

Annex A. Overview of selected sustainable infrastructure standards and norms

This annex provides an initial stocktake of sustainable infrastructure initiatives, to raise awareness amongst policy-makers, infrastructure planners and decision-makers on the variety of tools, instruments and techniques available to help them better integrate the 2030 Agenda for Sustainable Development as well as climate and development goals into their strategic infrastructure planning and decision-making. This annex is by no means comprehensive, but aims to showcase the variety of tools and instruments available to governments for integrating sustainability into infrastructure decision-making. It also shows that there is no one-size-fits-all solution, and it is essential to tailor instruments to the specificities of each country, including institutional capacity. Navigating the complexity of international standards and norms requires targeted technical assistance and capacity-building programmes, in line with the specific needs and capacity of recipient countries.

1. The need for sustainable infrastructure definitions, standards and tools

Sustainable infrastructure is central to achieving the Sustainable Development Goals (SDGs) and the climate objectives of the Paris Agreement, given that current infrastructure systems account for more than 60% of global GHG emissions. Although infrastructure is only explicitly mentioned in SDG 9, it underlies all of the other socio-economic SDGs (Thacker et al., 2018^[1]). Helping countries mainstream social and environmental benefits in infrastructure planning will bring multiple co-benefits to health and air quality through clean transport systems (SDG 3), access to energy (SDG 7), sustainable industrialisation (SDG 9) and responsible production and consumption (SDG 12). Sustainable infrastructure could also contribute to protecting and promoting sustainable use of terrestrial ecosystems (SDG 15), and better planned transport infrastructure and improved connectivity could reduce inequalities within countries (SDG 10).

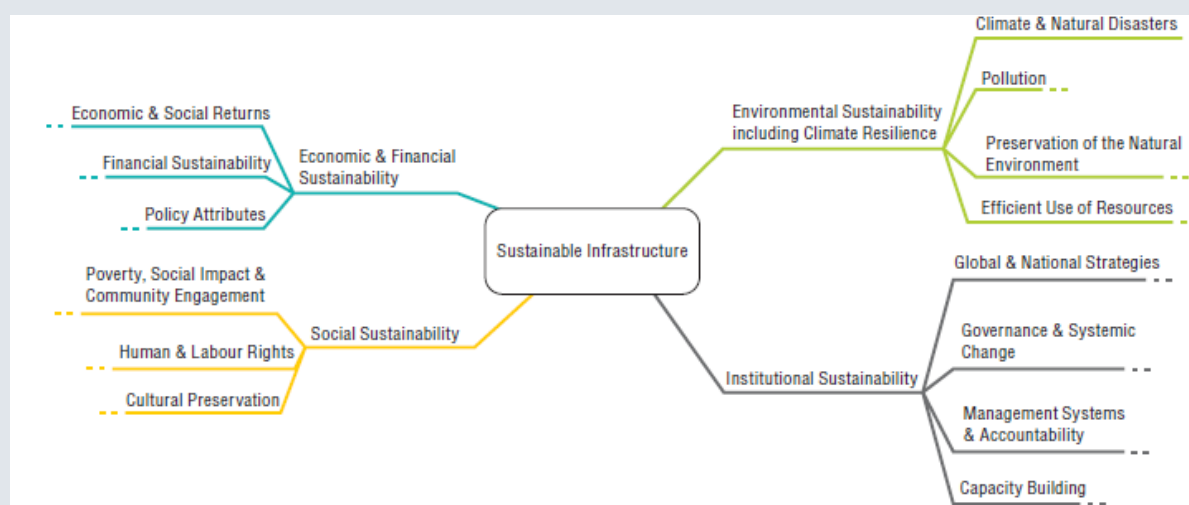
The types of infrastructure selected for construction have both direct and indirect impacts on the environment and wellbeing. Since infrastructure assets are typically designed to last for decades, infrastructure's impacts are long lasting and have the potential to lock countries into unsustainable development pathways, for instance due to higher rates of greenhouse gas emissions and insufficient resilience to climatic and other catastrophic events. Countries must avoid investments that lock in carbon-intensive and resource-inefficient infrastructure and technology, and instead focus on investments in green infrastructure, clean energy, clean technology, and human and natural capital. They must also ensure that infrastructure investments generate positive social outcomes, benefit the poor, leave no one behind, and respect human rights (UN Environment, 2019^[2]). Risks to the environmental, social, economic, financial as well as institutional sustainability of infrastructure need to be considered during all phases of infrastructure planning, and in particular during up-stream, macro-level strategic infrastructure planning.

In the context of the 2030 Agenda for Sustainable Development, there are many estimates of expected infrastructure investment needs. The OECD estimates that an annual average of USD 6.9 trillion in infrastructure investment until 2030 is required to support global development (OECD, 2018^[3]). The bulk of this investment is needed in developing countries, which face strong population growth, rising income levels and rapid urbanisation as well as global trends such as growing inequality and climate change. To date, countries have mainly focused on closing the infrastructure finance and investment gap, with limited attention to environmental and societal problems in the planning and construction of such projects, leading to only incremental policy approaches to climate, infrastructure and finance (OECD/World Bank/UN Environment, 2018^[4]). However, investing now in a decisive transition, including in sustainable infrastructure, could increase long-term GDP by 2.8%, while also providing potential growth benefits in the short-term. It is therefore critical that infrastructure investment decisions over the next five years shift investment flows towards low-carbon, climate-resilient infrastructure to achieve the scale of investment needed to meet sustainability and growth demands.

Balancing the socio-economic and environmental aspects of infrastructure has proven challenging for countries. Analytical tools such as Cost-Benefits Analysis (CBAs) and Environmental and Social Impact Assessments (ESIA) have been implemented and used at the project levels, although not systematically. Additionally, several barriers still prevent investment in sustainable infrastructure including the absence of articulated visions, long-term low-emission development strategies or investment roadmaps, a lack of transparent pipelines of bankable sustainable infrastructure projects and a lack of shared definitions (see box xxx) and standards of sustainability. Mainstreaming climate and development considerations in investment decisions and strategies is needed and requires action on multiple fronts, from upstream sustainable infrastructure planning to project prioritisation, financing and delivery (IDB, 2018^[5]).

Box A.1. Defining sustainable infrastructure

Infrastructure is sustainable if, throughout its life cycle (i.e. from the planning stages throughout its operation and until decommissioning), it provides social, economic and environmental benefits, but no single, harmonised definition of sustainable infrastructure exists (IDB, 2018^[5]). A harmonised definition of sustainable infrastructure could ensure consistency of data collection, help project preparation and the development of benchmarks and metrics of success to leverage further private sector investment in sustainable infrastructure. The Inter-American Development Bank developed a framework for sustainable infrastructure that attempts to harmonise existing definitions of sustainable infrastructure, building on the G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment. Such modular definition to sustainability needs to be adjusted to specific country contexts.



Adapted from IDB (2018^[5]), *What is Sustainable Infrastructure? A Framework to Guide Sustainability Across the Project Cycle*, Inter-American Development Bank, <https://publications.iadb.org/en/what-sustainable-infrastructure-framework-guide-sustainability-across-project-cycle>.

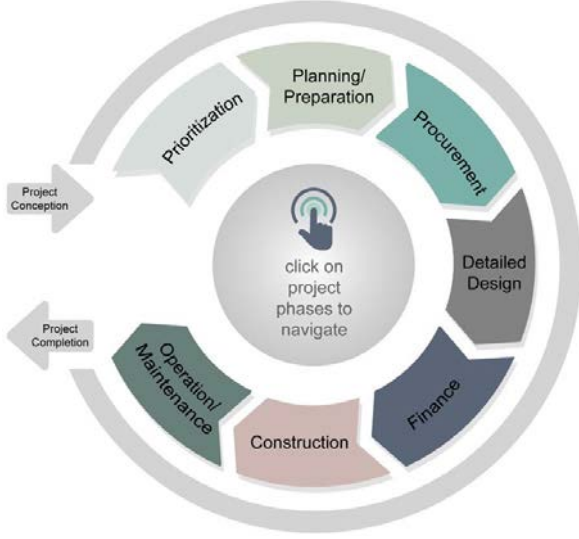
2. Navigating the multitude of principles, standards and norms

The challenge for policy-makers today is not so much the lack of tools and instruments to evaluate and mainstream sustainability in infrastructure decision-making, but rather the multitude of sustainable infrastructure standards and tools. There is a plethora of internationally, nationally and locally endorsed definitions, approaches, standards, principles, guidelines and frameworks in place for sustainable infrastructural development. This extensive number of tools and methods can create a sense of confusion, therefore inadvertently hindering the sustainable practices that such standards advocate (IDB, 2018^[5]). The tools, rating systems and guidelines created can also place excessive focus on specific aspects of infrastructure development, in turn making it increasingly difficult to decide on which standards to prioritise in order to achieve sustainability. In addition, by striving to achieve comprehensive sustainability, it can often lead to disagreements between various disciplines involved in the planning,

construction and operation of an infrastructure project, and lead to trade-offs between different SDGs.

Therefore, it is imperative to understand the diversity of current sustainable infrastructure standards and involved stakeholders. Several initiatives and papers have striven to fill this knowledge gap. For instance, the *Sustainable Infrastructure Tool Navigator* (n.d.^[6]) lists more than 50 rating systems (see Table 2), high-level principles and guidelines to support project teams, public officials and financiers among other stakeholders to integrate sustainability throughout the lifecycle of infrastructure projects. The tool is organised by project phase (see Table 1, stakeholders, types of tools and sectors to facilitate the navigation.

Table A.1. Organisation structure of the Sustainable infrastructure tools navigator

I. Project phase of infrastructure projects	II. Main audience and main users
	<ul style="list-style-type: none"> • Project team • Developers • Public authorities • General audience • Operators • Investors • Credit rating agencies • Financial institutions • Insurers
III. Type of tools	IV. Sectors
<ul style="list-style-type: none"> • Rating systems • Guidelines • Principles • Financial tools • Global sustainability benchmark • Project preparation software 	<ul style="list-style-type: none"> • Highways • Urban areas, Landscape • All productive sectors • Energy • Transportation • Hydropower • Parking • Waste

Source: Sustainable Infrastructure Tool Navigator (n.d.^[6]), <https://sustainable-infrastructure-tools.org/>

Table A.2. Standards listed in the Sustainable Infrastructure Tool Navigator

Infrastructure project lifecycle stages	Infrastructure sector		
	General	Transport	Energy
1. Prioritisation	SOURCE [https://public.sif-source.org/] Smart Scan Tool [http://www.gib-foundation.org/smartscan/] Zofnass Economic Process Tool [http://economictool.zofnass.org/] IFCs Environmental and Social Performance Standards [https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards] GRESB [https://gresb.com/about/] Financial Valuation Tool [https://www.fvtool.com/] Environment and Social Framework [https://www.worldbank.org/en/projects-operations/environmental-and-social-framework]	TREDIS [https://tredis.com/]	
2. Planning / preparation	Sustainable Infrastructure Guidelines for Overseas Chinese Enterprises [http://csr2.mofcom.gov.cn/article/policies/ind/201707/20170702608844.shtml] Sustainability Assessment Method for Civil Engineering Works [https://www.fccco.com/en/sustainability/responsible_construction/sustainability-system-assessment/] SURE Standard [http://www.gib-foundation.org/sure-standard/]	Greenroads Rating System [https://www.greenroads.org/publications] Sustainable Transportation Analysis and Rating System [https://www.sccrtc.org/wp-content/uploads/2014/02/STARS-Pilot-Project-Application-Manual.pdf] TREDIS [https://tredis.com/] BE2ST-in-Highways [http://mrc.wisc.edu/be2st-in-highways/]	Performance Excellence in Energy Renewal-PEER [http://peer.gbci.org/] E0100 Standard for Responsible Energy [https://www.equitableorigin.org/eo100-for-responsible-energy/overview/]
3. Procurement	GRESB [https://gresb.com/about/]	TREDIS [https://tredis.com/]	

	Zofnass Economic Process Tool http://economictool.zofnass.org/		Performance Excellence in Energy Renewal-PEER http://peer.gbci.org/
4. Detailed Design	<p>Sustainable Infrastructure Guidelines for Overseas Chinese Enterprises http://csr2.mofcom.gov.cn/article/policies/ind/201707/20170702608844.shtml</p> <p>Sustainability Assessment Method for Civil Engineering Works https://www.fccco.com/en/sustainability/responsible_construction/sustainability-system-assessment</p> <p>Sustainable Asset Valuation (SAVi) https://www.iisd.org/project/SAVi-sustainable-asset-valuation</p> <p>IS Rating Scheme https://isca.org.au/component/content/article?id=867</p>	<p>Greenroads Rating System https://www.greenroads.org/publications</p> <p>Sustainable Transportation Analysis and Rating System https://www.sccrtc.org/wp-content/uploads/2014/02/STARS-Pilot-Project-Application-Manual.pdf</p> <p>TREDIS https://tredis.com/</p> <p>BE2ST-in-Highways http://mrc.wisc.edu/be2st-in-highways/</p>	<p>Performance Excellence in Energy Renewal-PEER http://peer.gbci.org/</p> <p>Hydropower Sustainability Assessment Protocol http://www.hydrosustainability.org/</p>
5. Finance	<p>Sustainability Bond Guidelines https://www.icmagroup.org/green-social-and-sustainability-bonds/sustainability-bond-guidelines-sbg/</p> <p>Social Bonds Principles https://www.icmagroup.org/green-social-and-sustainability-bonds/social-bond-principles-sbp/</p> <p>Principles for Sustainable Insurance https://www.unepfi.org/psi/the-principles/</p> <p>Principles for Responsible Investment https://www.unpri.org/</p> <p>Green Bond Principles https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/</p> <p>Climate Bond Standards https://sustainable-infrastructure-tools.org/tools/climate-bonds-standard/</p> <p>Zofnass Economic Process Tool http://economictool.zofnass.org/</p> <p>Financial Valuation Tool https://www.fvtool.com</p>	<p>TREDIS https://tredis.com/</p>	<p>E0100 Standard for Responsible Energy https://www.equitableorigin.org/eo100-for-responsible-energy/overview/</p>

Source:	6. Construction	<p>Sustainable Infrastructure Guidelines for Overseas Chinese Enterprises [http://csr2.mofcom.gov.cn/article/policies/ind/201707/20170702608844.shtml]</p> <p>Sustainability Assessment Method for Civil Engineering Works [https://www.fccco.com/en/sustainability/responsible_construction/sustainability-system-assessment]</p> <p>Smart Scan Tool [http://www.gib-foundation.org/smartscan/]</p> <p>IFCs Environmental and Social Performance Standards [https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards]</p>	<p>Greenroads Rating System [https://www.greenroads.org/publications]</p> <p>Sustainable Transportation Analysis and Rating System [https://www.sccrtc.org/wp-content/uploads/2014/02/STARS-Pilot-Project-Application-Manual.pdf]</p> <p>TREDIS [https://tredis.com/]</p>	<p>E0100 Standard for Responsible Energy [https://www.equitableorigin.org/eo100-for-responsible-energy/overview/]</p> <p>Hydropower Sustainability Assessment Protocol [http://www.hydro-sustainability.org/]</p>
	7. Operation / maintenance	<p>True Zero Waste [https://true.gbci.org]</p> <p>Sustainable Infrastructure Guidelines for Overseas Chinese Enterprises [http://csr2.mofcom.gov.cn/article/policies/ind/201707/20170702608844.shtml]</p> <p>Sustainability Assessment Method for Civil Engineering Works [https://www.fccco.com/en/sustainability/responsible_construction/sustainability-system-assessment]</p> <p>GRESB [https://gresb.com/about/]</p> <p>Smart Scan Tool [http://www.gib-foundation.org/smartscan/]</p>	<p>Greenroads Rating System [https://www.greenroads.org/publications]</p> <p>TREDIS [https://tredis.com/]</p>	<p>E0100 Standard for Responsible Energy [https://www.equitableorigin.org/eo100-for-responsible-energy/overview/]</p> <p>Performance Excellence in Energy Renewal-PEER [http://peer.gbci.org/]</p>

Sustainable Infrastructure Tool Navigator (n.d.^[6]), <https://sustainable-infrastructure-tools.org/>

The Navigator is quite complete but not comprehensive. For instance, it fails to account for some key internationally recognised standards that are not directly related to sustainable infrastructure projects, but that influence the overall policy strategies and environment. The *G20/OECD/WB Stocktake of Tools and Instruments Related to Infrastructure as an Asset Class – Progress Report* (OECD and World Bank, 2018^[7]) provides a comprehensive overview of existing infrastructure policy tools, standards and instruments that have received international recognition, typically by G20 or G7 or OECD. The stocktake, undertaken in consultation with various international organisations including ADB, AfDB, AIIB, EBRD, EIB, FSB, IADB, IFC, IMF, IsDB, GI Hub, NDB and UN, is mainly targeted at decision makers and policy makers and is structured around different categories:

- A. Policy related tools and instruments,
- B. Project related tools and instruments
- C. Infrastructure-related data.

The table below provides an overview of a few internationally agreed standards and principles related to sustainable infrastructure mainly targeted at policy-makers that intend to create a policy framework conducive to investment in sustainable infrastructure. The following list is by not comprehensive but provides a good overview of the different OECD instruments with different legal statuses. A few are legally binding for OECD countries and adhering non-members, while others have been endorsed by OECD countries or the G20 but remain “soft” law instruments.

Table A.3. Examples of internationally recognised instruments and standards related to sustainable infrastructure

A. Policy related tools and instruments	
Framework condition	<p>G7 Ise-Shima Principles for Promoting Quality Infrastructure G20 principles for quality infrastructure investment OECD Policy Framework for Investment, adopted by an OECD council recommendation in 2015 to improve investment climate to mobilise private investments, including in quality infrastructure, and to enhance the policy framework. Application to selected sectors such as—Transport infrastructure-Procurement guidelines (ITF) The OECD Principles for Private Sector Participation in Infrastructure, approved by the OECD council in 2007</p>
Financing	<p>G20/OECD High-level Principles of Long-term Investment Financing by Institutional Investors OECD Policy Guidance for Investment in Clean Energy Infrastructure Mapping Channels to Mobilise Institutional Investment in Sustainable Energy Investment governance and the integration of environmental, social and governance factors OECD Investing in Climate, Investing in Growth OECD/ WB/ UNEP Financing Climate Futures: Rethinking Infrastructure</p>
Governance	<p>OECD Framework for the Governance of Infrastructure to plan and prioritise investments, manage PPPs and procurement, design effective regulatory environments and manage integrity risks G20 Compendium of Good Practices for Promoting Integrity and Transparency in Infrastructure Development –focuses on transparency and integrity in the infrastructure cycle. (anti- corruption and fraud) at Appraisal, Planning, Tendering, Implementation & Contract Management, etc. OECD Guidelines for Multinational Enterprises, that integrate Responsible Business Conduct (RBC) principles and standards for investments in the infrastructure project life e-cycle for better economic, environmental and social outcomes, avoid political gridlock, and ensure that infrastructure serves public interest G20/OECD Principles of Corporate Governance and OECD Guidelines on Corporate Governance of State-Owned Enterprises Anti-corruption, responsible business conduct and the environment, with the OECD Anti-Bribery Convention, OECD Integrity Framework for Public Investment Open competition in procurement, with the OECD Recommendation of the Council on Public Procurement and OECD Arrangement on Officially Supported Export Credits</p>
Development	<p>United Nations Sustainable Development Goals OECD DAC Blended Finance Principles for Unlocking Commercial Finance for the SDGs</p>
Environment	<p>The 2019 OECD council Recommendation on the Assessment of Projects with Significant Impact on the Environment</p>
B. Project related tools and instruments	
Planning and prioritisation	<p>WBG Infrastructure Prioritisation Framework (IPF) OECD Principles for the Public Governance of Public-Private Partnerships</p>
Institutional capacity for project development	<p>Multi-lateral Development Banks APMG PPP Certification Program WBG Country PPP Readiness Diagnostic</p>
Project preparation	<p>WBG PPP Screening Tool WBG/IMF PPP Fiscal Risk Assessment Model (PFRAM) WBG Project Readiness Assessment WBG Policy Guidelines for Managing Unsolicited Proposals OECD Recommendation on Public Procurement OECD Recommendation on Fighting Bid Rigging in Public Procurement Sustainable Infrastructure Foundation SOURCE UNECE International Specialist Centers UNECE Standard On Zero Tolerance to Corruption</p>
Transaction support and contract management	<p>WBG Framework for Disclosure in PPP Projects WBG Guidance on PPP Contractual Provisions GI Hub Annotated Public-private Partnership Risk Allocation Matrices The GI Hub PPP Contract Management Tool</p>

The experience of OECD countries and the OECD's broad network of policy communities and analytical capacity enables it to address the infrastructure challenge from different policy angles, including investment, finance, governance, and in different sectors as

transport, ICT and clean energy. Such a holistic and high-quality policy-oriented research and dialogue is a distinctive and complementary contribution to those of regional and multilateral development banks.

With a mandate from the OECD Ministers in 2017⁴, the OECD is currently taking an integrated, strategic approach to quality infrastructure investments by developing a horizontal project involving 19 OECD directorates and agencies. Some examples of through a horizontal project involving 19 OECD directorates and agencies, covering many disciplines and areas of expertise. Some examples of this work include:

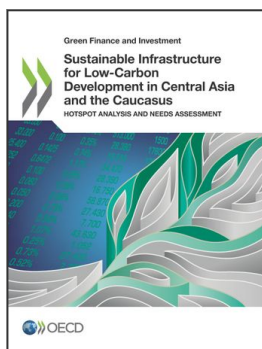
- The [OECD Framework for the Governance of Infrastructure](#) is supporting governments to plan and prioritise investments; manage private-public partnerships and procurement; design effective regulatory environments and manage integrity risks.
- The [OECD Policy Framework for Investment](#) helps governments to improve their investment climate to mobilise private investments, including in quality infrastructure, and enhance the policy framework to maximise the economic, social and environmental outcomes of such investments.
- Endorsed by the G20 in September, 2016, the [G20/OECD Guidance Note on Diversification of Financial Instruments for Infrastructure and SMEs](#) provides key policy and regulatory guidance on mobilising private investment in infrastructure, and forms the basis of mobilising investment for quality infrastructure, as set forth in the G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment. The selected voluntary policy recommendations seek to assist governments in tackling key challenges linked to mobilising private financing for infrastructure and SMEs, in particular from institutional investors and capital markets and diversifying financial instruments with special attention to equity financing. The use of risk mitigation techniques and various funding models for infrastructure are also important parts of the recommendations.
- In order to assist countries in meeting their development and investment goals, the OECD has developed indicators to help countries design national action plans and assess progress in meeting the 17 SDGs. Within the framework of Ise-Shima Principles and Transparency & Openness, further analysis will highlight policy gaps between existing guidelines and outstanding challenges of emerging and developing economies that still need to be addressed.
- Research on new technologies and innovation in infrastructure, in particular the emergence of blockchain and distributed ledger technologies, is uncovering ways to improve infrastructure performance through digitalisation, performance measurement through better data and information, enhancing sustainability, while building greater trust with civil society. The OECD just held last week for the first time the “OECD Blockchain Policy Forum”, with many messages coming out from this key event on the potential applications of blockchain for infrastructure to explore further.
- A project “[Financing Climate Futures](#)”, which is a follow-on to [Investing in Climate, Investing in Growth](#), focuses on ways to accelerate the financing of high-quality resilient infrastructure that is in alignment with long-term de-carbonisation.

⁴ <https://www.oecd.org/development/promoting-quality-infrastructure-japan-april-2018.htm>

- The OECD Centre on Green Finance and Investment brings together policy makers, regulators and market participants to catalyse investment in the transition to a clean, low-emission, and climate-resilient global economy, looking at tools including green bonds and green banks.

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