mitigation, and management of environmental risks as well as impacts is a key component for appraising and designing quality infrastructure projects. It is a standard process in monitoring and evaluation among countries (including Australia, Brazil, Germany and Saudi Arabia) as well as MDBs. For example, the World Bank's Environmental and Social Framework<sup>5</sup> establishes the standards for World Bank financed projects. This framework has defined specific environmental standards that are designed to avoid, minimize, reduce, or mitigate any adverse environmental and risks and impacts of projects. The framework promotes **adoption of a mitigation hierarchy** approach to projects that follows avoidance, minimization, restoration, and offsets in order to reduce and control any negative effects on the environment. Adoption of mitigation hierarchy has been recognized widely by other MDBs including Asian Development Bank<sup>6</sup> as well as multilateral environmental initiatives such as the Cross-Sector Biodiversity Initiative (CSBI)<sup>7</sup>. Cross-cutting QII indicators matrix includes the indicator "adopt an

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<sup>2</sup> (Gatti, 2018)

<sup>3</sup> (Asian Development Bank (ADB), 2017)

<sup>4</sup> (Inter-American Development Bank (IADB), 2020)

<sup>5</sup> (World Bank, 2017)

<sup>6</sup> (Asian Development Bank (ADB), 2012)

<sup>7</sup> The Cross-Sector Biodiversity Initiative (CSBI) is a partnership between IPIECA, the International Council on Mining and Metals (ICMM) and the Equator Principles Association, for developing and sharing good practice related to biodiversity in the extractive industries. Affiliated members include the European Bank

environmental and social mitigation hierarchy framework” as an indicator for projects where this is relevant to showcase their alignment with QII principle 3.

Different infrastructure assets contribute in different ways to environmental goals encompassed in QII Principle 3. For example, renewable energy project such as wind farms or solar plants can select “**Renewable energy generated or installed**” from the energy QII indicator matrix to showcase their alignment with this QII principle.

#### *QII Principle 4: Building resilience against natural disasters and other risks*

Climate risks mainly arise from meteorological, hydrological and/or climatological events that result in extreme weather occurrences including storms, floods, landslides, extreme temperatures, droughts, and wildfires. Assessing climate risks has increased in complexity. In the past risk assessments could rely on historical data. The new uncertainties arising from unpredictable changes in weather patterns have further complicated such assessments while making them more critical. Infrastructure is one of the sectors that is particularly susceptible to physical impacts of climate change. Resilience considerations are likely to become central in design and locational aspects of quality infrastructure projects, not only in greenfield construction but also in infrastructure modernization.

The QII indicators matrix accordingly incorporates broad resilience indicators that can be tailored to project and local context. Cross-cutting QII indicators include metrics to assess whether the project’s **design is durable to disaster risks**. This broad indicator is customizable to the investment and covers disaster risk mitigation measures such as hydropower dam designs equipped to manage increased water flows from glacial melting and increased precipitation. The sector annexes include several sector specific indicators tailored to investment type, for example, metrics assessing whether a water project **improve redundancy of water and wastewater infrastructure**, to enhance network robustness during a crisis as well as recovery from failure of critical links.

Quality infrastructure investments may also entail that projects evaluate and procure insurance to cover risks emerging from geophysical, meteorological, hydrological and space weather disaster events as a measure to improve resilience. This Compendium includes indicators that can measure such preparedness, for example, whether a project has secured **disaster risk financing** such as preapproved lines of financing that can disburse in the immediate aftermath of a disaster to provide timely budget support, alleviating fiscal pressures on the project.

#### *QII Principle 5: Integrating social considerations in infrastructure investment*

Considerations on social aspects are critical when assessing the quality of infrastructure investments and need to be integrated in decision-making throughout the project cycle.

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for Reconstruction and Development (EBRD), the International Finance Corporation (IFC) and the Inter-American Development Bank (IDB).

Infrastructure provides essential services to meet social needs and expectations that should be evaluated based on social cost-benefit analysis to relevant stakeholders that may be impacted by the project.

There are often significant disparities in access to infrastructure among user groups on the basis of income, location, social status, gender or disability, among others. For example, lower levels of access and quality of infrastructure in rural areas can significantly impact rural populations, where a lack of access to modern infrastructure services negatively affects productivity, educational attainment and even health, and ultimately can exacerbate the poverty trap. Infrastructure projects that contribute to lowering the rural infrastructure gap can select **“Rural infrastructure assets established or improved”** from the cross-cutting QII indicators matrix to showcase their contribution to QII Principle 5.

There are sector specific contexts in which certain infrastructure assets make unique contributions to QII Principle 5. For example, transportations projects that **improve vehicle types and operating models are designed with the diverse needs of people that are mobility impaired in mind** can select this indicator from the transportation QII indicators matrix to highlight alignment with QII Principle 5.

#### *QII Principle 6: Strengthening infrastructure governance*

Infrastructure governance relates to how project developers and stakeholders prioritize, plan, budget, deliver, regulate, monitor, and evaluate infrastructure investments to improve transparency and efficiency. The Compendium includes indicators that can be used to measure or highlight alignment with QII Principle 6. For example, an indicator on **adoption and operationalization of best practice procurement standards** is included that’s applicable across sectors. This indicator can encompass a wide range of measures that impact the design and implementation of the procurement process including transparency, value for money, equal treatment, open competition, and sound procedural management. MAPS<sup>8</sup> Methodology for Assessing Procurement Systems and other World Bank and OECD procurement tools and standards could be used by stakeholders to benchmark performance of specific projects or systems. Quality infrastructure projects that include transparent and robust competitive bid-based procurement, setting up a mechanism that provides for efficient bidding and contract awards can use this indicator. For instance, renewable energy projects that are being developed through a competitive auction-based regime (e.g. South Africa’s Renewable Energy Independent Power Producer Procurement Program (REIPPPP)) could select this indicator to showcase alignment with QII Principle 6.

Sector annexes include several sector specific indicators tailored to capture sector specific contexts; providing a menu of indicators that complements cross-cutting indicators. For example, the Energy Annex includes an indicator measuring fiscal

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<sup>8</sup> MAPS Methodology for assessing procurement systems (OECD, 2020)



transfers to the power sector. This indicator can be used by energy projects that have measurable and attributable impact on energy sector costs in the country and the value of transfers extended to the sector by the government. This includes subsidies on fuels (domestic and imported) for energy generation and on electricity served to end-users. For example, if a project introduces a low-cost generation plant that will reduce average cost of generation substantially with ensuing reduction in need for government subsidies to cover the gap between generation cost and end-user tariffs can utilize this indicator to showcase contribution to QII Principle 6.

# COMPENDIUM OF CROSS-CUTTING INDICATORS

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## SECTOR ANNEXES

ENERGY

WATER & WASTEWATER

ICT

TRANSPORTATION

URBAN INFRASTRUCTURE

## CROSS-CUTTING QII INDICATORS

The cross-cutting QII indicators matrix is composed of a set of indicators that sector agnostic and can be applied across infrastructure sub-sectors even though their relevance is not universal. This is consistent with the menu-based approach adopted for the Compendium. The cross-cutting indicators matrix is intended to be complemented with the sector-specific QII indicator matrices which are tailored to capture sector-specific contexts of projects.

**Table A.1 – Cross-cutting QII Indicators**

Principles	Units	Indicators
<b>Principle 1:</b>  <b>Maximizing the positive impact of infrastructure to achieve sustainable growth and development</b>	#	Direct jobs supported by the project (Operations and Maintenance)
	#	Direct jobs created by the project (Operations and Maintenance)
	#	Construction jobs (Temporary Construction)
	#	Development of employee skills (Tier 2)
	FTE #	Total employment effects (Tier 2)
	currency, % of total	Domestic purchases (Tier 2)
	Y/N	Technical and specialized skills for suppliers (Tier 2)
	currency	Private capital mobilization
	days	Time between contract signature and financial close
	Y/N	Business innovation (Tier 2)
<b>Principle 2:</b>  <b>Raising Economic efficiency in view of life-cycle cost</b>	%	Internal rate of return (IRR) and/or Economic rate of return (ERR) (Tier 2)
	capacity per currency	Additional capacity per currency invested
	Y/N	Sustainable pricing mechanisms (Tier 2)

	Y/N	Risk mitigation measurement (Tier 2)
	Y/N	Technological innovation (Tier 2)
	Y/N	Value-for-money analysis conducted (Tier 2)
<b>Principle 3:</b>  <b>Integrating environmental considerations in infrastructure investments</b>	tonnes per year	GHG emissions reduction/avoided
	tonnes per year	Local air pollutants reduced (Tier 2)
	kWh or MJ	Energy consumption (conservation) (Tier 2)
	m <sup>3</sup>	Water consumption (conservation) (Tier 2)
	Y/N	Adopts an environmental and social mitigation hierarchy framework
	Y/N	Sustainability certification
	Y/N	Provides tools, and data to improve E&S practices for stakeholder engagement (Tier 2)
<b>Principle 4:</b>  <b>Building resilience against natural disasters and other risks</b>	currency	Budget committed to disaster and climate risk resilience measures (Tier 2)
	Y/N	Improvement in employee technical and disaster management skills (Tier 2)
	Y/N	Design durable to disaster risks (Tier 2)
	currency	Disaster risk financing (Tier 2)
<b>Principle 5:</b>  <b>Integrating social considerations in infrastructure investment</b>	km, GWh, m <sup>3</sup>	Rural infrastructure assets established or improved
	currency	Community development contributions
	Y/N	Infrastructure improvement in local community
	Y/N, #	Stakeholder engagement
	currency	Compensation to displaced inhabitants (Tier 2)
	Y/N	Design minimizes land acquisition and involuntary resettlement (Tier 2)



	Y/N	Disability & special needs integration (Tier 2)
	# or %	Female direct jobs supported by the project (Operations and Maintenance) (Tier 2)
	# or %	Female direct jobs created by the project (Operations and Maintenance) (Tier 2)
	#	Fatal/non-fatal occupational accidents
<b>Principle 6:</b> <b>Strengthening infrastructure governance</b>	Y/N	Transparency and accountability measures in procurement and financial management supported in implementation (Tier 2)
	# and %	Governance body members that have received training on anti-corruption (Tier 2)
	Y/N	Anti-corruption protocols & procedures (Tier 2)
	Y/N	Information disclosure (Tier 2)
	Y/N	Fiscal sustainability (Tier 2)

## ANNEX 1: ENERGY

The Energy QII Indicators Matrix covers the **power**, **oil** and **gas** sectors and complements the common indicators listed in the cross-sectoral indicators matrix. Indicators in the Energy QII indicators matrix can be applied to projects that support the four segments of the electricity supply chain: *generation*, *transmission*, *distribution*, and *retail* as well as the full oil & gas supply chain: *upstream*, *midstream*, and *downstream*.

### REMINDER:

The sector-specific indicators below are meant to supplement the [cross-cutting indicators](#) to form a menu of voluntary, non-binding, non-prescriptive and customizable indicators.

**Table A.2 – Energy QII Indicators**

Principles	Units	Indicators
<b>Principle 1:</b> Maximizing the positive impact of infrastructure to achieve sustainable growth and development	#	Jobs created in renewable energy and other energy transition-related fields (Tier 2)
	GWh or currency /day	Volume of electricity traded
	currency	Export sales
	index or %	Domestic intermediate goods in the oil and gas sector (Tier 2)
	#	New electricity or gas connections
	#	LNG/CNG stations
	SAIDI, SAIFI	Duration and frequency of electricity outages
	currency per kWh	Average national cost of electricity generation
<b>Principle 2:</b> Raising Economic efficiency in view of life-cycle cost	currency per GWh	Levelized cost of electricity (LCOE) (Tier 2)
	%	Electric power transmission and distribution losses
	%	Customers with meters
	years	Reserves/resources-to-production ratio (oil and gas)

	Y/N	New technology to improve power network infrastructure reliability and efficiency implemented (Tier 2)
<b>Principle 3:</b> Integrating environmental considerations in infrastructure investments	Gwh, MW	Renewable energy generated or installed
	Toe per MWh	Ratio of solid waste generation to units of energy produced (Tier 2)
	Y/N	Contribution to country's energy sector NDC target (Tier 2)
	Y/N	Decommissioning plan (oil & gas) (Tier 2)
<b>Principle 4:</b> Building resilience against natural disasters and other risks	Y/N	Energy project design incorporates climate adaptation & climate risk mitigation measures (Tier 2)
<b>Principle 5:</b> Integrating social considerations in infrastructure investment	#	New connections to energy for underserved groups (Tier 2)
	#	Installation of pre-payment / smart meters
<b>Principle 6:</b> Strengthening infrastructure governance	currency	Fiscal transfers to the power sector (Tier 2)
	Y/N	Transparency of tax/royalty payments to host governments (Tier 2)

## ANNEX 2: WATER & WASTEWATER

The QII indicators matrix for water & wastewater covers the full sector value chain including: (i) raw water collection and transmission; (ii) municipal/industrial water treatment; (iii) municipal/industrial water distribution; (iv) sewerage and (v) municipal/industrial sewage treatment.

### REMINDER:

The sector-specific indicators below are meant to supplement the [cross-cutting indicators](#) to form a menu of voluntary, non-binding, non-prescriptive and customizable indicators.

**Table A.3 – Water & Wastewater QII Indicators**

Principles	Units	Indicators
<b>Principle 1:</b> Maximizing the positive impact of infrastructure to achieve sustainable growth and development	# hours per day	Average period of water supply
	# seconds per liter	Piped water pressure (Tier 2)
	#	New connections to piped water and wastewater services
	%	Population with access to safe drinking water
	%	Population with access to improved sanitation
	%	User experience (Tier 2)
<b>Principle 2:</b> Raising Economic efficiency in view of life-cycle cost	%	Non-revenue water (commercial)
	%	Non-revenue water (technical)
	%, m <sup>3</sup>	Total volume of water recycled and reused
<b>Principle 3:</b> Integrating environmental considerations in infrastructure investments	m <sup>3</sup>	Wastewater treated
	%	Reused supplied water (Tier 2)
	%	Level of water stress (Tier 2)
<b>Principle 4:</b>	Y/N	Design improves resilience to failure of critical links (Tier 2)
	days	Water pump failures (Tier 2)



<b>Building resilience against natural disasters and other risks</b>	# per 1000 km	Fortuitous “incidents” affecting the wastewater collection network during dry weather (Tier 2)
	# per km	Ruptures in transportation and distribution pipes (Tier 2)
	%	Preventive maintenance (Tier 2)
<b>Principle 5: Integrating social considerations in infrastructure investment</b>	#	New connections to water, sanitation, and wastewater services for underserved groups (Tier 2)
	Y/N, # beneficiaries	Water & sanitation education program in schools (Tier 2)
	Y/N	Multi-generational equity (Tier 2)
<b>Principle 6: Strengthening infrastructure governance</b>	Y/N	Updated, timely shared, consistent, and comparable water information systems (Tier 2)

## ANNEX 3: ICT

The QII indicators matrix for ICT infrastructure covers the full sector value chain. It consists of the undersea, underground, and above-ground cables, the tower sites, data centers and satellites, as well as the spectrum assets and rights, and the active equipment that interconnects the world through the world wide web and facilitate the delivery of products and services in all sectors.

### REMINDER:

The sector-specific indicators below are meant to supplement the [cross-cutting indicators](#) to form a menu of voluntary, non-binding, non-prescriptive and customizable indicators.

**Table A.4 – ICT QII Indicators**

Principles	Units	Indicators
<b>Principle 1:</b> Maximizing the positive impact of infrastructure to achieve sustainable growth and development	%	Proportion of individuals owning mobile phone by gender (Tier 2)
	TB or %	Data center capacity sold (Tier 2)
	Mbps	Median download speed (Tier 2)
	# or %	Fixed data subscriptions
	#	Mobile service subscriptions
	#	Active cloud service clients (firms) (Tier 2)
	Y/N	ICT strategy for sustainable development (Tier 2)
<b>Principle 2:</b> Raising Economic efficiency in view of life-cycle cost	%	Network coverage
	MW per currency, # per currency	Data center power capacity added or number of racks added (Tier 2)
	TB per second per currency	Submarine cables capacity installed (Tier 2)
	km per currency	New lines installed
	# per currency	New sites/cells installed (Tier 2)

	#	Tenancy ratio (Tier 2)
<b>Principle 3:</b> Integrating environmental considerations in infrastructure investments	Y/N	Visual impacts (Tier 2)
	Y/N, tonnes produced or recycled per year	Hazardous materials and waste (Tier 2)
<b>Principle 4:</b> Building resilience against natural disasters and other risks	Y/N	Network robustness (Tier 2)
<b>Principle 5:</b> Integrating social considerations in infrastructure investment	#, %	New users from underserved groups (Tier 2)
<b>Principle 6:</b> Strengthening infrastructure governance	index	Cyber security and data protection (Tier 2)

## ANNEX 4: TRANSPORTATION

The QII indicators for transportation cover the full sector value chain including air freight and logistics, airlines, marine, road and rail, and transportation services.

### REMINDER:

The sector-specific indicators below are meant to supplement the [cross-cutting indicators](#) to form a menu of voluntary, non-binding, non-prescriptive and customizable indicators.

**Table A.5 – Transportation QII Indicators**

Principles	Units	Indicators
<b>Principle 1:</b> Maximizing the positive impact of infrastructure to achieve sustainable growth and development	passenger-km, tonne-km, MT, TEUs	Passenger and freight volumes by mode of transport
	currency per unit handled	Average terminal charges (Tier 2)
	# per hour	Berth moves (Tier 2)
	hours	Container dwell time (Tier 2)
	# per year	Air traffic movements
	sqm per passenger	Space per passenger
	Y/N	Improved airfield infrastructure (Tier 2)
	hours	Journey times (Tier 2)
	trips per day	Journey frequency
	currency per km	Passenger fare
	# vehicles per year	Average daily traffic (or infrastructure utilization rate)
<b>Principle 2:</b> Raising Economic efficiency in view of life-cycle cost	currency per km	Vehicle operating costs (roads/ports) (Tier 2)
	%	Operation & Maintenance cost recovery from fees / user tariffs (Tier 2)



<b>Principle 3:</b> Integrating environmental considerations in infrastructure investments	Y/N	Measures to limit noise pollution (Tier 2)
	tonnes per year or % of total	Efficient use of materials & waste reduction (Tier 2)
	unit per year	Energy & water efficiency (Tier 2)
	Y/N	Contribution to country's transport sector NDC target (Tier 2)
<b>Principle 4:</b> Building resilience against natural disasters and other risks	Y/N	Project introduces design or technical characteristics that enable operability in all weather conditions
<b>Principle 5:</b> Integrating social considerations in infrastructure investment	%	Proportion of the rural population who live within 2 km of an all-season road (Tier 2)
	Y/N	Supports fair and full access to transportation services and economic opportunities by marginalized regions (e.g., rural) (Tier 2)
	Y/N	Design and operation of accessible transportation (Tier 2)
<b>Principle 6:</b> Strengthening infrastructure governance	Y/N	Introduction of new type of concession terms (Tier 2)
	Y/N	Information transparency & access (Tier 2)

## ANNEX 5: URBAN INFRASTRUCTURE

The QII indicators matrix for urban infrastructure covers urban public transport and solid waste sectors. Urban mobility includes: (i) bus and bus rapid transit (BRT); (ii) metro; (iii) light rail; (iv) urban roads and (v) bicycles and other non-motorized vehicles. Indicators for solid waste cover the full sector value chain including: (i) collection; (ii) transportation; (iii) treatment; and (iv) disposal.

### REMINDER:

The sector-specific indicators below are meant to supplement the [cross-cutting indicators](#) to form a menu of voluntary, non-binding, non-prescriptive and customizable indicators.

**Table A.6 – Urban Infrastructure QII Indicators**

Principles	Units	Indicators
<b>Principle 1:</b> Maximizing the positive impact of infrastructure to achieve sustainable growth and development	passengers per day	Average daily ridership
	hours per day	Public transport network daily coverage
	hours	Decreased journey times
	km per 100,000 population	Access for non-motorized traffic (Tier 2)
	km per hr	Vehicle average speed (urban) (Tier 2)
	%	Proportion of municipal solid waste collected and managed in controlled facilities
	# or %	People benefitting from improved solid waste management facilities
	# per day or per hour	Service frequency
<b>Principle 2:</b> Raising Economic efficiency in view of life-cycle cost	various	Journey experience (Tier 2)
	%	Load factor
<b>Principle 3:</b>	currency/km	Vehicle operation cost per km (Tier 2)
	tonnes	Total weight of waste diverted from disposal and its recovery

<b>Integrating environmental considerations in infrastructure investments</b>	GWh	Energy recovery from waste
	%	Share of electric or renewable energy based public transport fleet
	Y/N	Measures to limit noise pollution (Tier 2)
<b>Principle 4: Building resilience against natural disasters and other risks</b>	Y/N	Diligent maintenance and continuity (Tier 2)
<b>Principle 5: Integrating social considerations in infrastructure investment</b>	%	Proportion of population that has convenient access to public transport, by sex, age, and persons with disabilities (Tier 2)
	%	Usability of public transport, by gender (Tier 2)
	% or #	Access to waste collection outside core city area
	#	Injury / fatality frequency rates (among public transit passengers, pedestrians, cyclists)
	% or #	Absolute accessibility of the urban area for underserved groups (Tier 2)
<b>Principle 6: Strengthening infrastructure governance</b>	% or Y/N	Land use and zoning plans that have been subject to a formal consultation process (Tier 2)