

3. Quality Infrastructure definition

The G20 Leaders stressed the importance of Quality Infrastructure (QI) investment to deliver high quality infrastructure projects at the Hangzhou Summit in September 2016⁶, where it was defined as investment:

“which aims to ensure economic efficiency in view of life-cycle cost, safety, resilience against natural disaster, job creation, capacity building, and transfer of expertise and know-how on mutually agreed terms and conditions, while addressing social and environmental impacts and aligning with economic and development strategies”.

Since then the G20 Leaders have endorsed a series of documents and initiatives, such as the *‘Roadmap to Infrastructure as an Asset Class’*⁷, which highlight the necessity to advance a shared understanding of “quality infrastructure” within the G20. Quality infrastructure has also been a G20 focus under the Japanese Presidency in 2019.

For the purposes of this *Reference Guide on Output Specifications*, the definition of ‘Quality Infrastructure’ from Hangzhou is broken down into several focus areas which are closely related to the G20 discussions under the 2019 Japanese Presidency of the G20. The table below elaborates on the G20 definition of Quality Infrastructure and the key infrastructure considerations when identifying and developing case studies in this Reference Guide.

Table 2: Quality Infrastructure focus area descriptions

Alignment to the QI Definition (Hangzhou) ⁸	Quality Infrastructure Focus Area	Description ⁹ and Considerations
That which aims to ensure economic efficiency in view of life-cycle cost	<p>Economic efficiency requires that the asset efficiently addresses a clear need and end users’ requirements through its lifecycle.</p> <p>Sustainability and longevity of an infrastructure asset</p>	<p>The relationship between the decisions made during design and construction, and how they aim to minimise the whole-life cost of the asset and meet the end users’ requirements. Considerations include:</p> <ul style="list-style-type: none"> • How the need for the asset has been identified and project objectives defined, and how these are translated into measurable requirements; • Processes and requirements that support reliable operation and maintenance, and economic efficiency in view of whole life cost; and • Requirements that promote good practice asset management and support the continued maintenance of an asset to meet the handback requirements.

6 Available at: <http://www.g20.utoronto.ca/2016/160905-communique.html>

7 Available at: http://www.oecd.org/g20/roadmap_to_infrastructure_as_an_asset_class_argentina_presidency_1_0.pdf

8 Defined as per the G20 description in the Hangzhou Communiqué

9 Descriptions in italics have been developed based on publications from the Center for Strategic and International Studies: <https://www.csis.org/analysis/quality-infrastructure>

Alignment to the QI Definition (Hangzhou) ⁸	Quality Infrastructure Focus Area	Description ⁹ and Considerations
Safety	Health and safety considerations during both construction and operation of the asset	<p>A design approach that considers the health and safety of those who construct, operate, maintain, modify and demolish an asset, as well as those who work in or with it, use it or are in the proximity of it (i.e. the public). Considerations include:</p> <ul style="list-style-type: none"> • How hazard identification and risk assessment methods are integrated into the design requirements, with the intention to eliminate or minimise the risks of injury throughout the life of the asset; and • The requirement to conform with appropriate health and safety standards and, if appropriate, go beyond these by developing a proactive health and safety culture.
Resilience against natural disaster	Ability of the asset to withstand natural and other disasters , including climate change	<p>The ability for an asset to demonstrate resilience and safety against natural disaster, terrorism and cyber-attack risks. Considerations include:</p> <ul style="list-style-type: none"> • Implementation of best design practice processes and procedures to identify location-specific hazards and aim to mitigate the impact of natural disasters on the asset's condition and its users through design. This could include design requirements above minimum standards and specifying the required level of performance following an event.
Job creation, capacity building and transfer of knowledge, expertise and know-how on mutually agreeable terms	Job creation, capacity building, transfer of knowledge and expertise	<p>Promoting job creation, capacity building, and transfer of expertise and know-how to national and local communities to deliver on economic development objectives. Considerations include:</p> <ul style="list-style-type: none"> • How the requirements support participation by smaller (and local) and minority-owned firms as part of the project delivery in both the construction and operation phases; and • Requirements aimed at transferring project knowledge and developing skills in the local community to support the long-term operations and maintenance of an asset, particularly relating to handback.
Addressing social impacts	Social impacts and inclusiveness	<p><i>Social impact is the effect a development's actions have on the well-being of the community.</i> Considerations include:</p> <ul style="list-style-type: none"> • How the project considers the impact it has on the local community, and the requirements in the contract to provide positive impact or mitigate the negative impact during both the construction and operations phases. Further defined in the GI Hub's '<i>Reference Tool on Inclusive Infrastructure and Social Equity</i>'¹⁰.

¹⁰ Available at <https://inclusiveinfra.gihub.org/>

Alignment to the QI Definition (Hangzhou) ⁸	Quality Infrastructure Focus Area	Description ⁹ and Considerations
Addressing... environmental impacts	Environmental impacts	<p><i>Environmental impacts may present themselves as temporary or permanent changes to the atmosphere, water, and land due to any development or human activities, which can result in impacts that may be either reversible or irreversible.</i></p> <ul style="list-style-type: none"> • How the project considers the impact it has on the environment, and the requirements in the contract to mitigate the impact during both the construction and operations phases. • Consideration is given to the mechanisms used to reduce energy consumption over the life of the asset.
Aligning with economic and development strategies.	<p>Alignment of the project with economic and development strategies (SDGs, national policy, etc)</p> <p>Ability of the asset to respond to changes in resource availability, population levels, demographics and disruptive technology</p>	<p>Ensuring alignment with economic and development strategies, and ability to respond to changing priorities or needs including aspects of climate change, population growth and disruptive technology at the national and regional levels. Considerations include:</p> <ul style="list-style-type: none"> • Identifying how the projects align with economic and development strategies and reflecting these in the project objectives and performance measures; and • How the requirements either foresee potential changes or refer to contractual mechanisms that allow future changes to be adopted.