



SECTION 1

Overview of the Reference Tool

The Framework for Inclusive Infrastructure

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Section 1

INTRODUCTION

Economies are literally - and figuratively - built on infrastructure, and ensuring that everyone in society benefits from public infrastructure assets is at the centre of many current debates. Creating more inclusive structures, networks and systems will help authorities to reduce inequality, drive productivity, increase land values and boost economic growth. However, there are significant challenges they must overcome.

It is often assumed that major infrastructure investment will trigger economic growth and thereby automatically benefit under-served and/or vulnerable groups¹, but this is not always the case.

In emerging markets, an estimated 783 million people in developing countries still lack access to clean water; 1.6 billion people are without electricity; 2.5 billion people do not have access to adequate sanitation; and nearly one billion lack access to an all-weather road². As these 'infrastructure gaps' are gradually addressed, economic benefits will undoubtedly result, but those benefits may not be equitably shared by all members of society.

This issue is also relevant in developed countries, where infrastructure projects tend to focus on economic hubs, while those in deprived areas fall further behind. Around the world, many existing infrastructure assets have not been built with accessibility or affordability in mind.

Inclusive growth and the related role of infrastructure are now key considerations for many governments of developed and developing countries, as well as for the international community. It is a broad topic, and supporting evidence is incomplete, which means it will take a concerted effort to address the barriers to implementation and drive change. This challenge has been accepted by the G20, under the 2018 Argentina Presidency, whose agenda highlighted the need for more "socially inclusive growth". Social inclusion is also considered to be a key component in the definition of Quality Infrastructure, a priority of the Government of Japan which has the Presidency of the G20 in 2019. These statements by the G20 support the global

and national inclusivity objectives set out in the United Nations' Sustainable Development Goals (SDGs), as well as international conventions, such as the ones defined by the International Labour Organization (ILO)³.

Many countries, even those with a healthy Gross Domestic Product (GDP), decent growth and falling unemployment, are currently experiencing a rise in populist sentiments, which reflect public dissatisfaction with the way overall economic growth currently benefits society. There is a need to reinforce existing mechanisms and find new ways to support marginalised social groups including women, young people, people with disabilities, low-income groups, minorities, unskilled people, and the unemployed, so they also benefit from the policy, planning, development, design, implementation, operation and monitoring of infrastructure projects and programs.

However, there are several challenges in evaluating large economic infrastructure projects and their related inclusivity benefits. The first is in attributing beneficial changes to the infrastructure project itself and not to other factors, such as the general growth of the economy. Large infrastructure projects cover a wide area, so it can be difficult to identify suitable control groups and then to attribute outcomes for such groups to that development.

Secondly, the benefits from investment in infrastructure can vary widely, even for similar projects in the same country. There are differences in institutions, legal incentives, social norms, access to financial resources, technological preferences and prior levels of development.

Finally, although some benefits will be realised immediately, it can take 20 to 30 years for all direct and indirect benefits to materialise⁴. Examples include reducing poverty gaps and the number of years people spend in poverty, expanding employment, increasing the participation of women in the workforce, and improving access to education and services. They are dynamic outcomes that follow the infrastructure project and extend over a long period of time.

¹ Leave no-one behind: infrastructure and inclusion - K4D – Knowledge, evidence and learning for development, (Raje, 2016)

² Infrastructure: A Game-changer for Women's Economic Empowerment, (Biswas & Mohun, 2016)

³ ILO C111 - Discrimination (Employment and Occupation) Convention, 1958 (No. 111), C100 - Equal Remuneration Convention, 1951 (No. 100), and C087 - Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87), (International Labour Organization, 2017)

⁴ Topic Guide, Maximising the Benefits to the Poor from Infrastructure Programs Aimed at Increasing Growth, (Hawkins, Wells, & Fernz, 2014)

Therefore, governments need to recognise the long-term value and opportunities created by developing infrastructure projects that are inclusive, develop a strategic approach, and embed inclusivity at each stage of the project lifecycle in collaboration with the private sector where appropriate.

OVERVIEW OF THE REFERENCE TOOL

The Global Infrastructure Hub (GI Hub), a G20 initiative, and its consultant, Atkins Acuity, have created this Reference Tool on Inclusive Infrastructure. It defines inclusivity in large scale infrastructure projects⁵. It also provides guidance and shares leading practices to maximise the impact of projects on reducing inequality and promoting shared prosperity.

This Reference Tool presents the results of global research on the lessons learned from inclusive practices. It builds on a detailed literature review, as well as consultations with infrastructure experts, institutional leaders and practitioners, and the assessment of more than 70 projects, including the eight case studies presented in Section 4 of this report.

The Reference Tool provides practical advice on inclusive infrastructure, primarily for government officials responsible for infrastructure projects. It is also designed to be a user-friendly resource for practitioners around the world who are responsible for projects at any stage of their development, implementation or monitoring.

First, the tool provides a working definition of inclusive infrastructure that establishes a baseline to further understand the concept.

It also includes a framework that details the critical Action Areas that need to be considered and addressed to ensure successful implementation of inclusivity in infrastructure projects. These Action Areas are then broken down into practices to provide a full list of recommendations, illustrated by real examples for practitioners to use in the process of developing and/or implementing more inclusive infrastructure.

Inclusive infrastructure is a topic that is attracting an increasing amount of interest from the international community and governments, and it will evolve as a concept. Some of the identified practices still need time to be developed, implemented and monitored, but they have nevertheless been included in the Reference Tool to stimulate further discussion and elaboration.

Finally, the case studies showcase projects that incorporate a combination of several leading practices and highlight the lessons learned.

While the Reference Tool is not a prescriptive inclusive infrastructure manual, it can be considered a guide that provides insight into the potential issues inherent to the implementation of inclusivity measures in a major infrastructure project. The tool also provides practical recommendations on how to resolve those issues throughout the entire project lifecycle.

The Reference Tool is designed to supplement other currently-available resources by aggregating available information to form relevant practices that can be implemented across all sectors and geographies. In some instances, practices are only presented for a specific sector and/or society group as their broader relevance still needs to be evaluated.

A large number and diverse range of issues and related solutions have been assessed to create an actionable Reference Tool for practitioners. As awareness of the concept is still relatively low, we expect the tool to continue to evolve over time.

Finally, the Reference Tool has not been designed to rate the maturity of relevant public sector authorities' capabilities as they relate to inclusivity. However, it may highlight changes that could be made to any organisation to ensure more effective and systematic implementation of inclusivity in infrastructure projects.

DEFINITION OF INCLUSIVE INFRASTRUCTURE

Infrastructure benefits are generally measured by macroeconomic outcomes. It is critical for infrastructure projects to be associated with improvements in competitiveness, scalability, profitability, integration and trade, but it is now increasingly important for such projects to also increase social and demographic inclusivity⁶.

The dimension of social and demographic inclusion and related positive outcomes are the core pillars of the inclusive infrastructure concept, so that benefits are shared with those demographic or social groups that are otherwise at risk of being excluded. Other dimensions, such as the ability to increase trade between countries, also play a key role in achieving inclusive outcomes, but these other dimensions are not the focus of this tool.

⁵ Large scale infrastructure projects are defined as projects with an overall CAPEX of USD 250 million. However, provided they were relevant and appropriate to the subject, smaller size projects were considered to analyse practices.

⁶ All on board: Making inclusive growth happen, (OECD, 2015)

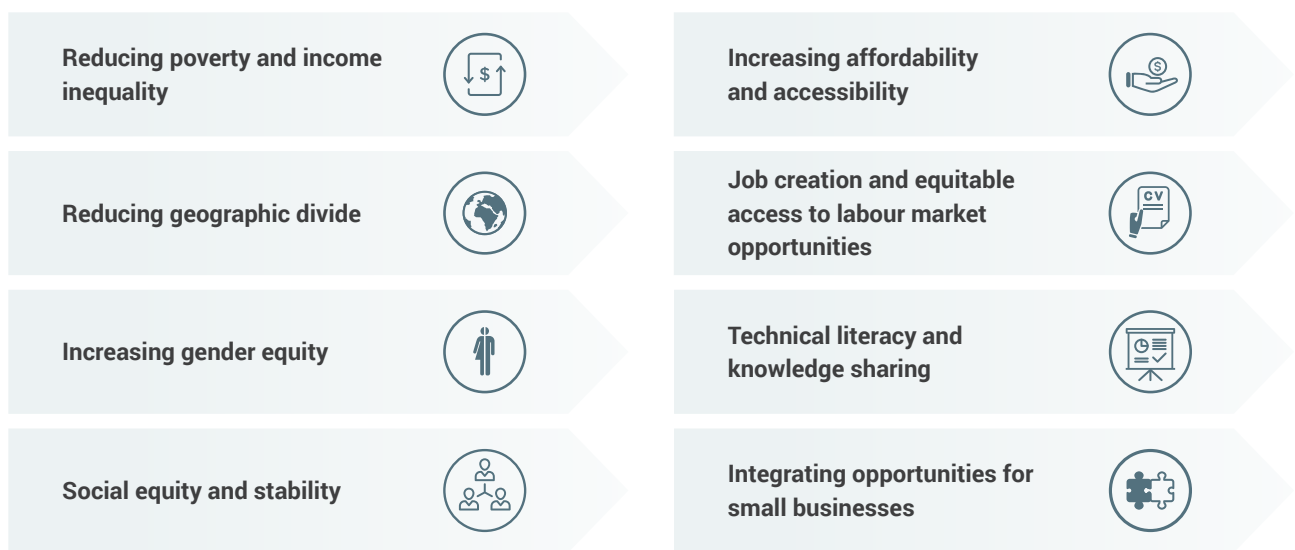
INCLUSIVE INFRASTRUCTURE

Any infrastructure development that enhances positive outcomes in social inclusivity and ensures no individual, community, or social group is left behind or prevented from benefiting from improved infrastructure.

The definition⁷ of inclusive infrastructure for large infrastructure projects is the foundation on which this Reference Tool has been built, but it is also intended to stimulate discussion within the international community as the concept develops further.

While still allowing comprehensive coverage of all aspects of this concept, the definition provides a framework to sharpen the focus of discussion. This will help to increase understanding and acceptance of the concept to maximise its benefits.

Based on this definition, the adoption of an inclusive approach to infrastructure development can offer a number of potential benefits, as follows:



The Reference Tool shares detailed insight into practices which can yield one or more of the benefits listed above. These practices provide a practical structure for addressing social and income inequalities and lack of accessibility, and help to identify opportunities to generate positive societal outcomes.

METHODOLOGY FOR DEVELOPING THE REFERENCE TOOL

The Reference Tool has been developed based on research into the existing literature and real examples of projects that showcase inclusive infrastructure practices. The steps that helped to inform the Reference Tool are set out in Figure 2.



Figure 2: Methodology of the Inclusive Infrastructure Reference Tool

⁷ Our working definition is the result of independent research based on a robust quantitative and qualitative methodology.

1. Literature review

The list of reviewed literature is provided in the Key Literature section. The list was created by a collaborative effort, considering the breadth of the inclusive infrastructure topic and the multitude of terms used to define it. This list includes literature identified through thorough database research⁸, as well as through recommendations from members of the project's consultative board and experts from the GI Hub and the consultant's project team. It captures findings from more than 100 pieces of literature from recognised sources, across all economic and social infrastructure sectors, including water supply and sanitation, energy access and transmission, highway projects, public transport, information and communications technology (ICT), social housing and urban development projects.

2. The Framework for Inclusive Infrastructure

Following the literature review, the Framework for Inclusive Infrastructure was formed to provide an easy and practical way for practitioners to understand what inclusive infrastructure means and the key Action Areas and related practices to consider. Building on the literature review and expert interviews, leading practices were identified at both policy and project levels across multiple sectors and geographies, as well as emerging practices with a clear potential to increase inclusive infrastructure benefits. Given that many of the identified practices are still at the early stages of implementation, in many cases there is limited information available on quantified outcomes. Impact evaluations will be useful in the longer-term to further feedback and strengthen the Framework.

3. Project identification

In parallel, a total of 70 policies and projects showcasing inclusivity practices were identified by the consultant, the GI Hub and the project's consultative board. They are at various stages of development, from planning to monitoring, and were from both developed and developing countries, in both common law and civil law jurisdictions. The practices implemented in these policies and projects informed and validated existing practices mentioned in the literature, and helped identify and define new elements for the Framework for Inclusive Infrastructure. The collection of projects also formed the basis of the shorter list of projects considered as case studies.

⁸ Including database searches, citation searches, and website searches. Academic databases searched as part of this process include: EconLit, Business Source Corporate, Bielefeld Academic Search Engine (BASE) and Research Gate. The citation search process was driven by Google Scholar, and multiple individual website searches were based on supplementary searches through the OECD Library, World Bank Group, International Monetary Fund (IMF), and the Asian Development Bank's (ADB) websites.

4. Consultative workshops

Two regional workshops were held to share the preliminary findings of the literature review and the Framework for Inclusive Infrastructure, as well as to gain further insight from infrastructure practitioners into the challenges they face in implementing inclusive infrastructure practices. The first workshop was in Kampala, Uganda; the second in Buenos Aires, Argentina, with attendees from relevant government agencies, as well as multilateral development banks (MDBs). Feedback and additional lessons learned from the workshops were then incorporated into the Reference Tool.

5. Case studies

We selected a number of case studies from the initial list of 70 policies and projects identified, initially focusing on projects with a capital expenditure (CAPEX) of at least USD 250 million, as well as projects showcasing multiple and varied inclusive infrastructure practices. The selected case studies also cover a variety of sectors, geographies and legal systems.

Multiple interviews with relevant stakeholders were conducted to ensure an in-depth recording of events. The case studies are shared in Section 4, and the fundamental lessons learned from them have also been incorporated into the Reference Tool.

6. The Inclusive Infrastructure Reference Tool

The Reference Tool was formed based on the Framework for Inclusive Infrastructure and the case studies, as well as insights from experts, the project's consultative board and workshop participants. It draws on real experiences from current and recent projects around the world and provides a solid basis for strengthening awareness of inclusive infrastructure. It also supports further dissemination of related practices to help facilitate the planning, design and implementation of future inclusive infrastructure projects.

THE FRAMEWORK FOR INCLUSIVE INFRASTRUCTURE

Purpose

The purpose of the Framework is, first, to help strengthen awareness and understanding around the definition and principles of inclusive infrastructure; and then to provide a summary of areas where practitioners can intervene and suggest practical solutions across the full project lifecycle.

Process

Development of the Framework commenced with a study of relevant literature and projects, which were used to identify common approaches and put forward practical recommendations for practitioners. The Framework ensures that existing solutions found in these studies have been considered, and provides a simple structure to aid comprehension and recollection. It covers two key dimensions: policy/institutional level and project level.

The process used to define the Framework was designed to capture the dynamic continuum of inclusive infrastructure (see Figure 3). This dynamic continuum reflects the fact that, as the inclusive infrastructure concept and related solutions mature, the content of the Framework will evolve. The flexible structure of the Framework will support further additions and enhancements.

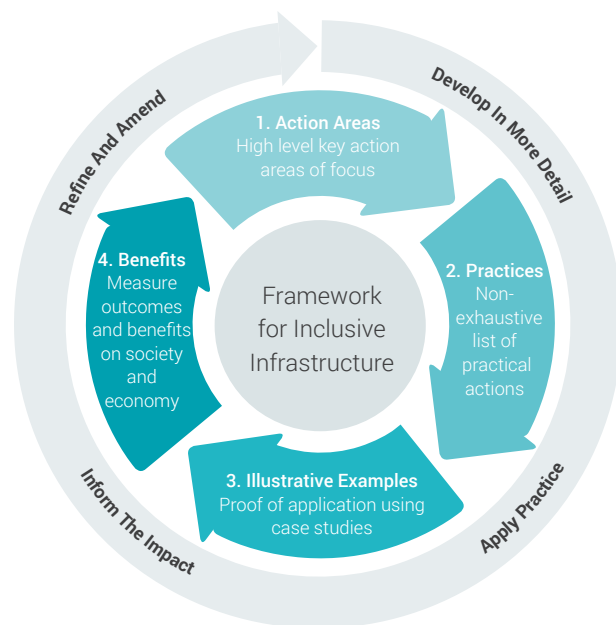


Figure 3: Dynamic continuum of inclusive infrastructure

The Framework

The Framework for Inclusive Infrastructure (see Figure 5) showcases leading practices at policy and project levels. It is composed of four key steps, defined as follows:

Action Areas

Action Areas are the main pillars to consider when creating more inclusive infrastructure. They also relate to areas that can help to maximise the benefits of inclusive infrastructure.

These Action Areas are then detailed in a series of actionable leading practices.

Practices

Each Action Area presents a set of practices, which are existing approaches used to maximise inclusivity. They summarise practical methods, processes or procedures identified recurrently in the literature and policy and project examples, with a strong track record of improving inclusivity in infrastructure.

To maximise the impact of these practices, it is important to define and understand their scope of application, which is the focus of the following step.

Illustrative examples

Illustrative examples serve as evidence that suggested practices can be successfully applied to infrastructure projects or programs in the real world. Selected case studies that provide evidence have been used to analyse in detail where one or multiple practices have been applied. This step also informs us of the practical benefits for society and the economy.

Benefits

Every practice and illustrative example should link to one or more benefits for under-served and/or vulnerable groups in society. As the inclusive infrastructure concept matures, the benefits may evolve, which will trigger a refinement or amendment of the Action Areas identified.

Action Areas and practices

The Action Areas are central themes that help to address inclusivity in large infrastructure programs. The number of Action Areas in this Reference Tool are intentionally limited, to provide a simple framework for governments and stakeholders. Each Action Area is supported by associated and identified practices that lead to multiple outcomes or benefits.

The identified Action Areas can be used to formulate specific questions for users to understand how best to approach an infrastructure development at either policy or project levels. The practices will serve as guidance and inspiration on how to integrate inclusive infrastructure into the policies or projects to realise improved inclusivity outcomes.

Benefits

Each input in the development of major infrastructure projects needs to be justified by its benefits to society and the economy. Understanding these benefits is an important step in the engagement of all key stakeholders, especially at the government level, given the importance of strengthening relevant enabling policies. As awareness of inclusive infrastructure is still growing, this understanding of benefits is critical as it provides a clear explanation of the incentives for enacting inclusive projects and policies.

The Framework for Inclusive Infrastructure defines benefits as positive social outcomes derived from

approaches addressing inclusivity in infrastructure projects. Benefits can be financial or non-financial advantages gained by previously disadvantaged or vulnerable groups from the application of inclusive infrastructure practices.

Infrastructure developments benefit society directly and indirectly⁹, and their positive outcomes can be distributed in several approaches (see Figure 4). In a 'targeted approach', previously under-served or vulnerable groups are the main beneficiaries. In contrast, an 'inclusive approach' is one wherein an infrastructure asset is planned and developed to benefit everyone, but in a manner that includes explicit consideration of previously disadvantaged, under-served or vulnerable groups so that they also benefit from the infrastructure development. Finally, under a 'passive approach', the infrastructure project does not try to address the needs of any one community. Instead, the benefits of the infrastructure are expected to trickle down to all members of society with no warranty of equitable distribution of positive outcomes.

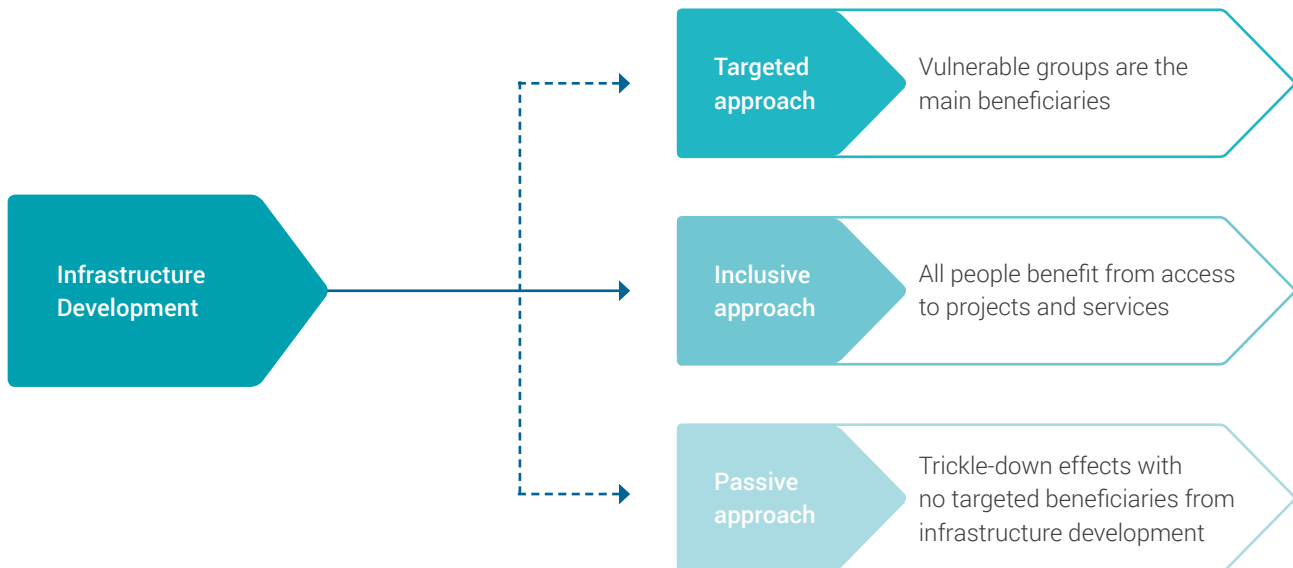


Figure 4. Approach to inclusive infrastructure

Source: Atkins Internal, adapted from *Inclusive Urban Infrastructure Investment: A Guide for Municipalities (Cities Development Initiative for Asia, 2016)*

⁹ Inclusive Urban Infrastructure Investment: A Guide for Municipalities, (Cities Development Initiative for Asia, 2016)



Figure 5: Framework for Inclusive Infrastructure

BENEFITS OF INCLUSIVE INFRASTRUCTURE AND ITS RELATIONSHIP WITH THE UNITED NATIONS' SUSTAINABLE DEVELOPMENT GOALS (SDGs)



SDG 9 – *build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation* – is the most explicit call for transforming the current infrastructure development approach into an inclusive one.

In addition, the universal access to infrastructure services under SDG 6 – *ensure availability and sustainable management of water and sanitation for all* – and SDG 7 –

ensure access to affordable, reliable, sustainable and modern energy for all – also directly imply an inclusive approach will be needed. In urban areas this is also highlighted under SDG 11 – *make cities and human settlements inclusive, safe, resilient and sustainable*.

Moreover, benefits from inclusive infrastructure also implicitly promote many other SDGs, including SDG 5 on gender equality.

The Framework for Inclusive Infrastructure defines its explicit benefits, and the table below demonstrates the relationship of those benefits to the SDGs.

IDENTIFIED BENEFIT	BENEFIT DESCRIPTION	SDG
 <p>Reducing poverty and income inequality</p>	<p>Inclusive infrastructure can significantly reduce poverty and income inequality^{*1} by directly addressing the challenges faced by vulnerable groups. It can increase access to essential services, markets, and learning opportunities. It can also boost people's earning potential and productivity^{*2}. In China, improving rural roads contributed to a reduction in poverty by increasing agricultural productivity and non-farm employment. For every USD 1,500 (CNY 10,000) invested on rural roads, at least three people are estimated to be lifted out of poverty^{*3}.</p>	   
 <p>Social equity and social stability</p>	<p>Inclusive infrastructure helps to distribute benefits equitably and starts to bridge the social divide^{*4}. It also reduces barriers to access and discrimination, positively impacting earning potential, social equity and stability.</p>	  
 <p>Increasing gender equity</p>	<p>Inclusive infrastructure aims to reduce inequality in the level of access to, use of, and control over infrastructure facilities and services by men and women. When inequalities within the household^{*5}, knowledge gaps, lack of education, and cultural restrictions are addressed, higher gender parity in earnings can be achieved and a significant increase in human capital wealth (to the order of 18%) can be generated^{*6}.</p>	  
 <p>Integration of small business opportunities</p>	<p>Inclusive infrastructure provides opportunities for small businesses to take part and benefit from major projects. For example, small-scale community contracting can involve small local contractors in various aspects of infrastructure construction and maintenance. This, in turn, increases income and creates employment opportunities^{*7}. It can also improve mobility, help small businesses and build their consumer base, enabling them to offer additional services and products.</p>	 

^{*1} Trends and Challenges in Infrastructure Investment in Low-Income Developing Countries, (Gurara, et al., 2017)

^{*2} The impact of infrastructure of growth in developing countries, IFC Economic Notes, (Estache & Garsous, 2012)

^{*3} Infrastructure and Poverty Reduction – What is the connection? (Ali & Pernia, 2013)

^{*4} The Changing Wealth of Nations 2018 - Unequal wealth distribution associated to infrastructure, (Lange, Wodon, & Carey, 2018)

^{*5} Use of and control over infrastructure facilities and services by men and women, (Doran, 1990).

IDENTIFIED BENEFIT	BENEFIT DESCRIPTION	SDG
 <p>Increasing affordability and accessibility</p>	<p>Inclusive infrastructure should be affordable, accessible and provide benefits for all. For example, a transport project that does not consider the needs of lower income and vulnerable groups, such as people with a disability or elderly passengers, will not be able to retain them as customers. However, by offering a discounted fare, they could open their network to a wider range of people and generate additional revenue^{*8}.</p>	    
 <p>Job creation and equal access to labour market opportunity</p>	<p>Infrastructure development, poverty reduction and the creation of employment are linked. Inclusive infrastructure fosters social inclusion related to labour market opportunities, which is based on the creation of new jobs across the project lifecycle, and on equal access to job opportunities, irrespective of gender and/or disability. In Eastern Indonesia, local firms were engaged to participate in the construction and maintenance of rural roads, with a view to reducing rural unemployment rates. This strategy was forecasted to provide an additional 10,000+ work days for each kilometre of new rural road built without any significant delays or an increase in costs^{*9}.</p>	  
 <p>Technical literacy and knowledge sharing</p>	<p>Improvements to infrastructure can boost the skills and knowledge of people in the communities surrounding it and can connect developers to new talent, but only if potential employees are aware of the opportunities that exist and can capitalise on them.</p> <p>Inclusive infrastructure aids in delivering developments and provides technical training opportunities, which, in turn, improves access to the labour market. For example, in Thailand, the ICT industry needs 6,000 to 7,000 workers per year, but falls 4,000 to 5,000 people short because of insufficient ICT literacy^{*10}.</p>	 
 <p>Reducing geographic divide</p>	<p>Inclusive infrastructure provides people with access to facilities, markets and services, and helps to connect people. This reduces discrimination and inequalities in the distribution of benefits. With equal access, the rural and urban divide is reduced, access to the labour markets is enhanced, there are more learning opportunities, and earning potential is improved through economic activities (e.g. increased productivity, access to consumer/service markets)^{*11}.</p>	  

^{*6} The Changing Wealth of Nations 2018 - Unequal wealth distribution associated to infrastructure, (Lange, Wodon, & Carey, 2018)

^{*7} See also the benefit on 'Job creation and equal access to labour market opportunity' under the benefits of the Framework.

^{*8} Transport Pricing and Accessibility (Gwilliam, 2017)

^{*9} Infrastructure, Poverty Reduction and Jobs, (International Labour Organization, 2018)

^{*10} Preparing ICT Skills for Digital Economy: Indonesia within the ASEAN context. (World Bank 2018)

^{*11} Infrastructure, Poverty Reduction and Jobs, (International Labour Organization, 2018)

TARGETED STAKEHOLDERS

The definition of inclusive infrastructure in this Reference Tool calls for a comprehensive understanding of which individuals and groups are at risk of being excluded. The context of each infrastructure project is unique, and those individuals or groups that have historically been excluded or are at risk of exclusion should, therefore, be assessed for each individual project (in *Section 2* of this Reference Tool, see *Action Area 1: Stakeholder Identification, Engagement and Empowerment*). It is important to note that these groupings are not homogeneous; for example, not all women have the same transport needs, nor do all elderly people face identical challenges, and there are numerous different forms of disability that should be considered.

It is also important to understand that individuals may be at the intersection of many groups. The term used for this is 'intersectionality'; for example, someone who is female, low-income and from a minority group.

The barriers faced by, and concerns of, a woman from a low-income household may be quite different to those of a woman from a high-income household. While the diversity of individuals may seem rather obvious, it is critically important to understand this concept when identifying, and consulting with, representatives of disadvantaged groups and when designing appropriate solutions.

In the context of inclusive infrastructure, specific groupings of targeted stakeholders include, but are not limited to, those outlined in the table below. Some specific considerations for the design of infrastructure projects which take into account these groupings have also been highlighted in this table, and will be examined throughout the Reference Tool.

TARGETED GROUP	SOME SPECIFIC CONSIDERATIONS (NON-EXHAUSTIVE)
Low-income groups	Affordability, political voice, social engagement
Women and girls	Safety, harassment and violence, access to employment, time-savings, safety audits, political voice
Youth (in both urban and rural areas)	Training, skills, employment
Children	Safety, access to education
Elderly	Mobility, independence
People living with a disability	Mobility, physical barriers, attitudinal barriers, employment
Job-seekers and the unemployed	Training, skills, employment
Minority groups	Consultation, political barriers, attitudinal barriers, employment
People living in informal settlements and isolated communities	Land title and proof of address issues, geographic isolation, affordability issues, correct targeting of viability gap subsidies
People living in vulnerable environments (such as semi-arid lands, flood plains)	Vulnerability to shocks, design for environmental and climate change and variability, mitigation and adaptation