

January 2017

Quality Infrastructure: Ensuring Sustainable Economic Growth

Daniel F. Runde

Infrastructure is the physical undergirding of any society, and a country's infrastructure plays a large role in determining its long-term economic and social trajectory. One World Bank study found that infrastructure not only accounted for over half of Africa's improved growth performance from 2001 to 2005, but also yielded indirect human development benefits in terms of disease reduction, health and education, and market creation.

Global infrastructure demand is estimated at approximately \$3.7 trillion annually, with the majority of that demand being generated in developing countries. Asia alone will require more than \$700 billion annually to support its growing infrastructure needs through 2020. As developing countries continue to experience population growth, rapid urbanization, and economic and industrial expansion, the need for effective and high-value infrastructure will remain acute.

In the context of this gap, and the global efforts to achieve the newly agreed upon Sustainable Development Goals (SDGs), there is a clear window of opportunity to bring a new approach to infrastructure that focuses on delivering the best long-term value for each infrastructure investment. Japan, in particular, has taken the lead on this issue with its focus on "quality infrastructure," a concept that has begun to attract broad global support.

One way or another, developing countries will take action to build the infrastructure they require, and the choices they make today will have lasting economic, social, and environmental impact. If a bridge collapses, a power plant falls short of its planned output, or a water sanitation facility fails to deliver clean drinking water, the impacts can be severe. A global consensus on quality infrastructure and a roadmap forward to achieve quality infrastructure are required.

What Is Quality Infrastructure?

There is still no clear definition for quality infrastructure, and given the rapid development of technology, we can expect the definition to evolve over time. That said, there are some agreed upon principles that the international community has set out.

At a minimum, quality infrastructure should utilize the best available technology to be reliable, economically and environmentally efficient, and adherent to internationally accepted safeguards and standards. More than that, quality infrastructure investments should align with long-term country strategies for economic development in a way that improves the flow of services, builds local capacity, and drives job creation. Meeting this standard requires thorough project preparation, innovative financing, and capable management and maintenance following the initial construction.

In May 2016, the G7 released the Ise-Shima Principles for Promoting Quality Infrastructure Investment to reaffirm “the critical importance for stakeholders to work coherently to bridge the existing global demand-supply gap of infrastructure investment by promoting quality infrastructure investment so as to promote strong, sustainable and balanced growth and to enhance resilience in our society.”

The Ise-Shima Principles set out a coherent and organized framework for bridging the global infrastructure gap. The five principles, listed below, are far from comprehensive, but should serve as a starting point for any conversation on quality infrastructure development.

- Principle 1: Ensuring effective governance, reliable operation, and economic efficiency in view of life-cycle cost, as well as safety and resilience against natural disaster, terrorism, and cyber-attack risks
- Principle 2: Ensuring job creation, capacity building, and transfer of expertise and know-how for local communities
- Principle 3: Addressing social and environmental impacts
- Principle 4: Ensuring alignment with economic and development strategies, including aspects of climate change and environment at the national and regional levels
- Principle 5: Enhancing effective resource mobilization including through Public-Private Partnerships (PPPs)

Infrastructure that fails to meet these standards of efficiency, safety, and economic sustainability may be less expensive in the short term but imposes huge costs on future growth and development. All economic growth relies upon consistent quality infrastructure, and in many ways, low-quality infrastructure is worse than no infrastructure at all. Firms and individuals can work around a lack of infrastructure because it’s predictable; low-quality infrastructure is unpredictable and therefore harder to manage.

A positive example of a high-value infrastructure project that meets these standards is Taiwan’s high-speed rail, which has been in operation since 2007. Over that time, there has not been a single accident, the rail survived a major earthquake in 2010 without any lasting damage, and trains arrive on schedule over 99 percent of the time.

Procuring, building, and maintaining this type of infrastructure is a process that requires contributions from a broad array of stakeholders. Local governments, bilateral development agencies, multilateral development banks, and private-sector companies all have a critical role in promoting the best possible infrastructure in developing countries. It is a challenge to get all these actors and institutions working together, but when they do the impact is significant.

Why Do We Need Quality Infrastructure?

High-quality infrastructure provides direct positive impacts, including higher efficiency, increased safety, decreased environmental impact, and more effective delivery of public goods and services. In most cases, it's easy to appreciate the value delivered by quality infrastructure. In developed countries we tend to assume that hospitals will have consistent access to power; that our water and air will be relatively clean and free of pollution; that roads, ports, and airports will be available to transport people and goods to the places they need to go.

A high-quality infrastructure investment also has positive spillover effects that range from job creation and increased foreign direct investment to improved tax revenue. These impacts were not recognized in the past, but organizations like the Asian Development Bank Institute (ADBI) have done work to quantify the positive spillover effects delivered by quality infrastructure. In the case of the Tashguzar–Boysun–Kumkurgon railway line in Uzbekistan, ADBI identified a 2 percent increase in the regional gross domestic product (GDP) growth rate in affected regions, 5 percent value add in industry, and 7 percent value add in services as a result of the project. A similar ADBI study of the STAR highway in the Philippines found that the project had “a significant impact not only on business taxes, but also on property taxes and regulatory fees.”

The other side of this conversation is that low-quality infrastructure, even when it comes at a significantly lower up-front price, imposes lasting costs. Poorly planned and constructed infrastructure may not be able to fully perform its planned use, and it can also lead to long-term public debt, accidents, and environmental damage.

While it is easy to understand the developmental importance of power generation, low-efficiency and high-emission power plants come with their own costs. A 2015 study estimated that outdoor air pollution in China contributes to the deaths of about 4,400 people per day. In disaster scenarios, which are common in the Asian regions where infrastructure demand is the highest, poorly constructed infrastructure can collapse causing both human and economic costs.

Unfortunately today, there are many examples of low-quality infrastructure projects that are poorly managed, face delayed completion and huge cost overruns, and pose potential safety concerns. From bridge collapses in India to years of delays, accidents, and billions of dollars in cost overruns in metro construction in Brazil, local governments and populations are the ones who bear the brunt of the cost.

How Can We Ensure Quality Infrastructure?

The first and most important step is building recognition for the importance of quality infrastructure. This process is already well underway. Beyond the aforementioned Ise-Shima Principles, the G20 Leaders' Communique provides a strong endorsement for the value of quality infrastructure in terms of "life-cycle cost, safety, resilience against natural disaster, job creation, capacity building, and transfer of expertise and know-how," in addition to limiting social and environmental costs.

Although there are some agreed upon principles and approaches to promoting quality infrastructure, the most challenging aspect remains identifying concrete steps and action items for relevant stakeholders around the world.

Life-Cycle Cost Procurement: Ensure broad change in the global procurement norm—away from low-bid and toward life-cycle cost. Low-bid systems are easy to understand, but they don't deliver the best value for investment over time. Ultimately, maintenance, malfunction, and less-effective service delivery drive up the total cost of the investment. Life-cycle cost procurement seeks to take into account the totality of these costs to deliver a better value for investment.

The World Bank recently shifted to life-cycle cost assessment in its own procurement. This is important, because in many cases the World Bank procurement method serves as a de facto standard setter for developing country policy. This is a positive step, but there are practical barriers to implementing life-cycle cost procurement systems.

Training and Capacity Building: Provide or enable large-scale training for public-sector officials. While life-cycle cost procurement standards have the potential to shift the global standard in infrastructure investment toward a higher quality paradigm, it will require training for tens of thousands of procurement officials around the world. To take life-cycle costs into account, officials need to build a more nuanced understanding of value over time. Training and capacity building are necessary to achieve this higher standard of procurement decisionmaking.

Bilateral development agencies and multilateral development banks must play a huge role in providing technical assistance, training, and capacity building to help officials in this space. The Japanese International Cooperation Agency (JICA) is already a leader in this area, but given the scale of training required, no single country or organization will be able to fill this gap alone.

The Global Procurement Initiative (GPI), spearheaded by the U.S. Trade and Development Agency is an example of bilateral and multilateral donors collaborating to help "public officials in emerging economies to better understand the total cost of ownership of goods and services for infrastructure projects." The GPI currently has seven partner countries and has trained more than 600 officials.

Standards and Certification: Promote new standards and certification for infrastructure projects and professionals. The international community is well positioned to set a global standard for

quality infrastructure, as well as to provide training certifications for public servants managing infrastructure procurement and construction. The World Bank is currently implementing a Public-Private Partnership certification program that could be mirrored or expanded upon to address challenges in the infrastructure space. Something similar to a certified public accountant or chartered financial analyst certification system for infrastructure would have broad ranging impact.

There need to be practical incentives for people, companies, and governments to meet a higher standard in the infrastructure space. Something akin to the Equator Principles, a framework used by global financial institutions to assess and manage environmental and social risk in investment projects, could be one way for donors to deliver value beyond financial support or technical assistance.

Project Preparation: Expand and refine demand-driven global project preparation support. Despite the enormous amount of investment needed to meet the global infrastructure gap, the key problem is frequently not the availability of financing. Many private companies are interested in investing in infrastructure projects, and have the resources available for such investments, but they are unable to identify “bankable” projects that offer viable investments with reasonable return on investment.

High financial risks, low local capacity, and lack of feasibility dissuade many private investors from making infrastructure investments. While there has been a notable increase in the number of International Project Preparation Facilities in recent years to help address this challenge, there is still significant room for bilateral and multilateral donors to help improve the quality of this support. CSIS released a report on this topic in 2016 and called for an increased focus on project preparation to catalyze private-sector investment in infrastructure development.

Conclusion

The enormous scale of the global infrastructure gap is well known, and until the gap is addressed, we will have slower economic growth, productivity increases, and human development around the world. A 1996 paper by Charles Hulten of the National Bureau of Economic Research (NBER) found that effective use of infrastructure resources explains more than 40 percent of the growth differential between high and low growth rate economies.

Achieving high-quality, economically efficient infrastructure is far more than a financing challenge. The main gaps in many developing countries are effective rule of law, consistent regulatory norms, land titling issues, and the capacity of public officials to plan and manage large-scale infrastructure. These issues are relevant at the national level, but also at the provincial and municipal level, where officials are on the front lines of infrastructure procurement and management.

Another element of this challenge is that infrastructure investment is a long-term process. The full outcomes and consequences of investment decisions around power generation, transportation systems, urban planning, and water management are not felt for 30 or 40 years. This timeline does

not align with the typical political cycle facing leaders making decisions around infrastructure development.

These are breakdowns that donors, including the United States, Japan, the European Union, and multilateral institutions can help address. Expert advice and financial support will remain critical contributions from the donor community, but the scope of support needs to be extended. By spreading information and knowledge, supporting the creation and adoption of new global infrastructure standards, and training local officials to meet these standards, donors can have a catalytic effect on the quality of infrastructure around the world.

The infrastructure gap is enormous, but there is an opportunity to make a significant impact with relatively small amounts of money through training and certification of public officials that manage infrastructure projects. The ADB and Japan have already made targeted commitments to train and certify public-sector procurement officials, and other donor agencies should follow their lead. If we follow through on necessary capacity building in the public sector, private-sector investment will follow.

Acknowledgments

This project and report were made possible through the generous support of the Mitsubishi Research Institute.

About the Author

Daniel F. Runde holds the Schreyer Chair in Global Analysis and is director of the Project on Prosperity and Development at the Center for Strategic and International Studies in Washington, D.C.

This report is produced by the Center for Strategic and International Studies (CSIS), a private, tax-exempt institution focusing on international public policy issues. Its research is nonpartisan and nonproprietary. CSIS does not take specific policy positions. Accordingly, all views, positions, and conclusions expressed in this publication should be understood to be solely those of the author(s).

© 2017 by the Center for Strategic and International Studies. All rights reserved.