

# Prioritizing Projects to Enhance Development Impact<sup>1</sup>

## I. Introduction

Additional investment is needed to expand, update and modernize infrastructure across developed and developing economies to meet the growing demands of consumers and businesses and meet the challenges of climate change.

Estimates of the size of the “infrastructure gap”—generally well over US\$1 trillion per year—suggest that the financing required significantly outstrips available resources. This has grown in the wake of the global financial crisis, where fiscal space is constrained, commercial banks are adapting to more stringent capital requirements, and private sector investors face a fragile recovery and widespread uncertainty.<sup>2</sup>

Simply raising spending on infrastructure will, however, not provide the allocative and distributional efficiency required to enhance economic growth and job creation over the long-term. It is therefore critical to achieving the international community’s growth, job creation and poverty alleviation goals that governments allocate scarce resources available for infrastructure investment where they will have the greatest impact.

With a plethora of competing demands, prioritizing investment projects is crucial. This means choosing those investments with the greatest economic potential by achieving the right balance between new infrastructure and operations and maintenance. For example, in the transport sector, underinvesting in road maintenance creates massive liabilities. The World Bank Group estimates that one dollar spent in

### Infrastructure Prioritization Principles

#### *Infrastructure investment plans should:*

**Principle One:** Align with the national strategic vision. .

**Principle Two:** Contain robust and transparent selection criteria that maximize positive economic, social and environmental impacts.

**Principle Three:** Consider the entire life-cycle of the assets.

**Principle Four:** Account for potential network and cross-sectoral impacts.

**Principle Five:** Contain analysis based on reliable data.

**Principle Six:** Be built around support from a wide range of stakeholders and across political parties.

**Principle Seven:** Optimize financing arrangements under different budget constraints.

**Principle Eight:** Optimize delivery options.

**Principle Nine:** Consider institutional and technical capacity to implement the plan.

**Principle Ten:** Flexible and adaptable to incorporating feedback.

<sup>1</sup> Prepared by World Bank Group staff for the G20 Investment and Infrastructure Working Group and the G20 Development Working Group, June 2014

<sup>2</sup> See World Bank Group and others, *Long-Term Finance for Growth and Development: Umbrella Paper*, 2013, [https://www.g20.org/sites/default/files/g20\\_resources/library/Long\\_Term\\_Financing\\_for\\_Growth\\_and\\_Development\\_February\\_2013\\_FINAL.pdf](https://www.g20.org/sites/default/files/g20_resources/library/Long_Term_Financing_for_Growth_and_Development_February_2013_FINAL.pdf)

road maintenance can save up to four dollars spent on road rehabilitation (WBG, 1998)<sup>3</sup>.

Having a sound and transparent prioritization process is essential for governments, not only to maximize the economic, environmental and social benefits of infrastructure investments, but also to attract additional financing, including from the private sector. Importantly, this process squarely allocates public resources within the context of a government's fiscal constraints. An infrastructure plan that has a robust evidence base, has been discussed with a wide group of stakeholders, and has sufficient cross-party political support, is more likely to be preserved after a change of government. A robust long-term infrastructure development plan gives confidence to financiers and construction companies that look for a secure and predictable pipeline of projects. This reduces risks and therefore price premiums.

Due to strong network effects, the technical and institutional complexities of the infrastructure sector require an integrated approach to project selection and planning. Telecommunications and electricity transmission exhibit strong network effects, whereby returns to users increase with the number of users. Roads, rail and water/sanitation are also networked services, so the impact of new investments on growth, output or firm costs will depend on the overall state and extent of the network. Moreover, there are significant spillover effects among infrastructure sectors. For example, the existence of a road network can decrease significantly the cost of expanding power transmission lines. In general, the lower the levels of infrastructure stock and the quality of infrastructure, the larger the dividends produced by increased investment.

Public investment decisions within infrastructure sectors involve gathering large quantities of project-level data across multiple dimensions through a coordinated effort by public institutions at the national, sector and/or local levels. This technical and institutional complexity provides an environment within which information asymmetries and coordination failures can affect the integrity and effectiveness of the decision-making process. Adopting a simple, yet procedurally nuanced, investment management system to guide investment decisions is an operational tool governments can utilize to improve the consistency, objectivity and, therefore, credibility and impact of investment decisions.

Preparing infrastructure plans is comparatively new for many countries. Australia, Mexico, Province of Ontario (Canada) and United Kingdom are the most cited successful examples of infrastructure planning (see WEF, 2012)<sup>4</sup>. However even these have scope for improvement. While infrastructure plans should be specifically tailored to suit the needs of sector and country constraints, there are common principles that can serve as the foundation and provide a guide to decision makers.

It is essential to have well-defined, transparent and clear criteria to prioritize projects so that their selection is objective and free of political influence. The principles set out below are intended to

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<sup>3</sup> World Bank Group. *Deterioration in Developing Countries: Causes and Consequences*. 1998

<sup>4</sup> World Economic Forum, "Strategic Infrastructure: Steps to prioritize and Deliver Infrastructure Effectively and Efficiently. September 2012.

help guide governments in their efforts to prioritize infrastructure activities to enhance the impact of the limited resources spent on infrastructure investment.

## II. Principles of Infrastructure Prioritization

### ***Principle One: A country's long-term strategic vision should guide the preparation of its infrastructure plan***

A country's sector strategies are both aspirational documents and communication tools that provide the rationale for a country's program of investments, while each project identified and developed by sector and sub-national agency provides the means by which the strategy can be achieved. Developing a program of infrastructure investment for the next 10+ years that targets the economic, environmental and social goals of the country requires, at a minimum, that each project selected for public support clearly and explicitly aligns with the long-term strategic vision. Showing the benefits of sector investments for achieving the strategic vision of the country is important to gain political as well as financial support for its execution. Usually, alignment with country vision becomes one of the main criteria for prioritization. In Sri Lanka, for example, the country's long-term strategic vision is to become a maritime hub for the region; therefore the development of the new Hambantota Port in the South of the country was prioritized as one of the key enablers to reach that vision.

### ***Principle Two: Robust and transparent selection criteria should maximize economic, social and environmental impact***

Governments should adopt cross-cutting, clear and robust selection criteria and a management framework to improve the objectivity, credibility and economic impact of investment decisions. Selecting infrastructure projects requires a thorough understanding of the extent to which society (as a whole and in its constituent parts) will benefit from that investment. Assessment of the benefits should not only include likely economic benefits and costs, but also social and environmental ones. The latter are usually more difficult to quantify and may require some qualitative data based on perceptions. However, all are fundamental building blocks. In particular, the economic internal rate of return of a project synthesizes the economic value of a project and estimates that value through a cost-benefit analysis (CBA). When the environmental and social cost and benefits can be quantified, they are incorporated in the CBA. However, when qualitative surveys are used instead, the environmental and social impacts are included as additional criteria in the selected decision making tool (for example, in the Multi-criteria analysis or MCA<sup>5</sup>). Notably, an important part of assessing benefits from infrastructure is how information is dealt with as part of the decision making process. This is because public investment decisions across infrastructure sectors require the synthesis of large quantities of information that cut across industries, services and population centers, both sectorally and geographically. This complexity needs to be adequately managed to avoid information

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<sup>5</sup> The MCA is a decision support tool that is used to make a comparative assessment between projects or heterogeneous measures. See [http://eprints.lse.ac.uk/12761/1/Multi-criteria\\_Analysis.pdf](http://eprints.lse.ac.uk/12761/1/Multi-criteria_Analysis.pdf)

asymmetries and coordination failures between sectors that may affect the integrity of the decision-making process.

***Principle Three: Investment plans should consider the entire life-cycle of the assets***

Optimizing resource allocation for infrastructure investment should take into account costs across the entire life-cycle of an asset including capital costs (CAPEX), routine and periodic maintenance, depreciation and contingency costs. This type of costing usually requires adaptation of the traditional approach to project procurement, which emphasizes that the lowest bid (based on CAPEX alone) is selected. The life-cycle approach requires that a longer-term cost horizon is used, which may result in a bid being selected that does not offer the lowest CAPEX, but provides the greatest financial savings over the life of the asset. Governments should consider the whole lifecycle cost in the design, building and maintenance of assets as part of their due diligence. For example, Public-Private Partnership (PPP) arrangements to build and operate an asset shift long-term operation and maintenance responsibilities to the concession company creating a stronger incentive to ensure long-term construction quality because the firm will be responsible for operations and maintenance costs many years down the road. It also encourages more preventative maintenance and reduces the risk of future fluctuations in operations costs.

***Principle Four: Potential network and cross-sectoral impacts should be accounted for***

One of the defining features of infrastructure assets is that they do not operate in isolation, but are part of an intricate system or network. For example, the decision to invest on roads will depend on the conditions of the network of other modes of transportation. Moreover, the decision to invest in a road may have an impact on the cost of expanding transmission lines and/or irrigation systems. Investments in a platform of urban services may produce economic returns greater than the sum of each individual investment as infrastructure investments may change land usage, productivity levels, settlement patterns and property values. Investment decisions made in isolation may result in excess capacity, redundant assets and wasted resources. Project evaluators should incorporate cross-sectoral and network effects and quantify externalities into the project evaluation. Accounting for cross-sectoral impacts and synergies requires an integrated planning process that incorporates the likely spillover effects—both positive and negative—from a particular infrastructure investment. This may require integrative spatial tools, land use modeling and other methodologies that estimate spillover effects of investments that are related spatially or along a supply chain<sup>6</sup>. Recently, the Central American Road Network undertook a spatial and supply chain analysis, to identify wait times at the border between countries and to determine optimal route planning and linkage to strategic assets such as ports.

***Principle Five: Analysis should be based on reliable data***

In order to estimate the infrastructure investment needs of the country and apply prioritization criteria, it is important to rely on sound and comprehensive databases including financial and non-financial information (e.g., usage rates, population density, infrastructure assets and the

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<sup>6</sup> See also World Bank, World Development Report 2009 : Reshaping Economic Geography.” Washington, DC.

quality of the services, inventory of infrastructure unit cost). Data is costly to collect and update, however it is a cornerstone of asset management. The availability and quality of data will determine the accuracy of the prioritization process and its outcomes. Many countries generate significant amounts of data but this is not collected with a systematic and standardized approach making difficult its use for future analysis (e.g., data is in paper form, is not categorized and is not in a readily usable format). Understanding the existing sources of primary and secondary data, the data gaps, as well as developing adequate digital platforms to store, share and process information is the starting point. Updating data and filling the gaps is costly and time consuming and demands a significant allocation of resources. However the benefits of doing this can pay for the initial outlay many times over by allowing for better selection of projects, and ultimately the commoditization of certain infrastructure costs (e.g., cost per kilometer of road). Countries approach data collection in different ways. In Brazil, for example, there is a federal logistics agency responsible for collecting, collating and processing infrastructure data across sectors.

***Principle Six: Support is needed from a wide range of stakeholders and across political parties***

Prioritization criteria, as well as the final infrastructure investment plan, require consultation with a wide range of relevant stakeholders. Having support across political parties is a crucial part of this. A plan that is recognized and supported by a broad audience is more likely to be preserved after a change of administration and this may help lower investment costs. This requires consultation not only during the prioritization process but also during the preparation and implementation of the projects to get feedback to improve the systems and to ensure and retain stakeholder participation. A good example of such a process was undertaken in the Province of Ontario (Canada), which ensured extensive consultations with major stakeholders during implementation of its investment plan.

***Principle Seven: Financing arrangements should be optimized under different budget constraints***

The public sector is the largest provider of infrastructure. Notwithstanding, the private sector will continue to play an increasingly crucial role in mobilizing financial resources and expertise. An assessment of the optimal structuring of financing for each project should be carried out to define the relative use of public versus private sector financing. The selection of the appropriate financing instruments depends on the size of the project, the amount and sustainability of its cash flow (e.g., tax payer and/or user fee based), its risk and collateral structure, the creditworthiness of the sponsors, and the legal and regulatory framework that provides procurement guidance.

Private sector participation also provides a crucial source of technical and financial innovation, but may create a contingent liability on the public-sector balance sheet. Developing socially beneficial infrastructure assets that provide for an internal rate of return that is equal to, or greater than, the cost of capital allows private participants to deliver basic services. Such a scenario reduces the direct CAPEX and operational expenditure (OPEX) charges on the public purse and may allow for a more targeted allocation of service costs to the specific users of the delivered service. However, the public balance sheet does incur the obligation, or liability, either directly through capital grants or other forms of public support, or indirectly through support to debt obligations, revenue or termination payments if a legitimate circumstance arises from the

contractual arrangement of the scheme with the private participant. It is therefore important that the public sector develop an adequate capacity for managing its debt, including contingent liabilities<sup>7</sup> before engaging in potentially costly partnerships with financing partners. Turkey and Chile, which have among the most extensive PPP and concessioning programs in the world, have developed systematic methodologies to value, account for, and mitigate the impact of contingent liabilities of their programs.

***Principle Eight: Delivery options should be optimized***

The private sector may, under certain circumstances, be able to build, operate and/or maintain an infrastructure asset more efficiently than the public sector. Governments should assess the costs and benefits of delivering through the public or private sector or a combination of both. One way of doing this involves using a public sector comparator to benchmark the cost of public versus private provision, establishing key parameters for comparison such as associated costs of investment, cost of capital and efficiency gains that may be derived in construction, operation and maintenance. Ultimately, when evaluating the optimal use of government resources, the comparison between private and public sector delivery of the asset throughout its life should determine which of these approaches produces greater savings. This due diligence needs to happen before the decision is made to bid out arrangements such as PPPs. At the end, the decision between public or private delivery needs to be determined by the relative benefits to society and the political economy of decision-making. Moreover, the decision needs to be consistent with prudent government fiscal policy and debt management.

***Principle Nine: Institutional and technical capacity should be developed to implement the plan***

Capacity to prepare, evaluate and bring projects to market needs to be considered and a strong methodological framework put in place when developing a comprehensive approach to infrastructure planning. While a country may have the financial resources to fund a pipeline of projects, it may not have the institutional and technical capacity to prepare, develop and/or supervise them efficiently. The reality is that the uneven distribution of technical capability within and across sectors can affect the allocation of resources, with the capacity to prepare or develop some projects compromised, such that some sectors receive insufficient funds from central ministries. The prioritization process should not ignore these relative constraints as they are essential to the efficient use of resources. A strong methodological framework to prepare, evaluate and bring projects to market is also needed and should be included as part of a country's formal project-appraisal methodology. An adequate methodology should become the precondition for (i) optimizing project selection and planning; (ii) giving a clear mandate to institutions/processes to manage the project cycle and its implementation; and (iii) ensuring and enhancing public infrastructure project's credibility and visibility to attract the private sector. The transparency, consistency and relevance of the ex-ante project appraisal methodology is key for mobilizing long term private financing.

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<sup>7</sup> Irwin, Timothy and Tanya Mokdad "Managing Contingent Liabilities in Public-Private Partnerships: Practice in Australia, Chile and South Africa". Washington DC, 2010. World Bank and PPIAF

***Principle Ten: Plans should be flexible and adaptable so as to incorporate feedback***

Monitoring and evaluating the development and implementation of infrastructure projects needs to be an integral part of the implementation of infrastructure plans. This process should allow for the creation of feedback mechanisms that provide the public sector with credible and impartial information to gauge the performance of particular agencies, to identify technical and other gaps and, over time, to link sector transfers to the achievement of certain project-level outcomes. Determining whether a project has achieved the desired objective in a cost-effective fashion allows decision-makers to recalibrate expectations for the next generation of infrastructure investments. Therefore, flexibility and adaptability over time are crucial to a dynamic process of prioritization. Road contracts for rehabilitation and maintenance in Argentina and Uruguay, for example, developed a system of monitoring and evaluation within the contractual arrangements that allowed the second generation of projects to refine, adapt and improve the original design to enhance the outcomes desired by government.

### **III. The particular challenges faced by less developed countries**

The principles described above serve as the foundation and provide guidance on the necessary elements to prioritize infrastructure projects and prepare robust investment plans. These principles are generally common across countries although countries at different levels of development may face different or additional challenges.

**Weaker governance and institutional capacity:** While policies, laws and regulatory frameworks to support infrastructure investment may exist in less developed countries, instability, weak governance and lack of enforceability can jeopardize the preparation and implementation of projects. This is usually evident in PPP projects that are carried out in countries with limited legal, institutional and regulatory frameworks to support them. Lack of confidence in the stability and predictability of legal and regulatory frameworks or in the decisions of the regulator increase considerably the risk to investors and therefore the risk premiums they require. These weaknesses in the system may also lead to more disputes and/or renegotiation of contracts during implementation.<sup>8</sup>

**Weaker technical capacity:** Less developed countries usually have weaker technical capacity to prepare, evaluate, bring to market, implement and supervise projects. Evidence suggests that infrastructure investment and the quality of the associated services are affected directly and substantially by the capacity of the public agency directly managing or supervising a given project. Lack of strategic direction, clarity of roles and responsibilities in decision making and follow-through once decisions have been made, are also important challenges. As noted above, the uneven distribution of institutional and technical capability within and across sectors can significantly bias the allocation of funds towards particular sectors impacting the overall benefits of infrastructure investments. Therefore, good appreciation, qualification and quantification of these factors are needed to be able to make adequate financial and human resource allocations. For example, a highly complex project might be identified as a high priority using the economic,

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<sup>8</sup> Araya, Schwartz, Andres, “The Effects of Country Risk and Conflict on PPPs,” PRWP 6560, World Bank, (2013).

social and environmental criteria, however the country may not have the capacity to execute, finance or maintain it. In this case, a strategy needs to be in place to acquire or build institutional, administrative and technical capacity before undertaking more complex operations.

African countries typically execute only about two-thirds of the budget allocated to public investment in infrastructure. One of the factors explaining this low rate of implementation is the adequacy of public sector capacity.<sup>9</sup> Put differently, public investment could in theory increase by as much as 30 percent without any increase in spending, simply by addressing the institutional bottlenecks that inhibit capital budget execution.<sup>10</sup>

**Lack of absorptive capacity of the economy:** Large projects in a small, resource constrained and inflexible economy can push up prices and wages and bid away scarce skilled labor from other parts of the economy. This is usually observed in less developed (including post-conflict) countries, that have an incipient construction industry and little market competition and that are suddenly faced with a significant inflow of resources, for example, from a rapidly growing economy, foreign direct investment or international aid. Notably some countries may need to be especially vigilant in implementing infrastructure development strategies to ensure that they do not negatively affect their overall competitiveness.

**Higher risks and fewer potential sources of finance:** Less developed countries usually face higher country and political risks. The challenges are due to macroeconomic and fiscal constraints and/or political instability. These increase the risk premium of a project and make it more difficult for a project to be financially viable. These characteristics may also narrow the range of potential sources of finance, thus limiting the type of projects which can be pursued. For example, a large share of Africa's infrastructure is domestically financed, with the central government budget being the main driver of infrastructure investment. The percentage of private sector participation in infrastructure remains low despite the increasing use of credit enhancement tools.

**Lack of proper accounting of contingent liabilities:** In the case of PPPs, these challenges are further compounded by the contingent liabilities that may arise as a result of implementing PPPs which may have direct economic consequences if not managed in a systematic way. Creating and maintaining a reliable inventory of contingent liabilities is essential for managing them. Since projects in less developed countries are more likely to require a guarantee for credit enhancement, the contingent liabilities are more binding. In particularly lucrative sectors, poorly paid or inadequately trained public servants are sometimes faced with the difficult task of negotiating the terms of PPP arrangements with highly paid and experienced representatives of private sector firms. This asymmetry can sometimes result in agreement with financial or economic consequences that are not fully understood by governments. It is therefore essential that

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<sup>9</sup> Briceño-Garmendia, Cecilia, Karlis Smits, and Vivien Foster. 2008. "Financing Public Infrastructure in Sub-Saharan Africa: Patterns, Issues, and Options." AICD Background Paper 15, Africa Infrastructure Sector Diagnostic, World Bank, Washington, DC.

<sup>10</sup> Foster, V. and C. Briceño-Garmendia (eds.), 2011: Africa's Infrastructure. A Time for Transformation. World Bank and French Development Agency, Washington, DC.



governments in less developed countries acquire sufficiently qualified expertise to support their negotiations.

**Affordability constraints:** Concerns about affordability are usually the reason or pretext for underpricing services and this lack of cost recovery can have major detrimental effects on infrastructure assets. Under recovery of costs impairs the financial health of utilities, encourages deterioration of assets, and slows the pace of service expansion. In addition, because of inequitable access to infrastructure services, these subsidies are often highly regressive, largely bypassing the poor. Usually, affordability would become a binding constraint in low-income countries only when service coverage starts to exceed 50 percent.<sup>11</sup> In the poorest of countries, and those with exceptionally high infrastructure costs, full cost recovery may be unachievable. Even in these cases, operating cost recovery should be a feasible objective, with subsidies limited to capital costs. Simulations suggest that raising tariffs to cost recovery would have only minimal effects on poverty rates in most cases. Underpricing infrastructure services is costing Africa \$4.2 billion a year in forgone revenues.<sup>12</sup>

**Limited and unreliable data:** Data on the quantity and quality of infrastructure assets and the associated services is very limited in most of the countries and in many cases unreliable. This is even more acute in less developed countries. Many countries do not have comprehensive asset registers and the workload of getting the initial information generated and organized is time and resource demanding. This makes the prioritization process even more challenging and the results less robust.

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<sup>11</sup> Op. cit,

<sup>12</sup> Ibid.