OECD Secretary-General Tax Report to G20 Leaders

Country, Month 20XX

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Infrastructure assets are exposed to long-term and complex risks creating challenges to investors in assessing and managing risks over time. While some institutional investors with a long-term horizon may consider such assets attractive for asset-liability management purposes, this has not translated to actual investment in practice, creating a wide investment gap for infrastructure assets. As investors increase demand for sustainable investment opportunities that combine acceptable returns with the achievement of environmental, social and governance benefits, there is a need to create an environment in which investors are better able to make decisions on the basis of relevant information and data, and for governments to strengthen the mechanisms to prioritise and prepare bankable infrastructure projects that meet the highest quality standards.

Long-term strategies of countries, such as nationally determined contributions (NDCs)\(^1\), the National Adaptation Plans (NAPs)\(^2\) and the National Biodiversity Strategies and Action Plans (NBSAPs)\(^3\), are pivotal in mitigating climate change impacts and to improve environmental sustainability. As a consequence of long-term strategies, a number of sustainable finance and infrastructure initiatives have been developed in recent years reflecting the increasing interest and need for financing to take environmental, social and governance (ESG) factors into account more carefully and closely.

The G20 Principles for Quality Infrastructure Investment (QII) lay out a clear vision for the need to maximise the positive impact of infrastructure to achieve sustainable growth and development. This recognises both the immediate economic impact of scaling up infrastructure investment, as well as its importance in setting the direction for a sustainable green transition.

Infrastructure investment has been identified as a crucial component of current stimulus packages not only due to its capacity to create millions of jobs globally in the short- and long-term, but also because the fiscal multiplier that results from investments following the COVID-19 crisis could potentially be larger than usual due to the particular characteristics of the current macroeconomic context (IMF, 2020\(^{[1]}\)).

However, beyond ensuring that infrastructure investment supports the economic recovery from the crisis in a timely way, governments must also channel resources towards projects that minimise environmental and climate impact, are resilient to future shocks, and contribute to sustainable long-term growth. Using infrastructure to reach climate objectives will require far reaching transitions within and across different sectors (i.e. energy and transport). Disregarding infrastructure’s strategic role and long-term impact is likely to lead to investments that run the risk of early obsolescence or locking-in of unsustainable technologies and practices (OECD, 2021\(^{[2]}\)).

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1. Introduction

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1 NDCs are a climate action plans to cut emissions and adapt to climate impacts in accordance with the Paris Agreement. Each Party to the Paris Agreement is required to establish an NDC and update it every five years. (United Nations, 2022\(^{[36]}\))

2 NAPs are strategies that take into account medium- and long-term adaptation needs informed by the latest climate science. (UNEP, 2022\(^{[37]}\))

3 NBSAPs are intended to define the current status of biodiversity, the threats leading to its degradation and the strategies and priority actions to ensure its conservation and sustainable use, in accordance with the Convention on Biological Diversity. (United Nations, 2022\(^{[38]}\))
Examples across G20 countries suggest that infrastructure investments will do most of the heavy-lifting in terms of social and economic recovery in forthcoming years. Under the current economic context, governments therefore face the double challenge of attracting private investment and ensuring that these resources are channelled towards environmentally sustainable and climate resilient infrastructure assets. Scaling-up sustainable infrastructure financing will depend to a large extent on the availability of governments to set a long term strategic vision that is well aligned with environmental and climate objectives, and in the capacity to materialize this vision in project pipelines that provide prospective investors with a clear sense of the government’s needs and commitment towards the achievement of climate and environmental objectives.

This OECD report examines elements that can advance the environment and data for sustainable infrastructure investment, and consider what policy actions that governments can take to ensure that investors are better able to make investment decisions related to infrastructure assets. The second section discusses the data needs for infrastructure investment more generally, and the ESG approaches currently proposed, including how this could impact wider ESG data availability. The third section reviews studies on legal and regulatory barriers to QII, to bring a better understanding of the nature of these barriers. The fourth section uses the lens of infrastructure governance to consider how finance ministries can help align other infrastructure actors to promote a pipeline of quality infrastructure projects, ensure that project objectives and reporting correspond with investor expectations, and reduce barriers to sustainable infrastructure investment.

It is clear that the lack of consistent reporting of infrastructure investments and projects is a fundamental weakness in the ecosystem of sustainable infrastructure financing and planning. Reporting requirements are complex given the intersection with corporate regimes and corporate governance, but scoping out the current reporting of infrastructure financing and reporting would be a useful first step in understanding where policy action may be necessary. What amounts to sustainable and quality infrastructure, and ESG factors that may be applicable is very much in the nascent stage of development. More discussion of what governments intend for sustainable and quality infrastructure, and how this can be applied in terms of concessions and multilateral development bank financing could provide additional clarity to investors.

Institutional frameworks to finance and develop infrastructure projects remain a key consideration, and strengthened government mechanisms can contribute to ensuring that fiscal planning and project selection are based on country strategies, and that they reflect sustainability and ESG factors.
2. Addressing the fragmented ESG data landscape of the infrastructure sector

There has been a shift in the discussion related to sustainable infrastructure in recent years, with the increased need for environmental, social and governance (ESG) considerations to be applied to infrastructure projects. There is a need to establish certainty with mechanisms to ensure that public and private infrastructure financing contribute to the Paris Agreement and sustainable development goals (SDGs) in a way that responds to ESG considerations.

The lack of data has been raised an issue at various international discussions, but in particular reflected in Policy Message VII of the Outcome Document of 2021 G20 Infrastructure Investors Dialogue Financing Sustainable Infrastructure for the Recovery (October 2021) as “[p]romote further consistency in data collection through improved methodologies and common terminologies, in particular in the ESG and new technologies area...” which proposes action to address this data gap.

Having more data available is meant to address the information asymmetry in infrastructure financing, lead to greater certainty and clarity for investors when they consider investments into sustainable infrastructure, and hopefully lead to a greater contribution by investors into sustainable infrastructure. By identifying how ESG data can be better made available to investors and governments making decisions on infrastructure investments, there could be greater investment opportunities into sustainable infrastructure.

Defining infrastructure

For data collection to be better carried out in the infrastructure sector, there needs to be a sound basis in which to carry this out across the various databases and initiatives. Without infrastructure being clearly defined, when considering ESG factors could create uncertainties, as some sub-sectors may not be included depending on the definition (such as, whether soft/social infrastructure should be included).

A definition on infrastructure could permit the collection of infrastructure investment and capital stock to be collected at the national account level, which would support wider private sector efforts and create a basis for comparison across countries. Based on their discussions, the OECD’s Working Party on National Accounts proposes the following basic definition for infrastructure:

[S]et of fundamental facilities and systems that support the provision of goods and services essential to enable, sustain, or enhance societal living conditions and protect the surrounding environment from erosion and other disasters that reduce the usefulness for economic purposes.
<table>
<thead>
<tr>
<th>Table 1. OECD definition of infrastructure</th>
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<tr>
<td>Set of fundamental facilities and systems that support the provision of goods and services essential to enable, sustain, or enhance societal living conditions and protect the surrounding environment from erosion and other disasters that reduce the usefulness for economic purposes.</td>
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### Economic Infrastructure

**Transport related infrastructure**
- Land transport infrastructure (highways, other road structures and networks including cycle paths and pedestrian areas; tunnels; bridges; and railway lines including railway stations)
- Water transport infrastructure (canals and waterways; marinas and harbours; seaports; and other water infrastructure)
- Air transport infrastructure (airports and other passenger terminals; and runways)
- Space transportation infrastructure (launching sites)

**Utilities related infrastructure**
- Mineral exploration and evaluation
- Oil refineries
- Storage facilities and distribution networks (e.g. petrol stations) for fossil fuels
- Natural gas distribution systems and transmission support structures
- Heat distribution networks
- Electric power plants and facilities
- Nuclear production plants, nuclear reactor steam supply systems
- Steam production plants
- Hydraulic production plants
- Marine power plants
- Wind power plants
- Solar panels
- Power and distribution transformers, turbines, turbine generators, etc.
- Power distribution and transmission networks
- Other energy-related storage facilities
- Water-related systems (water filtration plants, water treatment equipment, water distribution systems, etc.)
- Sewage systems (sewage treatment plants, other sewage infrastructure)
- Waste disposal facilities

**Flood protection and water management related infrastructure**
- Dykes, dams and sea walls
- Water regulation systems
- Relevant improvements to land, including land acquisitions (e.g. investments in flooding areas, forest management systems to avoid erosion and absorb water excess)
- Other flood control systems

**IT and communications related infrastructure**
- Communications buildings, including cell-towers and data centres
- Network base stations
- Broadband access and internet connectivity systems
- Software to run IT and communications related networks
- Permits for the use of radio spectra
- Cables and lines - coaxial, copper, aluminium, etc., optical fibre
- Satellite networks (in-orbit and ground based infrastructure)
- Other communication construction

### Social infrastructure

**Education related infrastructure**
- Schools, colleges, and universities
- Student residences
- Libraries
- Other education related facilities

**Health related infrastructure**
- Hospitals and clinics
- Nursing homes, homes for the aged
- Other health facilities

**Public order and safety related infrastructure**
- Police Stations
- Fire stations
- Courts
- Prisons
- Other public safety related facilities

**Culture related infrastructure**
- Museums
- Historical sites
- Religious centres and memorial sites

**Recreation related infrastructure**
- Indoor and outdoor recreational facilities
- Facilities with spectator capacity
- Public parks
- Natural reserves: land acquisitions and investments to make the natural reserves accessible
Convergence of sustainable finance and infrastructure initiatives

To have a better understanding of how QII Principles could be implemented for data purposes, 21 sustainable finance and infrastructure initiatives, which are widely recognised and applied in financial and infrastructure context, were mapped in terms of the conditions by which they made requirements. The following 21 initiatives were mapped in this exercise:

- Investment Principles and Eligibility Criteria
- Aligned Set of Sustainability Indicators for Infrastructure
- CEEQUAL
- Equator Principles
- Climate Bond Standards
- Climate Policy Initiative (CPI) Global Landscape of Climate Finance
- EU Green Taxonomy
- GIB (SuRe)
- Green Bond Principles
- Green Loan Principles
- GRESB
- Harmonized MDB Frameworks on Climate Finance Tracking
- IDB Sustainable Infrastructure Framework
- IFC Definitions and Metrics for Climate-Related Activities
- IFC Environment & Social Performance Standards
- Infrastructure Sustainability Council of Australia (ISCA)
- ISI (Envision)
- Social Bond Principles (relevant infrastructure categories)
- Sustainability Linked Loan Principles
- UN Social and Environmental Standards
- UNDP SDG Impact Standards for SDG Bonds

An examination of the 21 sustainable finance and infrastructure initiatives makes clear that there is convergence in sustainable finance and infrastructure initiatives. This is particularly the case in relation to ‘E’ factors, as some of the initiatives are focussed on climate change. However, the initiatives are focussed on climate mitigation and not climate adaptation and resilience which requires greater consideration given the impact that climate change is having on infrastructure assets, in particular in relation to disasters.

Many initiatives only list the areas of considerations, and do not specifically elaborate on how this could be specifically assessed. This means that while the various initiatives cover similar areas, initiatives that provide a more risk-based approach and enabling a more granular understanding are limited in number.

<table>
<thead>
<tr>
<th>Table 2. Most common assessment measurements and relevant QII Indicator(s)</th>
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<tbody>
<tr>
<td>Most common measurement among assessed frameworks</td>
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<tr>
<td>Environmental</td>
</tr>
<tr>
<td>Greenhouse emissions reduction</td>
</tr>
<tr>
<td>Pollution control</td>
</tr>
<tr>
<td>Biodiversity and ecosystem conservation</td>
</tr>
<tr>
<td>Energy efficiency</td>
</tr>
</tbody>
</table>
Waste reduction | Waste management and recycling  | Y/N  
| Reduction of waste: metric tonnes or percentage of total over lifetime of project  | Waste prevented/minimised/reused/recycled  | --  

Social

| Stakeholder engagement | Stakeholder engagement plan  | Y/N  
| Number of displaced people, including minorities and indigenous people  | Stakeholder engagement, Y/N, number of beneficiaries  
| Design minimises land acquisition and involuntary resettlement, Y/N  |  

Community development

| Management of public health and safety risks, Y/N  | Community development contributions, currency Infrastructure improvement in local community, Y/N  
| Rural infrastructure assets established or improved, Km for roads, GWh for electricity, and m3 for water  |  

Human & labour rights compliance

| Labour standards  | Y/N  
| Fair wages, % of employees  | Fatal/non-fatal occupational accidents, #  

Gender

| Gender equality, inclusiveness and empowerment plan  | Female direct jobs supported by the project, #  

Governance

| Anti-corruption protocols & procedures, Y/N  | Governance body members that have received training on anti-corruption, number of members and percentage of members  
| Anti-corruption protocols & procedures, Y/N  |  

Corporate governance and sustainability disclosure

| Corporate governance structures  | Fiscal sustainability  | Y/N  
| Information disclosure  | Y/N  
| Transparency and accountability measures in procurement and financial management supported in implementation  | Y/N  

Note: Y/N stands for a question that can be answered with yes or no.

This is also reflected when the assessment of an area is based on a yes/no response which leads to a binary or tick box approach of assessment. While this is helpful in terms of ensuring that the issue is considered, it may not encourage projects to improve their performance on ESG over time. To bring greater contextualisation, the areas of convergence are listed below avoiding, where possible, binary response assessments.

Environmental factors are converging on some areas, such as:

- GHG emissions reduction in terms of tCO2e/year,
- Air pollution: fine particulate matter emission PM2.5 and PM10 emission or reduced air pollutant tonnes per year,
- Number of species impacted, and percentage of land impacted/disturbed by project,
- Renewable energy used MWh/year, and
- Reduced waste in metric tonnes.

For social factors, there are a number of areas more divergence in terms of the approaches that are taken, although some areas of convergence can be observed. Areas of convergence for social factors include:

- Existence of stakeholder engagement plan,
- Number of displaced people, including minorities and indigenous people,
- Existence of heritage assessment and protection procedures,
- Existence and implementation of protection of community health/safety plan,
- Adherence to International Labour Organisation Conventions and existence and implementation of occupational health and safety (OH&S) management systems,
- Frequency rates of fatal and non-fatal occupational injuries (number of cases per hours worked),
- Fair wages (percentage of employees paid fair wage out of total number of employees),
- Local jobs created (number during construction & operation), and
• Existence of gender equality, inclusiveness and empowerment plan.

For governance factors, there is convergence on:

• Existence of anti-corruption protocols and procedures, and
• Existence of corporate governance structures.

Infrastructure asset datasets

Data related to infrastructure assets is limited to several fee-based data vendors, Preqin, Refinitiv, EDHECinfra, Moody’s and IJGlobal. Preqin offers infrastructure data at the investor, fund and deals level, whereas Refinitiv, Moody’s and IJGlobal capture data at the project transaction level. EDHECinfra provides information on performance indices, as well as unlisted infrastructure assets data.

This shows that there are a number of databases that collect infrastructure asset and project level data. Yet, one aspect that is prevalent in all databases is that available data is skewed towards advanced financial market data, and limited for EMDEs markets. With regard to Preqin, significantly less observations on infrastructure investments and deals are available when selecting the regions Africa and Latin America and the Caribbean in relation to North America and Europe. IJ Global’s project level transaction data does not cover the region Africa at all. Refinitiv’s coverage in 2021 with regard to Latin America was relatively large, but this was significantly less for African and other EMDE markets.

ESG approaches

Data providers do have ESG approaches, but assess different aspects of ESG and not necessarily a risk assessment against ESG factors. Preqin uses ESG transparency, whereby the infrastructure funds self-declare which of the 37 indicators it adheres to or not (a yes/no binary approach). Preqin's ESG transparency provides useful insights into the types of activities the fund may be engaging in that is relevant to ESG considerations. However, it is a yes/no binary approach, heavily reliant on implementation of UN PRI, and does not provide a detailed insight into the funds approach to ESG factors.

GRESB provides aggregated level information on infrastructure funds’ and companies’ ESG performance in the infrastructure sector and only members are able to receive a more detailed analysis in this respect, but even members are not able to attain full access to GRESB’s database.

It is clear that while these ESG approaches are useful in having some information on ESG factors of infrastructure funds and projects, if we take into account the sustainable finance and sustainable infrastructure initiatives, these databases would not be able to respond to providing a quantitative understanding of adherence to initiatives.

One of the main issues related to the development of an ESG assessed database is the weakness of corporate reporting regimes, as well as the disclosure requirements. Infrastructure projects are often private companies or special purpose vehicles (SPVs), with financial reporting not having to be publicly disclosed. Reporting could be paper-based, making data collection of such corporate information extremely resource heavy. While the recommendations of the Task Force on Climate-related Financial Disclosure (TFCD) would be a useful non-financial disclosure regime, it is limited to environmental factors, and as of October 2021, only eight jurisdictions have TCFD-aligned official reporting requirements, for example.

Limited data is available on infrastructure assets’ risk exposures in general but especially not through quantitative risk reporting. Most ESG frameworks’ measurement approaches use process and output indicators, such as GHG emission, instead of measuring ESG impacts or ESG risks. Without a framework explicitly taking into account the direct and indirect risks that the ESG characteristics of infrastructure
investments create, the relationship between ESG investments and the market value of these investments remains unclear. Consequently, investors might be less motivated to incorporate ESG considerations in their investments. EDHECinfra’s TICCS classification does provide an opportunity to classify infrastructure assets according to its risks and could facilitate data collection in this regard.

Moreover, data on ESG considerations in infrastructure is skewed towards developed markets with limited coverage of emerging and developing markets. When considering the regional coverage of infrastructure-related ESG approaches, Preqin’s ESG Transparency coverage provides some insight into the challenges of this. In Preqin’s ESG Transparency data 780 observations are for North America, 660 for Europe, 340 for Asia, 100 for Australasia, 50 for the Middle East, 30 observations for Latin America and the Caribbean, and 30 observations for Africa. It is unclear whether this is the outcome of lack of projects, lack of coverage, or lack of available information. However, it does point to the paradox of where infrastructure investment is most needed, ESG-related data is least available, creating greater information asymmetry for investors.

Better data for infrastructure and ESG assessed

**Basic infrastructure data**

- **Definition of infrastructure for data collection purposes**: Currently, there is no internationally recognised definition of infrastructure for data collection purposes. The OECD’s Working Party on National Accounts has developed an infrastructure definition to facilitate the data collection and comparison of statistics based on the System of National Accounts, which could be a starting point for data collection.

  An internationally agreed definition should form the basis of data collection for infrastructure, and this could be based on the OECD definition developed for national account system.

- **Data collection at national account level**: supporting data collection of infrastructure investment and capital stock could create a useful baseline to better understand the level of investments that are being made in the domestic context.

  Collecting infrastructure investment and capital stock at the national account level would support the creation of a nationally comparable database of infrastructure investment, and such government action would form a basis to consider private investment data.

- **Improved reporting regimes and digitalisation**: the lack of data in EMDEs and SMEs is related to the weaker corporate reporting regime in these markets. In addition, the lack of digitalisation of reporting also creates a barrier to collecting data from companies that are developing or operating infrastructure assets.

  Countries could consider mechanisms to strengthen financial and non-financial reporting on infrastructure projects, including alignment with TCFD and Sustainability Accounting Standards Board (SASB) Standards.

  Digitalisation of infrastructure reporting, such as SOURCE, could also strengthen data availability of EMDEs and SMEs, and seeking avenues to do so could be instrumental for data collection purposes.

- **Complexity of infrastructure projects**: infrastructure projects will change hands as it transitions from the development/construction stage to operation phase. This create challenges in terms of tracing the project and collecting continuous data of a project.

  Establishing a framework which can trace and collect data over the life cycle of a project could provide valuable information on understanding the financial performance as well as sustainability impact of an infrastructure project.
**Defining sustainable infrastructure**

- **Recognising sustainable infrastructure**: while there has been extensive discussions on sustainable infrastructure, there is not yet a clear understanding of what this might constitute. While there is much emphasis on climate mitigation, climate resilience and adaptation should also become a greater part of the discussion. In addition, greater discussion should take part on social and governance aspects, to encompass the entire ESG spectrum.

> Having a more detailed discussion on what constitutes sustainable infrastructure and reaching a common understanding on what aspects require close consideration is important to create certainty for investors.

In addition to climate mitigation, climate adaptation and resilience should also become a greater focus of sustainable infrastructure going forward.

- **Converging on sustainable infrastructure initiatives**: there have been a number of sustainable finance and infrastructure initiative from both the public and private sector over the years, which has allowed us to better understand the areas of convergence of these initiatives. While environmental factors have been better defined, and assessment measures can be identified, this is less the case for social and governance factors. Greater work needs to be carried out to ensure that assessment approaches are developed for S and G factors.

> As there is a greater convergence on E factors, more discussion on S and G factors would assist to better contextualise what constitutes S and G too.

- **Developing a greater understanding of ESG assessment approaches**: A shortcoming of some of the initiatives is the binary assessment method for a number of conditions that are being assessed. While having a binary approach is more useful than not having a condition being required and might result in more conditions being fulfilled, it does not provide an understanding as to which level the infrastructure project is adhering to any condition. Thus, as greater discussion takes place, it is hoped that more granular and possibly quantitative approaches can be developed for each condition.

> Approaches to ESG could be better served by having a more granular approach, going beyond a simple binary approach. For this, greater discussion needs to take place to develop approaches that are meaningful and can be quantified.

Initiatives such as UN PRI present promising examples of how public-private initiatives can be used incentivise businesses to adopt sustainable approaches. A model that can scale up sustainable infrastructure with businesses and investors should be considered if sustainable infrastructure is to be a key policy goal of governments.

In this vein, the QII Indicators that are being developed by IFC provide an important approach to how some of these considerations could be operationalised and shared for a better understanding of sustainable infrastructure.

**ESG data for infrastructure**

- **Lack of comprehensive ESG data for infrastructure**: one of the key findings of this report is that ESG-assessed data is not in fact publicly available. Some data vendors have ESG-adjacent data, but do not have available data that is assessing ESG comprehensively.

> While ESG-adjacent data exists ESG-assessed data is not publicly available, and thus it is currently not possible to make an assessment of the performance of sustainable infrastructure.
- **Cost of producing ESG data**: given the nature of infrastructure projects, infrastructure data in itself is costly to produce, and ESG data would be even more resource heavy. Currently, the ESG-adjacent data that is available is thus self-reported on a voluntary basis by infrastructure companies and not assessed by the data vendors. This places a significant barrier on having true ESG data available for infrastructure assets.

  *Currently, TFCD-aligned report is limited to eight jurisdictions. While this in itself may not address the reporting of infrastructure projects and is limited to climate-related reporting, extending such coverage could incentivise more companies to adopt such reporting.*

- **Reflection of lack of understanding on sustainable infrastructure**: many of the issues related to ESG data reflects back on the fact that there is not a common understanding of sustainable infrastructure, and the market for such data has not yet developed. This could evolve as governments start having clearer requirements related to the development and operation of their infrastructure projects.

  *Developing a market for ESG data could depend on requirements being made from governments or business expectations leading to voluntarily through incentives. UN PRI could provide a good template on how this could be developed.*

- **Limited disclosure from unlisted infrastructure assets**: many infrastructure entities are unlisted or private entities, which are subject to limited disclosure requirements. This further hampers applying ESG conditions.

- **Greater implementation of sustainable infrastructure labels and development of indicators**: there are a number of initiatives that could facilitate greater application of assessed ESG conditions and advancement of understanding of how these labels could support infrastructure projects and investor decisions. Initiatives such as FAST-Infra and collection of QII Indicators could make a contribution and create a data repository for sustainable infrastructure going forward.

  *Collecting QII Indicators would create an important benchmark for sustainable infrastructure and linking this with financial performance could be useful. In addition, the launch of sustainable infrastructure initiatives, such as FAST-Infra could also create an impetus for developing a market of ESG data.*
One of the common areas that investors claim affect their investment decisions into infrastructure has been legal and regulatory barriers. However, legal and regulatory barriers can be different depending on the investor, type of infrastructure, and country in which the infrastructure is based. Thus, if governments are to address this to attract more private investment, a better understanding of what may constitute legal and regulatory barriers is necessary.

In an attempt to bring a more granular understanding to these barriers, the OECD examined the nature of barriers in more detail in cooperation with some members of the D20-Long-term Investors Club, some institutional investors and available reports covering the topic.

A table of classification of legal and regulatory barriers was developed using the OECD Compendium of Policy Good Practices for Quality Infrastructure Investment (2020), OECD Implementation Handbook for Quality Infrastructure Investment (2021) and OECD FDI regulatory restrictiveness index, as well as input from within the OECD Secretariat. The table looks at the investment side (the recipient side of investment) and at the financing side (including regulatory aspects that shape the supply of capital for infrastructure). For the sake of completeness, aspects of financial risks are also included, although they go beyond legal and regulatory barriers.

**European Union**

The main barriers to investment in Europe are:

- Length of regulatory process (85%)
- Regulatory uncertainty (83%)
- Availability of skilled staff (79%)
- Lack of funding (76%)
- Uncertainty about the future (73%)
- Lack of technical capacity (72%)
- Business regulations (~ 65%)
- Energy costs (~ 65%)

In addition, access to finance also comes up frequently as a barrier for investment in the European Union. Stricter austerity policies and a decrease in public funding resulting from the global financial crisis and the pandemic limited the ability to develop infrastructure in the European Union. The following are the most important barriers, which complement those reported by EU firms:

The Solvency Capital Requirements (SCR) of Solvency I (pension funds and small insurers) could pose challenges for pension funds investing in infrastructure. Investments in unlisted private equity in Germany
is required to apply high stress levels for stress testing purposes, leading to higher capital requirements and hence limiting pension funds’ ability to invest in infrastructure assets that are unlisted private equity.

**North America**

US firms reported the following measures as most pressing long-term barriers:

- Availability of skilled staff (92%)
- Uncertainty about the future (77%)
- Business regulations (~ 71%)
- Labour market regulations (70%)

**Latin America and the Caribbean**

Most countries in Latin America and the Caribbean have a PPP law, which does not guarantee a consolidated legal framework, nor is it a strict prerequisite for private investment in infrastructure projects. Having a PPP law does not necessarily mean that PPPs are being implemented, which can be a reflection of inconsistent or lacking legal mechanisms, unstable democratic regimes, and/or a combination of failures.

Most PPP projects (83%) are implemented in the transport sector. Similar to other regions of the world, this stems from a long-standing tradition of private investment historically devoted to the development of economic infrastructure in the transport sector (roads, railways, seaports, airports, etc.) due to its long-term reliability, potential to foster economic development, demographic connectivity, and geographic cohesion. The promotion of PPPs in other sectors is limited due to regulations in some countries regarding PPP implementation in these sectors.

Two main monitoring issues stand out:

- Lack of standardisation of PPP agreement regulation in the region
- PPP monitoring legislation in most countries rarely addresses sector-specific regulations.

The main challenge is the lack of capital market maturity, since it eliminates the project finance option from the public side, although the guarantees provided by most countries include allowing the private investor to provide project finance. Some of these guarantees are also provided through insurance mechanisms in the form of single-purpose funds to guarantee obligations towards PPPs. Other incentives might include loans, grants, capital contributions, and assistance by publicly-owned development banks and financial institutions.

**Asia**

Several common barriers are relevant for most countries in Asia:

- Delays in land acquisition processes
- Undeveloped lender security rights
- Undeveloped treatment of termination and compensation events
- Limited government support measures (public funding) packages
- Insufficient guidance and regulation for SOEs participation
- Foreign ownership restrictions
- Lack of standardised PPP contract provisions
• Lack of PPP selection, prioritisation and pipeline development methodologies
• Unbalanced risk allocation

Other respondents also identified specific regulations posing barriers related to security interest and ownership, and currency convertibility, and land use and acquisition.

One of the many problems were the constraints to institutional capacity resulting from high public official turnover. Nevertheless, most countries have a PPP-monitoring government agency and have published pipeline of potential PPP projects.

In the transport and road sector, some barriers include:

• Traffic and revenue risk / Demand uncertainty
• Land acquisition constraints

Social infrastructure has not always been considered as being an infrastructure asset in Asia, but there has been increasing recognition that social infrastructure, which includes education, health public order, and culture and recreational infrastructure, are also important infrastructure assets. These infrastructure projects have proven to be as successful for private investors as traditional infrastructure projects, yet they are subject to fewer of the regulatory constraints cited above and have a lower risk profile.

Areas that require further examination

Despite the regional differences, some of the barriers that could inhibit quality infrastructure investment can be classified into institutional framework, legal framework, and other relevant barriers.

**Institutional framework**

• Length of regulatory process
• Availability of institutional framework and skilled staff due to high turnover of staff
• Delays in land acquisition processes
• Limited government support measures (public funding) packages
• Lack of PPP selection, prioritisation and pipeline development methodologies

**Legal framework**

• Lack of sector regulation or recognition of certain infrastructure sub-sectors
• Business regulations
• Labour market regulations
• Undeveloped lender security rights and treatment of termination and compensation events
• Insufficient guidance and regulation for SOEs participation
• Lack of standardised PPP contract provisions
• Foreign ownership restrictions

**Other relevant barriers**

• Lack of capital market maturity
• Unbalanced risk allocation
• Currency convertibility
In addition, insufficient or unavailable risk analysis and mitigation tools, especially those related to regulatory regimes and political uncertainty, as well as to lack of capital market maturity could be creating barriers to investors. The lack of clear and homogenous ESG regulatory and reporting frameworks and ESG-related risk analysis and mitigation tools for investors are also a source of concern in particular for quality infrastructure investment.

As the list is based on existing literature and specific input from some investors, it does not establish a complete picture of barriers for investments to be made. However, the observations provide a consistent picture of how barriers are being created. With this in mind, the next step that can be taken to further elaborate on legal and regulatory barriers to quality infrastructure investment could be to examine these barriers in selected countries or focus on a specific class of barriers. The institutional framework in particular appears to present issues across regions, and could benefit from more in-depth analysis of their cause and how they could be addressed.
Implementing the G20 QII Principles will require a fundamental realignment of government planning and delivery processes. Under this context, the following challenges have been identified as critical for enabling investment in environmentally sustainable and climate-resilient infrastructure:

- **Inadequacy of traditional frameworks and tools**: traditional planning and decision-making frameworks and instruments for infrastructure investment are ill-adapted for accommodating multiple objectives, particularly when these extend beyond the direct benefits for users to encompass broader outcomes relating to the environment, such as climate change mitigation, cleaner air, and biodiversity preservation. This is partly due to the fact that understanding the economic impacts of climate change is an evolving field of research and it also depends on key assumptions (Auffhammer, 2018[3]).

- **Misalignments between environmental sustainability and infrastructure policy agendas**: infrastructure investments often have to tackle multiple economic, social and environmental needs. Finding a balance between investments that boost job generation, productivity and competitiveness and those that strengthen environmental sustainability and resilience to climate change risks can become a grueling task.

- **Heightened uncertainty and rapidly changing environments**: uncertainties arising from factors such as rapidly evolving technologies, the impacts of climate change and behavioural changes in society create a challenge for planning infrastructure assets with lifetimes that span decades. Insufficient flexibility, responsiveness and poorly targeted procurement strategies can lead to dated or carbon-intensive technologies encroaching into long-term infrastructure contracts and agreements.

- **Short-sighted investments**: politicians have a strong incentive to prioritise infrastructure investments with high visibility and display tangible results to certain constituencies (OECD, 2020[4]). Especially amidst an economic and social crisis, the risk of selecting projects that deliver the most benefits in the short-term, without a clear long-term target, is higher than ever.

- **Multi-level governance**: an infrastructure project does not exist in a vacuum, but it is rather part of a network of multiple infrastructure assets that are interlinked and cross different jurisdictions. In this regard, governing infrastructure is generally challenging as it requires to coordinate and cooperate across different administrations, and it all becomes even harder when addressing climate change, considering that its impacts and risks are perceived differently across spaces.

Infrastructure governance provides an approach to implement all of the G20 QII Principles, but actions to promote sustainable investment in particular, benefit from an understanding of how Ministries of Finance can help align other infrastructure actors in order to promote a pipeline of quality infrastructure projects, ensure that project objectives and reporting correspond with investor expectations, and reduce barriers to sustainable infrastructure investment.
Infrastructure governance can be understood as the policies, frameworks, norms, processes and tools used by public bodies to plan, make decisions, implement and monitor the entire life cycle of public infrastructure. Governance has a key role to play in delivering well-articulated and whole-of-government infrastructure responses and ensuring infrastructure projects are well-targeted. While there has been an increasing focus on infrastructure governance in recent years, the crisis has sharpened the need to accelerate reform efforts in this area.

The OECD Recommendation on the Governance of Infrastructure and the OECD Recommendation on Principles for Public Governance of Public-Private Partnerships provide guidance on key governance strategies to facilitate and promote investment in green and climate-resilient infrastructure. Based on a recollection of good practices from G20 countries, the OECD has identified three priority areas where governments can support the scaling up of sustainable infrastructure investment, drawing on principles of infrastructure governance:

1. Steering the green agenda: aligning the strategic long-term infrastructure vision with environmental policy objectives;
2. Strengthening project alignment with green objectives and delivery for a sustainable infrastructure pipeline; and
3. Capacity building for sustainable infrastructure investment.
Steering the green agenda: aligning the strategic long-term infrastructure vision with environmental policy objectives

Quality infrastructure investment requires a clear vision for the future and a credible roadmap to achieve it. The G20 Principles stress the need to define a long-term vision for infrastructure which can help governments establish an adequate institutional framework, implement clear governance arrangements, define needs and targets, coordinate across stakeholders and develop reliable action plans. Furthermore, transparency and predictability of government intentions is a precondition to enable long-term investment decisions, especially from private investors.

Long-term infrastructure strategies that mainstream climate change adaptation and mitigation, with complementary medium-term action plans play an important role in steering investments decisions, from both public and private actors (Aguilar Jaberi, A., et al., 2020[5]). OECD countries have now become more aware of the need for coherence between long-term infrastructure plans and broader sustainable development objectives, in light of commitments made under the Sustainable Development Goals of the Agenda 2030. In this regard, most of the surveyed OECD countries back in 2021 (i.e., 24 out of 32, or 75%) have aligned their long-term infrastructure plan with environmental and climate action policies (OECD, 2020[6]).

Different strategies and tools have been used to promote alignment of the strategic long-term infrastructure vision with environmental policy objectives. To illustrate, 69% of the surveyed countries invest in key projects enabling the implementation of broader sustainability initiatives, 59% focus on identifying cross-sector synergies to reduce negative environmental impacts, and 56% on adapting existing infrastructure to improve environmental performance. Fewer have adopted resource efficiency targets in the construction

### Box 1: Guiding sustainable infrastructure investment to ensure effective delivery

The United States has taken several actions to ensure that the 1.2 Trillion USD passed in the Infrastructure Investment and Jobs Act is effectively implemented and meets sustainability objectives:

1. **Steering mechanisms**: An Executive Order sets six implementation priorities, including for infrastructure that is climate resilient and which helps combat the climate crisis. An Infrastructure Implementation Task Force established by Executive Order and led by a newly-appointed White House Infrastructure Implementation Coordinator, provides guidance from the Centre of Government (National Economic Council Director as co-chair, the Office of Management and Budget (OMB), the Domestic Policy Council, and the Climate Policy Office in the White House), alongside the heads of six federal agencies.

2. **Strengthening project alignment**: Given that the vast majority of infrastructure investment is implemented at the State level, infrastructure coordinators have been appointed in 53 states and territories to work with the Task Force. The White House has produced a Bipartisan Infrastructure Law Guidebook and a Rural Playbook, factsheets and videos to help local communities understand how they can benefit from funding under the law.

3. **Capacity building**: The reinforced implementation effort has resulted in Implementation guidance produced by the OMB for ministries and agencies. The federal government is hiring for over 8000 essential and mission-driven roles to implement the law including engineers and scientists to combat climate change.
and operation of infrastructure (41%) or research and development to promote environmentally friendly infrastructure (34%) (OECD, 2020[6]) (Figure 2).

Figure 2. Goals and targets in the national infrastructure plan to promote environmentally sustainable infrastructure in OECD countries, 2020

Note: Results are shown for 32 OECD countries.
Source: 2020 OECD Survey on the Governance of Infrastructure

Based on G20 country practices, the following elements can be highlighted in order to improve infrastructure long-term planning, ensuring that the long-term vision is aligned with climate and environmental objectives, and can be used as an instrument to steer the green agenda.

- **Demonstrate clear and credible commitment to long-term climate goals, international biodiversity targets, and other environmental objectives.** In that regard, Indonesia is integrating climate change considerations into the planning processes in order to enable the transition towards a green economy. To develop the Low-Carbon Development Policy under its 2020-2024 National Medium-Term Development Plan, Indonesia employed a systems-based analysis framework to consider the inter-linkages between different economic sectors and development goals, including the reduction of greenhouse gas emissions and conservation of biodiversity.

- **Ensure that infrastructure long-term planning takes into account environmental and climate considerations, and the link with other government priorities such as inclusion and territorial development.** Canada’s ‘Investing in Canada Plan’ includes a specific funding stream dedicated to investments that support a transition to a clean growth economy in provinces and territories. The plan was recently updated to include a COVID-19 resilience component to fund shovel-ready, short-term projects that aim to retrofit, repair and upgrade existing infrastructure, as well as disaster mitigation and adaptation projects. Another example is South Korea’s New Deal to combat the economic setbacks caused by COVID-19, with a distinctive territorial approach. The main objective of the plan is to transform the country into a fast-mover, low-carbon economy and inclusive society.

- **Use the vision to underline a clear investment strategy that sends a message to financial markets of strong government leadership and will for low-carbon infrastructure.** Government leadership in infrastructure investment is vital to shape the direction of a country’s green transformation and to crowd in private investment of sustainable infrastructure. To support the implementation of the Singapore Green Plan 2030, Singapore’s net-zero ambitions and the
Green Finance Action Plan, the country has introduced the Significant Infrastructure Government Loan Act (SINGA), designed to support major, long-term infrastructure projects following stringent project appraisal by tapping into the debt market to use public investment to clearly and significantly set the direction of sustainable infrastructure. Under SINGA, Singapore plans also to issue green bonds as a key part of its sustainability agenda and to help finance further development of sustainable infrastructure, mobilising private capital, and catalysing climate actions.

- **Accommodate future uncertainties resulting from climate change and technological innovation**, by providing the appropriate degree of flexibility to enable adjustments over time and reflect changing circumstances or new information (OECD, 2021[7]). In this regard, a number of alternative decision-making approaches have been developed, using scenario planning as their basis, such as real option analysis, robust-decision making and adaptive planning. The **Netherlands**, for example, has adopted adaptive planning water-management as the basis for its long-term planning for its water resources, building on an iterative decision-making process and the use of Nature-based Solutions (NbS) (Zevenbergena, Rijkeb and van Herkb, 2015[8]; OECD, 2018[9]).

- **Estimate the potential effect of the long-term strategic vision on the environment.** For the development of the National Development Plan (NDP) 2021-2030, **Ireland** has undertaken climate and environmental assessment of the NDP measures, along with an assessment of the alignment of the plan as a whole with the ideals of a green recovery plan. Seven climate and environmental outcomes were specified on which each NDP measure is likely to have an impact: climate mitigation, climate adaptation, water quality, air quality, waste and circular economy, nature and biodiversity, and just transition. This assessment could be used to inform priority setting and capital budget planning under the Public Spending Code.

- **Ensure cross-sector synergies and introduce a systemic approach to improve resilience in the long-term.** The COVID-19 crisis provided an opportunity to focus investment on long-term objectives such as pursuing a low-carbon transition, promoting resilience, and reducing regional disparities. In **Italy**, Milan launched the 2020 Adaptation strategy which aims to rethink the timing, timetables and the rhythm of the city, and to reclaim public spaces for wellbeing, leisure, and sports. The strategy also aims at stimulating the recovery of the construction sector by launching widespread maintenance and redevelopment projects on existing real estate assets, both public and private, alongside energy-saving initiatives, environmental redevelopment and improved home comfort.

- **Develop a strategy to scale-up financing of sustainable infrastructure in the medium and long-term.** **France** has been one of the pioneer and leading countries on sovereign ESG financing. On 24 January 2017, Agence France Trésor launched the first French sovereign green bond for an issuance amount of €7bn. In addition, on 16 March 2021, AFT launched a second Green OAT through syndication: the OAT 0.50% 25 June 2044, for an amount of €7bn matching the level reached during the inaugural issue of the first green OAT. France’s Green OATs funds central government budget expenditure and expenditure under the “Invest for the Future” programme to fight climate change, adapt to climate change, protect biodiversity and fight pollution. The funds raised are handled like funds from a conventional OAT and managed in compliance with the general budget rule. However, they are matched to an equivalent amount of Green Eligible Expenditures and the aggregate of such expenditure in a given year sets the limit for Green OATs issuance.

- **Develop transparent pathways to create greater investment predictability and strengthen the demand for sustainable investment.** **Brazil**’s Infrastructure Observatory aims to disseminate relevant information on investments and sustainability in infrastructure to improve its
planning and regulation. The platform presents scenarios and projections of investment and socioeconomic indicators, and lists the projects being planned and executed with participation of the Federal government as well as private investments. The projects are evaluated from the perspective of sustainability along four dimensions: economic-financial, environmental, social and institutional.

**Strengthening project alignment with green objectives and delivery for a sustainable infrastructure pipeline**

Infrastructure is a long-lived capital-intensive investment. Decisions made today about the nature, location, and design of infrastructure will have long-lasting effects that influence the extent to which investments deliver anticipated benefits over time and align with broader policy objectives (OECD, 2021[2]). Governments have a primary role in defining which investment options are best able to contribute to the achievement of identified policy goals. Political dynamics can undermine sound decision making on infrastructure when processes for identifying priority projects and choosing delivery modes are not sufficiently formalised (OECD, 2017[10]). If the incentives are skewed towards displaying tangible results to a certain constituency, some other infrastructure needs might end up being neglected, resulting in inefficient investments that fail to respond adequately to the needs of the population. Political short-sightedness can indeed hamper sustainable infrastructure investments, whose benefits are often intangible and tend to accrue just in the longer-time horizon.

In the context of a wider focus on well-being and sustainable development, infrastructure investment is increasingly required to address multiple economic, social, and environmental objectives. This creates challenges for decision-makers, who are required to weigh and balance different (and sometimes competing goals) in selecting and prioritising projects (OECD, 2021[2]). While there is a natural inclination to promote ‘shovel-ready’ solutions, this must be balanced by the need for environmentally sustainable and climate-resilient infrastructure.

As pointed out in the OECD Recommendation on the Governance of Infrastructure, governments benefit from decision-making processes that are based on a sound understanding of the expected returns of infrastructure projects and pay due consideration to economic efficiency as well as social, environmental, and climate costs and benefits throughout the whole of the asset’s life cycle. Short lists of projects should be developed using assessment methods that analyse both monetary and non-monetary costs and benefits and consider the projects’ contribution to environmental and resilience policy goals.

Traditional tools and mechanisms to appraise and prioritise infrastructure projects are often ill-equipped to consider environmental and climate aspects, and this is also due to the inherent difficulty to estimate the environmental costs and benefits of an infrastructure asset and translate them in monetary values. Most OECD countries use CBA (77%, 24 out of 31 countries (for PPPs); 84%, 26 out of 31 countries (for other infrastructure projects)) (Figure 3) to inform infrastructure appraisal and decision-making as it is simple in its logic, and it generates clear quantitative values (i.e., Net Present Values, Benefit/Cost ratios) that can be used to compare and rank projects. Nonetheless, it leaves aside a wide range of factors that are not easy-to-monetise, but that are relevant for the purpose of fostering sustainable infrastructure investments (OECD, 2021[7]). Methodologies such as multi-criteria analysis which can accommodate more long-term goals – such as environmental sustainability – are less widely used (39% (for PPPs); 48% (for other infrastructure projects)) (Figure 3).
Figure 3. Methodologies used to assess infrastructure projects in OECD countries, 2020

The following good practices based on OECD and G20 country experiences can serve as tools to ensure the project appraisal and prioritization process fosters sustainable infrastructure:

- **Better integrate environmental considerations in project prioritisation, also broadening the scope of the CBA.** The OECD is currently supporting the Department of Public Expenditure and Reform (DPER) in Ireland to strengthen the integration of environmental and climate considerations in the appraisal of infrastructure project investments, within the framework of the Public Spending Code (PSC). This also includes improve the quantification of the emission impact of infrastructure projects in the CBA.

- **Include sustainability as part of a rigorous project assessment process to inform the capital budgeting process.** Australia has developed a transparent method of project selection to inform Australian Federal budget processes and incentivise sub-national governments and other project proponents to undertake robust appraisals that can include sustainability goals. Infrastructure Australia (IA) undertakes independent assessments of infrastructure projects and initiatives on behalf of the Federal Government against criteria that, in part, includes environmental value. Infrastructure Australia publicly releases these evaluations in the form of Infrastructure Priority Lists. For a project or initiative to be assessed, it must be supported by an appraisal deemed adequate by IA (Infrastructure Australia, 2022). While in Australia, this method could be developed further to include sustainability goals, it provides a structured way for countries to ensure projects and initiatives are robustly appraised against sustainable objectives.

- **Ensure decisions on infrastructure investments are informed by robust evidence-based analysis.** This helps overcome political short-sightedness, enhances the opportunity to opt for sustainable infrastructure investments. In this regard, Norway’s Ministry of Finance foresees an
additional scrutiny for large transport projects via a two-stage quality assurance process, which includes inputs from independent reviewers and evaluates environmental and social impacts (OECD, 2017[11]).

- **Accurately account for the financial cost of carbon and environmental externalities in the financial evaluation of infrastructure projects.** Germany’s Federal Ministry of Finance identifies climate action as a priority (Federal Ministry of Finance, 2022). As part of this, Germany launched its national emissions trading system (nEHS) in 2021 for the heating and transport sectors. The fixed price for a tonne of CO₂, which started at €25 in 2021, will gradually increase to €55 by 2025. All revenues will be recycled into new sustainable investment projects and initiatives.

- **Supplement CBA with other methodological tools to analyse both monetary and non-monetary costs, such as multi-criteria analysis.** The United Kingdom has adopted general guidelines for the incorporation of multi-criteria analysis (MCA) in decision-making processes (Department for Communities and Local Government, 2009[12]). The guidelines describe various techniques to perform MCA, encompassing a wide range of quite distinct approaches. MCA can bring a degree of structure, analysis and openness that lie beyond the practical reach of CBA, as it often involves combinations of some criteria which are valued in monetary terms, and criteria for which monetary valuations do not exist. MCA is then a good instrument to integrate and evaluate the environmental (i.e., water and air pollution, impacts on biodiversity and landscape, etc.) and climate impacts (i.e., GHG emissions) of projects, as it considers both elements for which monetary values can be estimated even just indirectly (i.e., through hedonic pricing techniques and stated preferences), as well as elements for which monetary values are not applicable.

- **Integrate sustainability considerations in the evaluation of projects.** In 2021, the Ministry for Sustainable Infrastructure and Mobility (MIMS) in Italy introduced sustainability considerations in the planning and evaluation of infrastructural projects, placing great focus on the environmental sustainability, along with the economic, social and governance dimensions. Among the novelties, the Ministry designed new guidelines for the *ex ante* valuation of projects, together with the related operational guidelines specific to the different sectors that fall under its competence, including railway, public transport and road sectors. It also introduced a new scoring system to define an order of priority for projects that builds on multiple criteria, encompassing also the environmental dimensions, as well as new guidelines for the Technical and Economic Feasibility Project that include a study on the environmental impact of project and a sustainability report.

- **Value ecologically sustainable project design.** In Australia, the Southbank Education and Training Precinct Project aimed to provide the highest level of ecologically sustainable design. It was awarded the 2009 Southbank Business Sustainability Award for environmental design, water conservation, waste management and energy management. The project was among the six major case studies selected by the Council of Australian Governments’ Infrastructure Working Group in 2010 to highlight those facets of major infrastructure projects that demonstrate best practice (Department of Infrastructure and Transport, Australian Government, 2010[13]).

- **Adopt a life-cycle perspective to estimate environmental benefits and costs of an infrastructure asset** - from construction to operation and maintenance to decommissioning. Infrastructure are capital-intensive assets with a lifetime that spans across several years. This entails that environmental considerations should not be limited to construction, but rather extend to the operation, maintenance and decommissioning phase. With the support of the EU, the OECD is currently supporting Hungary in promoting green public procurement, with a special focus on life cycle costing (LCC). A comprehensive LCC analysis takes into consideration the costs of mitigating/reducing (external) environmental impacts when awarding a public contract. Hungary, for example, has used LCC during the public procurement process for the construction of a sewage treatment plant for better compliance with environmental regulations.
• **Engage stakeholders to ensure infrastructure needs are addressed in a sustainable, inclusive and effective way.** This will feed up legitimacy, trust, and shared ownership on infrastructure investment projects that support environmental objectives, while ensuring other important aspects and sustainability dimensions are not disregarded. In France, stakeholder engagement is mandatory for any transport infrastructure project with a budget from EUR 300 million or a length of more than 40 km. The Tours-Bordeaux project involved 150 public meetings to provide information on the project from its very earliest stages and 2,000 stakeholder consultations. 500 visits to four construction sites were organised, principally for local residents, with nearly 20,000 people attending over a period of three years. Stakeholder consultations resulted in agreements on environmental protection, avoiding sensitive sites, and creating natural environments close to the line in compensation for comparable sites disturbed or destroyed.

• **Align existing evaluation tools and processes with green objectives to streamline implementation.** The United States has released a new Permitting Action Plan to strengthen and accelerate federal permitting and environmental reviews by fully leveraging existing permitting authorities to implement new provisions of the Infrastructure Investment and Jobs Act. The Action Plan outlines the Administration’s strategy for ensuring that federal environmental reviews and permitting processes are effective, efficient, and transparent, guided by the best available science to promote positive environmental and community outcomes, and shaped by early and meaningful public engagement.

**Capacity building for sustainable infrastructure investment**

Sustainable and resilient infrastructure investment is increasingly required to address multiple economic, social and environmental objectives beyond a narrow definition of user needs. This creates challenges for decision-makers, who are required to weigh and balance different (and sometimes competing goals) in selecting and prioritising projects. Existing decision-making frameworks are not always well-adapted to accommodating a more diverse set of objectives. If the political incentives are skewed towards displaying tangible results to a certain constituency green and resilient infrastructure can be neglected. This will result in inefficient investments that fail to respond adequately to the needs of the population.

Closing the infrastructure financing gap and attracting private sector investment will depend on the capacity of governments to ensure a pipeline of quality, environmentally sustainable projects that respond to investor needs. Building capacity to create and use evidence-based tools and metrics will better inform infrastructure planning and prioritisation, providing countries with a clearer understanding of the environmental impacts of investments. Supporting innovative financing instruments, such as green and sustainable bonds, will further support the successful rollout of quality, environmentally sustainable project pipelines.

• **Identify key challenges and reasons for failure and provide support to develop a mitigation strategy.** For example, the Commercial Law Development Program (CLDP), a division of the United States Department of Commerce advises policymakers and government officials in developing and post-conflict countries to develop transparent legal and procedural frameworks to oversee complex infrastructure projects. Identifying the common reasons for project failure, the CLDP provides technical assistance in mitigating these risks through due diligence considerations, political considerations, and inter-stakeholder communications.

• **Increasing awareness and providing capacity building on green infrastructure.** The OECD in collaboration with the European Union, is supporting Italy to integrate a green infrastructure approach into the planning of transport infrastructure. An important component of the project includes providing training and capacity building to increase awareness, and strengthen the capacities of public servants on green infrastructure, by improving definitions, cost benefit
methodologies, and processes to include the consideration of green infrastructure options, alongside traditional grey infrastructure proposals.

- **Improving capability to translate climate objectives into functional specifications for PPP and project tenders. Indonesia** uses PPP as an innovative financing scheme to integrate considerations of environmental aspects, climate change issues and green financing early on in the project life cycle. Examples of green considerations integrated into PPP projects include, but are not limited to, implementing a project design that promotes efficient use of energy, implementing reuse of treated wastewater, rainwater harvesting, and rainwater aquifer recharge system, and the use of materials which minimise operation and maintenance costs. Indonesia is also implementing an ESG framework into PPP and non-PPP projects as part of its commitment to addressing climate change, as well as capturing financing opportunities.

- **Leverage public development finance institutions to play a catalytic role and strengthen public sector’s capacity.** This type of institutions can be particularly helpful to develop the infrastructure finance market and strengthen the pre-investment phase in emerging and developing economies. For example, the National Development Fund (FDN) in Colombia, a financial corporation specializing in the financing and structuring of infrastructure projects, offers innovative products and services to attract resources that facilitate the private sector’s participation in the development of infrastructure projects in Colombia. The FDN plays a catalytic role in overcoming gaps in the market and mobilizes financial resources to develop national infrastructure, while appropriately managing risks. The FDN is also committed to ensuring that infrastructure investment actively contributes to the achievement of national and international commitments on environmental protection, climate resilience and low greenhouse gas emissions. Similarly, the Brazilian Development Bank (BNDES), the main financing agent for development in Brazil, plays a fundamental role in stimulating the expansion of industry and infrastructure in the country. In its efforts to build markets, promote a green economy, and engage in green innovation financing, the BNDES has made direct equity investments in Sunew, a company aiming at the large-scale manufacturing and commercialisation of Organic Photovoltaic (OPV) films to generate solar energy.

- **Improve visibility and technical assistance to projects and make smart use of financial resources.** To achieve climate objectives and solve the infrastructure financing gaps, the European Union has accelerated the development of strategically important infrastructure projects by providing institutional access, public guarantees and funds. In 2014, the European Commission launched the Investment Plan for Europe (IPE) to remove obstacles to investments, provide visibility and technical assistance to projects and make smart use of financial resources across Europe. The Plan has three pillars: first, the European Fund for Strategic Investments (EFSI); second, the European Investment Advisory Hub and the European Investment Project Portal; third, targeted efforts to remove national and EU-level regulatory barriers to investments (OECD, 2018[9]).

In the wake of COVID-19, G20 countries understand more than ever the need to leverage infrastructure investment to fully realizing their potential to deliver on key policy priorities, including catalysing the low-carbon transition, safeguarding biodiversity, building resilience to climate change, and underpinning countries’ sustainable development.

Governments can improve the environment for sustainable infrastructure investment by improving the alignment of public and private expectations regarding sustainability objectives, pathways and measures. This begins with high-level dialogue at the political level, e.g. through the OECD-G20 Investors’ Dialogue, but the work of alignment does not stop here. Implementing the G20 QII Principles, requires governments to cascade their environmental and climate commitments and plans through their infrastructure planning and capital budgeting across sectors, to operationalise high level objectives into project prioritisation and
appraisal criteria, and to ensure that key capacities are in place across the public sector to make the right decisions in line with government objectives in order to ensure a pipeline of bankable quality infrastructure projects.

In support of this complex challenge, the OECD is preparing a Toolbox for the Implementation of the Recommendation on the Governance of Infrastructure that will draw on the examples laid out in this paper and its annexes and further develop the infrastructure governance pillars that can support country ambitions. Furthermore, it is developing Infrastructure Governance Indicators that operationalise the Recommendation in terms of functional practice. Extending these indicators beyond OECD countries and collecting additional good practice examples to include other G20 members and beyond would provide an additional step in filling the data gap on key practices to implement the G20 principles.
References


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Annex: Case studies
Southbank Education and Training Precinct, Queensland

In a nutshell:

**OBJECTIVE:** The Southbank Education and Training Precinct Project was underpinned by a strong service need to meet the growing demand for education and training in modern teaching facilities.

**Agency in charge:** Department of Employment and Training

**Levels of government:** Sub-national

**Year of implementation:** 2005

**Current status:** Operation

**Value:** $542 million

Overview:

Judged as the ‘Best Global Project’ at the prestigious Public Private Finance Awards in London in 2007, Southbank Education and Training Precinct was Queensland’s first PPP and was delivered under the Queensland Government’s PPP Policy and Value for Money Framework. The project underwent a rigorous business case analysis supported by a robust quantitative financial assessment before approval by the Queensland Government. Importantly, the Queensland Government undertook a comprehensive market sounding process as part of developing the business case to understand the private sector’s key issues and concerns. The project was governed and managed in a manner that promoted accountability and responsibility throughout the decision-making structure with representation from a wide variety of stakeholders and input from specialist advisers. In addition to the successful delivery of the project, the Queensland Government was able to leverage the other benefits of PPPs which include innovation, leading edge design, optimal risk allocation and whole-of-life considerations. As a direct result of the lessons learned from the project, the Queensland Government updated the Value for Money Framework.

From the outset the Southbank Education and Training Precinct Project aimed to provide the highest level of ecologically sustainable design. It was awarded the 2009 Southbank Business Sustainability Award for environmental design, water conservation, waste management and energy management.

**Challenges:** During the tender process, a low level of interaction resulted in the private sector misinterpreting the project scope.

**Lessons learned:** A more interactive tender process with the private sector would have reduced the risk of the private sector misinterpreting project scope or output specifications.

REFERENCES:
The Brazilian Development Bank (BNDES) is the main financing agent for development in Brazil, playing a fundamental role in stimulating the expansion of industry and infrastructure in the country. The Bank offers several financial support mechanisms to Brazilian companies of all sizes as well as public administration entities, enabling investments in all economic sectors. In any supported undertaking, from the analysis phase up to the monitoring, the BNDES emphasizes three factors it considers strategic: innovation, local development and socio-environmental development.

For example, in its efforts to build markets, promote a green economy, and engage in green innovation financing, the BNDES has made direct equity investments in Sunew, a company aiming at the large-scale manufacturing and commercialisation of Organic Photovoltaic (OPV) films to generate solar energy. The OPV technology was developed by the Brazilian research centre CSEM, which BNDES supported in 2013 through Funtec. The Funtec agreement provided for the pre-emptive right for BNDESPAR (BNDES’s equity investment arm) to eventually participate in the start-up companies created to produce and commercialise the products resulting from the research. This right was exercised by BNDESPAR in the context of Sunew, CSEM’s spin-off company. In 2015, BNDESPAR subscribed shares in Sunew for an amount of BRL 4.5 million (USD 1.3 million), which gave it rights to 30% of the company’s shares, with the rest held by CSEM (45%), a private investor (15%) and the company’s funders (10%). Subsequently, there have been further capital increases, mainly needed to enable commercialisation of the OPV films, in which Sunew was successful in attracting capital from four new private investors, including some angel investors. BNDESPAR then approved subsequent capital increases to maintain its ownership interest in Sunew.

REFERENCES:
The Investing in Canada Plan is the Government of Canada’s long-term infrastructure plan. Beginning in 2016, it will commit more than CAD 180 billion over 12 years in order to: generate long-term economic growth; improve the resilience of communities and transition to a clean growth economy; and improve social inclusion and socio-economic outcomes for all Canadians. The Plan targets five areas for investment: Public Transit; Green Infrastructure; Social Infrastructure; Trade and Transportation Infrastructure (including the National Trade Corridors Fund); and Rural and Northern Communities. Infrastructure Canada reports on progress made towards their objectives on an annual basis, through their reporting on results. In addition, a progress report on the Investing in Canada Plan from 2016-2019 was published, providing key data and indicators to demonstrate real-world impacts and displays concrete examples of investments that are making a difference in communities across the country. This Plan includes funding programs delivered through Infrastructure Canada and subordinated financing through the Canada Infrastructure Bank. Through the Investing in Canada Plan, sub-national governments are responsible for the prioritisation based upon their needs. This includes public transit systems that involve subways or light rail elements. Planning and monitoring at the sub-national levels can vary greatly depending on the size, population and needs of a region.

In order to ensure that infrastructure is leveraged to address vulnerabilities and inequalities across women and men, projects included in the plan were assessed using the Gender-based Analysis Plus (GBA+) framework to understand their differentiated impacts on women. This seeks to ensure that the projects are targeted to communities in which investments are needed the most, acknowledging that some populations and groups face different disadvantages and have diverse needs.
Colombia

Financiera de Desarrollo Nacional (FDN)
Infrastructure Development Bank

In a nutshell:

OBJECTIVE: The FDN’s main objective is to be a catalyst factor in developing the infrastructure finance market needed for Colombia’s transformation and well-being.

Overview:

The Financiera de Desarrollo Nacional (FDN) is a financial corporation specializing in the financing and structuring of infrastructure projects, offering innovative products and services to attract resources that facilitate the private sector’s participation in the development of infrastructure projects in Colombia. The FDN engages mainly in the pre-investment phase to ensure a better investment climate and a quality pipeline of projects. It plays a catalytic role in overcoming gaps in the market and mobilizes financial resources to develop national infrastructure, while appropriately managing risks. It supports projects via direct funding as well as by attracting investors to obtain the comprehensive financing needed to implement large infrastructure projects that are instrumental in the transformation of the country. As of September 2021, the FDN is the largest financer of Colombia’s Fourth Generation (4G) road development programme. FDN is also growing in other sectors such as energy, urban mobility, urban renewal, water and sewage.

Beyond guarding fiscal sustainability, affordability and value for money of infrastructure projects, the FDN is also committed to ensuring that infrastructure investment actively contributes to the achievement of national and international commitments on environmental protection, climate resilience and low greenhouse gas emissions, social inclusion and gender equality. In order to ensure the sustainability of the projects it finances, the FDN promotes management of community relations based on an integrated assessment. In particular, it identifies impacts, risks and social opportunities, ensures effective community participation -based on the clear and complete disclosure of the project information and consultation with communities on aspects that directly affect them-, and enforces the client’s obligation to maintain a good environmental and social performance during the construction

REFERENCES:

Agency in charge
FDN

Levels of government
National

Year of implementation:
2011

Current status:
Fully operational
France

Tours-Bordeaux project

**TYPE OF TOOL:** Project

**MAIN SECTOR:** Transport

**INFRASTRUCTURE GOVERNANCE DIMENSION:**
Strengthening project alignment with green objectives and delivery for a sustainable infrastructure pipeline

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**In a nutshell:**

**OBJECTIVE:** The Tours-Bordeaux project is part of a broad regional development scheme and is aimed at enabling economic development in the southwestern regions of France.

**Agency in charge:** SNCF Réseau

**Levels of government:** National and sub-national

**Year of implementation:**

**Current status:** Operation

**Value:** €7.8 billion

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**Overview:**

The high-speed train line covering Tours-Bordeaux was financed by PPP between SNCF Réseau and LISEA (Vinci group). Signed in 2011, this was the first railway concession contract in France. A 303-kilometre HSR line connecting Tours and Bordeaux, the LGV Sud Europe Atlantique (SEA) was the largest Greenfield HSR project in Europe, with an estimated cost of EUR 7.8 billion, reducing the travel time between Paris and Bordeaux from 3 hours to 2h05.

In France, stakeholder engagement is mandatory for any transport infrastructure project with a budget from EUR 300 million or a length of more than 40 km. Stakeholder engagement tends to add one year to project completion, but the ownership and quality of the projects is improved. The Tours-Bordeaux project involved 150 public meetings to provide information on the project from its very earliest stages and 2,000 stakeholder consultations. 500 visits to four construction sites were organised, principally for local residents, with nearly 20,000 people attending over a period of three years. Consultations resulted in modifications to the route of the line and improvements to roads in the neighbourhood of the line. They also resulted in agreements on environmental protection, avoiding sensitive sites, and creating natural environments close to the line in compensation for comparable sites disturbed or destroyed. Local elected politicians have a strong role in promoting the strategic case for the project.

**Challenges:** The environmental and social acceptability of the project was a major challenge given its significant potential effects.

**Lessons learned:** The integration of environmental issues at a very early stage of the project and stakeholder engagement were important factors for strengthening the trust and transparency required to achieve environmental and social acceptability.

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**REFERENCES:**

**OBJECTIVE:** The Tours-Bordeaux project is part of a broad regional development scheme and is aimed at enabling economic development in the southwestern regions of France.

**Levels of government:**

**Value:** €7.8 billion
India

Life-cycle costing to achieve energy efficiency

**TYPE OF TOOL:** Methodology/guidelines

**MAIN SECTOR:** Transport

**INFRASTRUCTURE GOVERNANCE DIMENSION:**
Strengthening project alignment with green objectives and delivery for a sustainable infrastructure pipeline

**In a nutshell:**

**OBJECTIVE:** The Indian Railways used life-cycle costing (LCC) as a tool to promote a low-carbon, energy-efficient lighting approach in Indian Railways’ residential quarters.

**Agency in charge**
Ministry of Railways

**Levels of government**
National and sub-national

**Year of implementation:** 2009

**Current status:** Fully operational

**Overview:**

The Indian Railways Vision 2020 document stated its intention to conserve energy by achieving 15% energy efficiency and to use a low-carbon, energy-efficient approach. Many employees working for Indian Railways reside in a railways colony. Most of these households use energy inefficient incandescent lamps (ICLs) for their lighting needs, thus increasing peak electricity demand in the evening. In keeping with the goals of Vision 2020, Indian Railways took a unique initiative in 2008 to reduce the peak lighting loads in Indian Railways’ residential quarters by replacing ICLs with energy-efficient compact fluorescent lamps (CFLs). The project team used life-cycle costing (LCC) as a tool to demonstrate the potential benefits of using CFLs over ICLs for lighting needs even though the upfront purchase price of a CFL is approximately five or six times that of an ICL in India. The idea was to encourage the involvement of stakeholders in the project implementation phase so that they could experience the benefits of adopting greener products and services themselves. The resulting energy savings achieved through this project would reduce the total power demand and lead to a reduction of greenhouse gas emissions. The secondary objective of the project was to demonstrate the use of the Clean Development Mechanism (CDM) under the Kyoto Protocol to finance an energy-efficiency project in an emerging economy. It leveraged money earned through the sale of certified emission reductions (CERs) generated during the project to distribute a maximum of 4 CFLs to 400,000 households across Indian Railways. Life-cycle costing (LCC) is an important tool for the selection of green products and services to provide value for money. However, due to its limitations, LCC should be used as tender evaluation criterion for products and services for which there is a considerable degree of confidence of capturing all of their current and future costs.

**REFERENCES:**

Levels of government
National and sub-national
Indonesia plans to employ innovative financing solutions to promote sustainable infrastructure. Indonesia faces a significant financing gap of approximately USD 148-263 billion to achieve net-zero emissions by 2060 as outlined in the Long-Term Strategy for Low Carbon and Climate Resilience 2060. Through its COVID-19 pandemic policies and recovery plans, Indonesia has managed to keep its debt risks and government deficit within manageable bounds. In this context, Indonesia plans to fulfill its infrastructure financing needs through its government budget (USD 163 billion, or 37%), financing from state-owned enterprises (USD 93 billion) and private sources (USD 185 billion, or 42%). To attract private finance, the government is promoting public-private partnerships (PPPs), blended finance schemes and a new blended finance platform managed by the PT Sarana Multi Infrastruktur (PT SMI, a national body designed to accelerate national infrastructure development in Indonesia) called SDG Indonesia One.

PPP scheme will be used as the backbone of blended finance. Indonesia initiated its PPP policy in 2005. It established a PPP unit under the Ministry of Finance and a PPP Joint Office with other ministries as a platform for co-ordination and a hub with private sector.

SDG Indonesia One, launched in 2018, draws financing from philanthropists, international donors, climate finance institutions, green investors, commercial banks and multilateral development banks (MDBs) among others.

The Ministry of Finance is also implementing an ESG framework into PPP and non-PPP projects. The implementation of ESG principles forms part of Indonesia's commitment to addressing climate change as well as capturing financing opportunities.
Indonesia

2020-2024 National Medium-Term Development Plan

**TYPE OF TOOL:** Plan  
**MAIN SECTOR:** Energy  
**INFRASTRUCTURE GOVERNANCE DIMENSION:**  
*Steering the green agenda: aligning the strategic long-term infrastructure vision with environmental policy objectives*

### In a nutshell:

**OBJECTIVE:** Indonesia is integrating climate change considerations into planning processes to enable transition towards a green economy.

- **Agency in charge:** Bappenas  
- **Year of implementation:** 2020  
- **Levels of government:** National  
- **Current status:** Fully operational

### Overview:

Under Indonesia’s current National Development Planning System (adopted in 2004), 20-year National Long-Term Development Plans (most recently for 2005-2025) cascade down to 5-year National Medium-Term Development Plans (currently 2020-2024) and annual Government Working Plans. In the power sector, Indonesia enjoys vast potential for renewable energy generation, which can turn the challenge of electrifying an archipelagic country of over 17 thousand islands into an opportunity for smaller-scale renewable deployment. Indonesia’s key challenges to achieve sustainable economic growth are existing regulations, which hinder labour, investment and trade, and low-quality institutions hampered by corruption, inefficient bureaucracy and weak inter-policy coordination. Moreover, low tax revenue, inadequate infrastructure, limited connectivity and insufficient human resource capacity are barriers to achieving Indonesia's development goals. Under the National Planning System approach, Low Carbon Development Planning Principles include: implementation of evidence-based policies; participation of carrying capacity (including GHG emissions); trade-off analysis to balance economic and social development objectives with environmental management objectives; implementation of Holistic, Integrated, Thematic, Spatial principles (HITS); and inclusiveness in the preparation of plans. To develop the Low-Carbon Development Policy under the 2020-2024 National Medium-Term Development Plan, Bappenas employed a systems-based analysis framework to consider the inter-linkages between different economic sectors and development goals, including the reduction of greenhouse gas emissions and conservation of biodiversity. In the power sector, the trade-offs between economic and sectoral targets on the one hand and air quality, land use and emissions considerations on the other, helped to develop a Low-Carbon Development Policy that balances these objectives.

### REFERENCES:

- Levels of government
- Agency in charge
- Year of implementation
- Infrastructural governance
- Objective

*OECD*
Ireland

National Development Plan 2021-2030

TYPE OF TOOL: Plan
MAIN SECTOR: All sectors
INFRASTRUCTURE GOVERNANCE DIMENSION: Steering the green agenda: aligning the strategic long-term infrastructure vision

In a nutshell:

OBJECTIVE: The National Development Plan 2021-2030 provides the enabling investment to implement Project Ireland 2040 to make Ireland a better country for all and to build a more resilient and sustainable future.

Agency in charge: DPER
Levels of government: National
Year of implementation: 2021
Current status: Fully operational

Overview:

As part of Project Ireland 2040, the National Development Plan 2021-2030 sets out Ireland’s overarching investment strategy to make Ireland a better country for all and to build a more resilient and sustainable future. It is the largest and greenest National Development Plan (NDP) ever delivered in the country’s history - €165 billion - with a particular focus on priority solutions to strengthen housing, climate ambitions, transport, healthcare, jobs growth in every region and economic renewal for the decade ahead. For the first time in the country, climate and environmental assessment of the NDP measures has been undertaken, along with an assessment of the alignment of the plan as a whole with the ideals of a green recovery plan. Seven climate and environmental outcomes were specified on which each NDP measure is likely to have an impact: i) Climate Mitigation; ii) Climate Adaptation; iii) Water Quality; iv) Air Quality; v) Waste & Circular Economy; vi) Nature & Biodiversity; and vii) Just Transition. The strategy commits €5 billion in additional carbon tax receipts to increasing capital investment levels in energy efficiency. It commits to increasing the share of renewable electricity up to 80% by 2030, an unprecedented commitment to the decarbonisation of electricity supplies. A critical climate priority and a major focus of the plan is improving the energy efficiency of homes, through the upgrade of at least 500,000 homes to a Building Energy Rating of B2/cost optimal or carbon equivalent by 2030, and the installation of 400,000 heat pumps in existing homes to replace older, less efficient heating systems. The plan provides a funding of about €35 billion to enhance public transport, active travel options and the connectivity of communities throughout Ireland. It also commits to the implementation of the current and future National Biodiversity Action Plan. The plan also includes commitments to further reforms of the Public Spending Code to ensure that it is compatible...
Italy

Milan's 2020 Adaptation Strategy

**TYPE OF TOOL:** Plan

**MAIN SECTOR:** Transport

**INFRASTRUCTURE GOVERNANCE DIMENSION:**
Steering the green agenda: aligning the strategic long-term infrastructure vision

**In a nutshell:**

**OBJECTIVE:** Milan's 2020 Adaptation Strategy sets comprehensive actions to reorganise the city following the COVID-19 crisis.

**Agency in charge**
The municipality of Milan

**Levels of government**
Sub-national

**Year of implementation:**
2020

**Current status:**
Fully operational

**Overview:**

The COVID-19 crisis provided an opportunity to focus investment on long-term objectives such as pursuing a low-carbon transition, promoting resilience, and reducing regional disparities. Some regions and cities have started to give a new impetus to their green strategy. Milan launched the 2020 Adaptation strategy which sets comprehensive actions to reduce travel demand (e.g. promoting smart and remote work models); improve and diversify mobility options (e.g. promoting bicycles, electric scooters, shared vehicles); increase public transport safety (e.g. limiting the number of people in public buses and subways, reducing crowds at bus stops and train stations with safety distancing); clear sidewalks; integrate public transport with other mobility systems; enhance automation of transport and parking tickets and passes; and to invest in short-term parking spaces (e.g. for delivery of essential goods for healthcare and emergency services). The plan also aims to rethink the timing, timetables and the rhythm of the city, to maximise flexibility and spread the mobility demand over time, encouraging more flexible timetables for schools and workers, and extending opening hours of services and businesses, as well as live cultural performances. It also intends to reclaim public spaces for wellbeing, leisure, and sports, with a gradual reopening of parks and sport facilities. It also commits to ensuring a Piazze Aperte (open squares) in every neighbourhood, through tactical urbanism and pedestrianisation, and extends terraces over parking spaces, while limiting the speed limit to 30km/h in the whole city. The Strategy aims at supporting social innovation, and start-ups to integrate business and social objectives while creating community cohesion. It suggests to stimulate the recovery of the construction sector by launching widespread maintenance and redevelopment projects on existing real estate assets, both public and private, alongside energy-saving initiatives.
Sustainability considerations in the planning and evaluation of infrastructure projects

**In a nutshell:**

**OBJECTIVE:** The Ministry for Sustainable Infrastructure and Mobility (MIMS) introduced sustainability considerations in the planning and evaluation of infrastructure projects to ensure rigorous evaluation of public investments.

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<th>Agency in charge</th>
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<td>MIMS</td>
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**Overview:**

In 2021, the Ministry for Sustainable Infrastructure and Mobility (MIMS) introduced sustainability considerations in the planning and evaluation of infrastructural projects, placing great focus on the environmental sustainability, along with the economic, social and governance dimensions. Among the novelties, the Ministry designed new guidelines for the ex-ante valuation of projects, together with the related operational guidelines specific to the different sectors that fall under its competence, including railway, public transport and road sectors. The ex-ante valuation assesses both the positive and negative impact of a project on the environment. On one side, the “substantial contribution” to one or more of the six environmental objectives established by the European Taxonomy Regulation is verified and measured applying the technical screening criteria contained in the Delegated Regulations by the EU Commission. On the other side, compliance with the do-no-significant-harm (DNSH) principle is verified in two phases, where Phase 2 represents a subsequent passage to assess the potential harm to the environment.

The MIMS also introduced a new scoring system that encompasses multiple criteria and aims to establish the order of priority for the different projects eligible to public funding. The scoring system encompasses four dimensions (economic-finance, social, governance and environment), which are broken down into sub-domains with specific components of analysis, indicators and qualitative information. The evaluation of each sub-domain is conducted through a discrete scale on four levels (1 min, 4 max), that is continuous and linearly increasing. The final project score is thus a weighted average of the scores on the four dimensions.

The MIMS also published new guidelines for the Technical and Economic Feasibility Project which...
OBJECTIVE: Luxembourg’s climate strategy for national and international investment is aimed at facilitating a green transition and contributing to global efforts to support climate change mitigation and adaptation.

Agency in charge
MECDD

Year of implementation:
2021

Current status:
Fully operational

Overview:

Luxembourg’s climate strategy for national and international investment integrates infrastructure, notably buildings and transport. In the transport sector, the selection of investments will be based on:
- Mobility planning favouring public transport and active mobility (national mobility plan, dedicated cycle paths, attractiveness of public transport, trans-European rail network with appropriate connections);
- Accelerated deployment of zero-emission vehicles (electrification of the car fleet, charging infrastructure);
- Decarbonisation of freight transport and the logistics sector (strategy for decarbonisation of the logistics sector);
- Aviation and maritime sector (European-wide and global solutions, emission trading schemes).

To contribute to global efforts to support climate change mitigation and adaptation, Luxembourg has committed to international climate funding of €200 million under its International Climate Finance (ICF) Strategy 2021-2025. The strategy identifies key priorities for directing support at interventions across the spectrum of mitigation and adaptation measures in developing countries: i) Natural Capital, Biodiversity, Forestry and Land-Use; ii) Clean Air and Water Resources; iii) Resource Efficiency and Waste Management; iv) Community-Based Adaptation and Resilience; v) Support for transparency requirements of the Paris Agreement; vi) Leveraging and Mainstreaming Climate and Sustainable Finance; and vii) Climate change induced migration. It outlines six main selection criteria for allocating the international climate change funding: i) Strong Climate Impacts; ii) Other sustainable development benefits; iii) Mobilization of private sector funding; iv) Transformation, innovation, and lasting impacts; v) Efficiency and iv) Gender equality contribution.

REFERENCES:
- OECD (forthcoming), Strengthening environmental considerations in public investment management in Ireland.
The Netherlands

Adaptive water management in the Netherlands

**TYPE OF TOOL:** Plan

**MAIN SECTOR:** Water

**INFRASTRUCTURE GOVERNANCE DIMENSION:**
Steering the green agenda: aligning the strategic long-term infrastructure vision

**In a nutshell:**

**OBJECTIVE:** The Netherlands’ adaptive planning approaches allow for accommodating uncertainty and a greater degree of flexibility to cope with climate change impact and future challenges related to water safety and freshwater supplies.

**Agency in charge**
Rijkswaterstaat

**Levels of government**
National

**Year of implementation:** 2012

**Current status:** Fully operational

**Overview:**

The Netherlands has a long and robust tradition of living with water. Located in a delta, more than half of the country’s territory and population and two-thirds of its economic activity are flood-prone. Safety against flooding and the management of excess rain have long been the foundation of water management in the Netherlands. Centuries of concerted action and investment helped build and maintain the country’s extensive system of primary and regional flood defences.

A new paradigm towards adaptive water management has put thinking about the future and long-term sustainability at the heart of Dutch water policy. This shift began with the programme “Room for the River” and culminated with the adoption of the Delta Act in 2012. The act established the Delta Programme, the Delta Commissioner, and the Delta Fund to advance an adaptive water management approach that places primacy on a long-term perspective (up to 2100) and flexible strategies to cope with future challenges related to water safety and freshwater supplies.

Adaptive management is seen as a structured, iterative, learning-based process involving the fundamental features of learning and adaptation leading to both improved understanding of the (resource) system and to improved management based on that understanding. This entails integrating a long-term perspective into water management planning with iterative decision making, considering how decisions in the short term potentially enable or foreclose future options, and the use of nature-based solutions, which can avoid or delay lock-in to capital-intensive, conventional “grey” infrastructure.

**REFERENCES:**
In Norway, projects with estimated costs in excess of NOK 1 billion (threshold of NOK 300 million for digitalisation projects) are subject to additional scrutiny via a two-stage quality assurance process. The process includes input from independent reviewers and was initially implemented to combat cost overruns. The process does not apply to the oil and gas sector, state-owned companies with responsibility for their own investments, and the hospital sector. QA1 focuses on quality assurance of choice of concept. It is conducted prior to the government cabinet’s selection of projects. The central purpose of this analysis is to check, at a relatively early stage, that the project has undergone a process of “fair and rational” choice. It is conducted by the responsible ministry or government agency and includes investigation of alternative solutions, socio-economic impacts, and relevance of the project to needs. There is emphasis on environmental and social impacts, land-use implications, and regional development. This evaluation, inter alia, must include a “do-nothing” option (“zero option”) and at least two alternative and conceptually different options. The external reviewers’ role includes analysis as well as review of documents. QA2 focuses on quality assurance of the management base and cost. It applies to projects that have yet to be submitted to parliament for approval and funding. The purpose of QA2 is to check the quality of the inputs to decisions, including the cost estimates and uncertainties associated with the project, before it is submitted to parliament to decide on funding allocation. It includes assessment of cost estimates derived from basic engineering work and assessment of at least two alternative contracting strategies. Notably, however, QA2 does not include revisiting and updating the cost-benefit analysis performed in QA1, unless the project seems to have been significantly altered from the option chosen at QA1. In addition, QA2 focuses on project management in the implementation phase.
In July 2020, the Republic Korea adopted the New Deal to combat the economic setbacks caused by COVID-19, with a distinctive territorial approach. The Korean New Deal, through investment and regulatory improvement, is aimed at accelerating remote work and education, promoting low carbon and eco-friendly manufacturing, and leading the transformation into a green and digital economy. According to the government’s plan, KRW 75.3 trillion will be invested in projects that are conducted outside of Greater Seoul. The majority of the spending will be funded by the central government, which will cover KRW 42.6 trillion, or 57%, while local governments will match those funds with a total of KRW 16.9 trillion. The remainder will be in the form of private sector investments. The government will assign major projects, such as installing green technology in outdated government-leased apartments, or installing artificial intelligence technology in traffic systems. Some of the planned projects will be led by local governments rather than by the central government, including the expansion of a robotics factory in Daegu, the establishment of an autonomous vehicle testing site in Sejong, and the development of a publicly-backed delivery platform in Gyeonggi. The plan will also create special economic zones by providing fiscal and tax support while lifting regulations. In July 2021, the government announced the upgrade of Korean New Deal, Korean New Deal 2.0. Under the plan, the government expanded the Green New Deal taking into consideration carbon neutrality. This included adding a new category of carbon neutrality, under which investment will be made in projects to achieve the 2030 Nationally Determined Contribution (NDC), such as building an emissions measurement system and creating a carbon reduction program for industries. The expanded Green New Deal covers various projects, as a result to effectively support the transition to a low-carbon economy.
Singapore

Significant Infrastructure Government Loan Act (SINGA)

TYPE OF TOOL: Legal instrument
MAIN SECTOR: All sectors
INFRASTRUCTURE GOVERNANCE DIMENSION: Steering the green agenda: aligning the strategic long-term infrastructure vision with environmental policy objectives

In a nutshell:

OBJECTIVE: Significant Infrastructure Government Loan Act (SINGA) aims to finance infrastructure projects with long-term benefits following stringent project appraisal by tapping into the debt market.

Agency in charge: Ministry of Finance
Levels of government: National
Year of implementation: 2021
Current status: Fully operational

Overview:

Singapore’s Significant Infrastructure Government Loan Act (SINGA) forms part of the government's differentiated financing strategy. It is designed to support major, long-term infrastructure projects that will benefit Singaporeans across generations rather than routine infrastructure projects and recurrent spending. After several decades of development expenditures funded by operating surpluses, Singapore is entering a new phase of infrastructure development characterised by borrowing-financed projects to update Singapore’s major, long-term infrastructure and adapt to emerging circumstances, including climate change. This plan is a continuation of historical phases where infrastructure investment enabled the economic transformation of Singapore. Borrowing allows infrastructure projects’ heavy upfront costs to be spread out across current and future generations, promoting inter-generational equity, and Singapore, with its AAA rating and current market environment, is ideally placed to tap into the debt market at favourable interest rates. To ensure prudent borrowing, the government has put rigorous safeguards in place to prevent excessive borrowing and target high-impact projects. Finally, government leadership in infrastructure investment helps to shape the direction of Singapore’s green transformation and to crowd in private investment of sustainable infrastructure. Singapore plans to issue green bonds under SINGA, aiming for SGD 35 billion by 2030. Public sector green bond issuance is a key part of Singapore’s sustainability agenda and helps with financing development of sustainable infrastructure, mobilising private capital, and catalysing climate actions. Such efforts aim to support the implementation of the Singapore Green Plan 2030, Singapore’s net-zero ambitions and the Green Finance Action Plan.

REFERENCES:
In a nutshell:

**OBJECTIVE:** The United Kingdom’s multi-criteria analysis manual provides guidance on the incorporation of multi-criteria analysis in decision-making processes.

**Agency in charge:** DLUHC

**Levels of government:** National

**Year of implementation:** 2009

**Current status:** Fully operational

**Overview:**

Embedding evidence-based project selection and prioritisation processes in government decision-making ensures value for money, affordability of infrastructure projects for the public budget and users, and minimal sustainability risks. Rigorous project appraisal and selection processes can help pay due consideration to social and economic efficiency (taking into account economic, social, fiscal, environmental and climate-related costs and benefits) and take into account the full cycle of the asset. Supplementing cost-benefit analysis with other methodological tools to accommodate multiple objectives and uses – such as infrastructure sustainability – helps establish the overall societal return on investments.

The United Kingdom has developed general guidelines for Government officials and other practitioners on the incorporation of multi-criteria analysis (MCA) in decision-making processes. The manual provides an explanation of techniques that do not necessarily rely on monetary valuations as a way to complement the use of monetary methodologies such as financial analysis, cost-effectiveness analysis, and cost-benefit analysis, which generally do not take into consideration the environmental impacts of infrastructure investments. It is designed to help non-specialist staff to gain an overview of the advantages offered by MCA and what its requirements may be in terms of resources for undertaking appraisals. The manual provides more detailed explanations of various MCA methodologies. It also outlines the relationships between the different techniques and indicates the ones which can yield the most fruitful applications, in contrast to those which may be of theoretical interest but little practical value. The manual includes detailed guidance for specialists interested in applying the techniques to their own particular decision-making problems. It also provides case studies illustrating application of MCA techniques.

**REFERENCES:**
The Commercial Law Development Program (CLDP) partners with developing and post-conflict countries to implement commercial legal reforms that support U.S. foreign policy goals. The government-to-government technical assistance helps host countries modernise their commercial legal environments, and support their economic development. CLDP’s Asia-Pacific Team advises policymakers and government officials to develop transparent legal and procedural frameworks to oversee complex infrastructure projects. CLDP finds common reasons for project failure: i) lack of government expertise, experience and capacity; ii) instability resulting from changes in governments; iii) poor communication during project development and procurement; iv) inappropriate project structure; v) insufficient project risk assessments; and vi) lack of clear mandate or political will for the project. To mitigate these risks, project due diligence should begin in the early stages of project identification and selection, with feasibility studies and value for money analysis as an integral part of the process. Assessments should vet the private partner to avoid conflicts of interest, mitigate risks of ethical and legal issues and ensure financial stability and compliance with reporting laws. Political considerations, including the existence of a project champion to advocate on behalf of the project without direct influence over the choice of the private partner, are essential for a project’s success. Additionally, inter-stakeholder communications are vital, with direct engagement of all affected ministries/agencies in the project implementation. An inter-stakeholder communication strategy could include identification of all interest groups, explanation of the main concepts to be communicated, mechanisms of communication, and a strategy for maintaining good relationships with the press.
The United States International Development Finance Corporation (DFC) is America’s development finance institution. DFC partners with the private sector to finance solutions to the most critical challenges facing the developing world today. DFC catalyses private sector investment by providing tools to commercially viable investments when the private sector is unwilling or unable to do so. Its services include debt financing, political risk insurance, investment funds, equity investment and technical assistance to promote viability and impact. DFC’s Office of Development Policy strives to produce positive development impacts and apply best practices in terms of environmental and social safeguards. The Office of Development Policy (ODP) works to ensure projects produce positive developmental impacts, apply best practices with respect to environmental and social safeguards. ODP carries out environmental and social risk assessments as well as evaluations of international development and US domestic economic impacts. Each project passes through a screening, application from the project sponsor, review of environmental, social and economic dimensions and due diligence checks. Approved projects are then monitored and evaluated in a transparent fashion through DFC’s annual Development Outcome Survey. To measure impact, DFC uses “IQ”, its development impact management system. An IQ score is calculated based on a project’s projected and actual contribution to economic growth, inclusion and innovation. The IQ Score helps inform decision-making during the project approval process. It classifies projects based on development performance, reflects both the positive and negative impacts of the investment, considers the relevance of the impacts within the country context and creates mechanisms to maximise the development impact of every investment that the DFC supports.
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