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Infrastructure

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Business Priorities for the
U.N. Sustainable Development Goals

Investment in infrastructure of all kinds – physical assets (e.g., roads and bridges) as well as sustainable solutions for the delivery of reliable energy, clean water, communications, logistics and mobility – will be key to achieving the proposed U.N. Sustainable Development Goals and their core mission of poverty reduction. Business, including the engineering, procurement and construction (EPC) industry, has a stake in and role in providing quality infrastructure, whether built or “human” and ensuring that is responsive to societal needs and economic growth imperatives. Further development of the SDGs and their support and implementation should reflect an integrated interpretation of what infrastructure consists of, how it is best planned and managed at local, national and regional levels, and the importance of improved collaboration among private and public sector actors. USCIB encourages governments and the international community to engage with business on the opportunities and enabling frameworks to strengthen access and inclusiveness, resilience, and “smart” and other innovation-related aspects of infrastructure investment and delivery as part of the U.N. Post 2015 Development Agenda.

Executive Summary

There are three underlying premises of this paper:

- First, infrastructure is not just about physical assets (e.g., roads and bridges), but also about sustainable solutions for the delivery of reliable energy, clean water, communications, logistics and mobility.
- Second, infrastructure advances the poverty reduction outcomes envisioned in the Post 2015 SDGs, and business, including the engineering, procurement and construction (EPC) industry, is an essential partner in this global effort and needs essential infrastructure to expedite development.
- Third, infrastructure is fundamental consideration for businesses of all sizes and sectors. Once regarded as a public sector activity, global development needs have led to the recognition that business has a stake in and role in providing quality infrastructure, whether built or “human¹” that is responsive to societal needs and economic growth imperatives.

USCIB believes that further development of the SDGs and their support and implementation should reflect an integrated interpretation of what infrastructure consists of, the multiple dimensions that are managed at local, national and regional levels, the relevance and contributions of a wide range of business sectors to infrastructure and the opportunities for improved collaboration among private and public sector actors.

We encourage governments and the international community to engage with business on the opportunities and enabling frameworks to strengthen access and inclusiveness, resilience, and “smart” and other innovation-related aspects of infrastructure investment and delivery as part of the U.N. Post 2015 Development Agenda.

The growing recognition of infrastructure as a fundamental catalyst for development is connected to key global trends and their impacts on shared prosperity. With an expected global population of over 8 billion by 2030, purposeful, smartly-designed and properly maintained infrastructure will become critical to expanding society’s access to public goods, as well as productive assets and innovations that advance individual and communal capacity, wellbeing, and national economic growth.

Conversely, failing to address global infrastructure needs in the U.N. Post-2015 Development agenda will not only weaken economic growth but also potentially reverse some of the positive gains seen since the adoption of the 2000 United Nations Millennium Development Goals (MDGs), as well as compromise future efforts to achieve the SDG targets. USCIB offers four recommendations to help frame infrastructure as one of the indispensable foundations for achieving the U.N. Post 2015 Development Agenda and SDGs. These recommendations are not exhaustive:

¹ “Human” infrastructure can be understood to include health care and education.

- **Promote governance frameworks involving multi-stakeholder inputs from civil society, government and business to strike the right balance between top-down and bottom-up decision-making processes.** This approach also helps to organize policies and prioritize projects at a systems level, rather than pursue single-purpose projects without consideration of other needed development, thereby promoting benefits for multiple sectors simultaneously.
- **Promote strategic infrastructure planning alongside the wider development agenda through technical and contracting frameworks which rank and prioritize investments according to need, return on investment, and affordability.** This approach helps governments to prioritize within infrastructure sectors and to assess benefits with costs and budget accordingly.
- **Develop a fuller range of alternative financing schemes to address the constraints on public funding and commercial debt.** This includes continuing to support multilateral financing institutions and export credit agencies, improving public-private partnerships, promoting project bonds and non-bank lending instruments, and optimizing existing infrastructures for productivity gains.
- **Leverage technology and data analytics to improve project quality and greater certainty of outcome.** Information technologies and data analytics should not only be used to operate cities more efficiently and sustainably, but also to help advance master planning, conceptual design and engineering, and construction. Designs for climate resilience, for example, can take into account projections for rainfall, tides, temperature and population in order to prepare for changing needs, vulnerabilities and opportunities.

Business Priorities for the Post-2015 Sustainable Development Agenda: Infrastructure

RESOURCE CONSTRAINTS, CLIMATE RESILIENCY, DATA ANALYTICS

Infrastructure issues confronting developed and developing nations are much discussed. Mature economies face the challenge of maintaining and modernizing critical infrastructures, such as transport, power, water, and telecommunications. Developing and emerging economies continue to grapple with planning infrastructure to deliver basic human needs, including water, sanitation, and electricity. Underlying these issues is the challenge of smarter decisions, better design and construction, innovative financing, and positioning the private sector as part of the solution.

While infrastructure has traditionally been viewed as primarily a public sector activity, the business and global development case for infrastructure has evolved and converged over time around enhancing access to limited resources and opportunities.² This evolution has been shaped by a confluence of powerful global trends:

- **Resource Constraints:** The UN estimates that the global population will reach over 8 billion people by 2030. The implications of this on urbanization, energy and water security, and transportation – to name a few – could be profound. An estimated \$57 trillion³ in infrastructure investment may be required by 2030 to keep pace with projected global GDP growth of around 3.8%.⁴ Core infrastructure (e.g., utilities, energy, and transport) may grow at an average of three percent per year through 2017, while social infrastructure (e.g., water, healthcare, and education) may grow at an annual average of four percent.⁵
- **Climate Resiliency:** Over the past decade there has been a growing concern and attention to building “resilience” into construction projects to withstand extreme weather conditions and address public safety and economic issues. The C40 Cities Climate Leadership Group, a network of the world’s megacities working to address climate change, reports that 98 percent of urban leaders surveyed, identified extreme weather as a major risk to their city. Their concerns are justified: weather-related losses and damage have risen from an annual average of about \$50 billion in the 1980s to close to \$200 billion over the last decade.⁶ These weather events have precipitated a rethink of the intersection between communities, governments, and the private sector in promoting resiliency in large-scale construction

² “Resilience in a Hotter World” (Harvard Business Review, April 2014).

³ McKinsey Global Institute report:

http://www.mckinsey.com/insights/engineering_construction/infrastructure_productivity.

⁴ Centre for European Policy Studies: <http://europa.eu/espas/pdf/espas-report-economy.pdf>.

⁵ Bain & Company research on the infrastructure investment market: <http://www.bain.com/about/press/press-releases/global-infrastructure-investment-to-reach-four-trillion-dollars-by-2017.aspx>.

⁶ The World Bank: <http://www.worldbank.org/en/news/feature/2013/11/18/disaster-climate-resilience-in-a-changing-world>.

projects. By 2030, there may be 325 million people vulnerable to extreme weather in Africa and Asia and trapped in poverty.⁷ Large coastal cities, many of them in middle-income nations, could face combined annual losses of US\$1 trillion from such events by mid-century.⁸

- **Data Analytics:** Innovative technologies and data analytics are increasingly being integrated into the planning and design aspects of sustainable urban development. Large information and technology companies are exploring the applicability of their products and services to solve persistent problems related to urbanization. So-called “smart technologies” can also foster collaborative frameworks between citizens, municipal governments, and businesses by making data and information more accessible, which promote collective decision-making processes to develop more durable, sustainable cities.

Advancing Infrastructure in the SDGs

Common among the macro trends discussed above is how infrastructure is closely linked to achieving SDG targets. However, every economy is different, and by extension, societal needs and political decisions vary with regard to infrastructure priorities. In many respects, we are entering a new era of industrial development where a rethinking of infrastructure, as it relates to achieving the SDGs, is critical. **Enhanced collaboration between civil society, government, and business in the planning, design and implementation of core and social infrastructures should (i) grow economies, (ii) build resiliency; and (iii) help to solve societal problems. Infrastructure development, similar to any development initiative, is more successful and sustainable when it involves all key stakeholders in decision-making and, where possible, the planning and execution of projects.**

Alternative means of financing large-scale infrastructure projects must also be addressed if we are to advance infrastructure as an SDG, and across all SDGs. It is beyond the scope of this paper to identify financing solutions, but we recognize it as a complicating factor given the fiscal austerity measures and budget constraints common among many governments. While public sector institutions, such as export credit agencies, will continue to be important sources of funding, private investment, pension funds and sovereign wealth funds may increasingly supplement the market. Finding creative ways to leverage public funding will be key, and public-private partnerships for new infrastructure projects may also complement the market over time.⁹

Against this backdrop, advancing infrastructure as a SDG requires enhanced cooperation and partnerships at the local, national and global levels around stakeholder governance, flexible financing, appropriate policies, access to knowledge and innovations, and capacity building.

⁷ The World Bank: http://www.worldbank.org/content/dam/Worldbank/document/SDN/Full_Report_Building_Resilience_Integrating_Climate_Disaster_Risk_Development.pdf.

⁸ *Ibid.*

⁹ Price Waterhouse Coopers: <http://www.pwc.com/gx/en/capital-projects-infrastructure/publications/cpi-outlook/assets/cpi-outlook-to-2025.pdf>.

USCIB member companies are facing and managing challenges across these dimensions in a variety of ways (examples can be found at the USCIB website BusinessforPost2015.com). For example, Bechtel Corporation is currently working through a more collaborative model to deliver several pioneering civil projects¹⁰ that are helping to put national economies – both in the developed and developing world – on a critical path towards achieving their sustainable development outcomes.

- Gabon’s approach to its national infrastructure development is a promising new model for public-private partnerships (see Box 2). Bechtel helped establish and continues to support l’Agence Nationale des Grands Travaux (ANGT) – the government’s executing agency of the \$25 billion National Infrastructure Master Plan (NIMP). Bechtel will eventually transition ANGT activities to the Gabonese staff that Bechtel recruited and trained.
- Crossrail (see Box 1), the largest infrastructure project in Europe, is expected to inject nearly \$70 billion into the UK economy. Among its many development outcomes, Crossrail will help improve mobility in and around London by reducing crowding on its existing transport network. It is estimated to bring an extra 1.5 million people within a 45 minute commute of London. Bechtel is also helping to raise the bar on “sustainable railway” design and development by using data, techniques, and technologies to reduce carbon emissions during construction and beyond.

Box 1

Box 2

Project: Crossrail Customer: Crossrail Ltd. Our role: Project management	Project: Gabon infrastructure Customer: Government of Gabon Our role: Management and technical support
<p>London’s Crossrail includes more than 26 miles (42 kilometers) of new rail tunnels and nine new London rail stations. When completed, it is expected to eliminate more than 300 million vehicle miles (nearly 485 million kilometers) each year, significantly easing congestion in & around the city.</p> <p>Crossrail’s comprehensive carbon management plan is aggressive. After estimating that 15 percent of the project’s lifecycle carbon emissions would be attributable to construction, Bechtel set out to reduce the carbon footprint by 5 percent—all without increasing costs. To date, we have exceeded these goals—cutting emissions by nearly 10 percent.</p>	<p>Bechtel and the Government of Gabon developed and are delivering a groundbreaking \$25 billion NIMP that will enable the country to modernize the national workforce, expand access to social development, and advance connectivity within the country, across Africa, and with the rest of the world. This unique project is drawing attention from other African governments as an example of how public-private partnerships can develop, design, and execute national development plans.</p> <p>The success of the infrastructure initiative rests in large measure on project management and accountability. Bechtel helped organize and currently manages ANGT, a government agency that oversees the execution and</p>

¹⁰ See Bechtel Sustainability Report for more information: <http://bechtel.com/Sustainability>.

Working closely with our project partners, we introduced several innovative plant and equipment technologies in select areas of the project to further reduce carbon impact. For example, our team has used diesel-electric hybrid excavators that consume 25 percent less fuel and produce 30 percent less carbon emissions than conventional excavators. We also substituted nonpetroleum biodiesel fuel in generators used to operate cranes, selected LED site lighting that consumes 47 percent less energy, and relied on zero emission hydrogen fuel cells as portable power sources.

By monitoring digital dimming, movement detection, and photocell light equipment, the team was able to provide a continuous real-time picture of consumption that helped to promote operational efficiencies. The energy needed to run services for the full design life of Crossrail—120 years—is expected to account for 85 percent of overall carbon emissions, most of which will come from the trains. The team is reducing emissions by focusing on design features to improve energy efficiency, including:

- Reducing the weight of passenger cars
- Establishing targets to reduce energy consumption
- Using regenerative braking
- Placing smart controls in passenger cars for lighting, heating, and air conditioning

delivery of NIMP. ANGT coordinates work with various ministries and government agencies, monitors progress, incorporates new execution tools and processes, and engages local communities about NIMP's progress. The agency translated NIMP's vision into a detailed implementation plan sequenced over 15 years. It also helps local businesses participate in the tendering process and has created and introduced minimum requirements for contracting Gabonese businesses. In 2013, the government invested nearly \$400 million in NIMP's execution, with two thirds of the work undertaken by Gabonese companies.

To prepare the local construction environment for the 21st century, we are advancing the competencies of all workers to implement and maintain international standards for quality, ethics, and safety. To date, 38 contractors have completed 210 courses, including site setup, site plant and vehicle maintenance, proper use of personal protective equipment, and how to conduct environmental risk assessments. We will deliver more than 50 additional courses in 2014 to teach contractors our core environmental, safety, and health processes, helping to create a local construction workforce capable of performing to international standards.

One of the biggest challenges we faced was striking the right balance between prioritizing long-term plans and current needs. By conducting comprehensive feasibility studies across the country, we provided the government a wealth of detailed technical, social, and financial data that enables government authorities to make informed decisions about project plans, designs, and priorities. This approach has not only generated critical information for future developments, but it also put in place a benchmark for how to plan future projects.

Ways to Measure Progress

Monitoring, evaluation, and reporting of development impacts are well discussed within the international development policy community. This should be no different for infrastructure, which can be a direct contributor to, or indirect enabler of, achieving the proposed SDGs.

While it may not be possible to list all the possible ways to measure how infrastructure will deliver SDG outcomes, **there are several key themes to advance the development of global performance indicators and supporting measurement tools. Among them are (i) ensuring public access to core and social infrastructures; (ii) planning for resiliency of infrastructure in relation to atmospheric changes; and (iii) innovating infrastructure sustainability in relation to reducing carbon emissions, improving energy efficiency and savings.**

There are also several tools currently available in the market to assess and rate the sustainability benefits of infrastructure projects, such as the Australian Green Infrastructure Council (AGIC)'s IS tool, the Institution of Civil Engineers' CEEQUAL tool, and the Institute of Sustainable Infrastructure's ENVISION too. While these rating tools cannot presently be endorsed as "ready to use" metrics for SDGs, they do reflect an evolution in thinking about infrastructure sustainability that should inform the search for new and widely-accepted tools for comparing sustainability between different assets, or different design solutions for a single asset.

While the methodologies for measuring infrastructure sustainability continue to evolve, a "return on investment" approach should more fully capture the environmental, economic, and social impacts in an objective and quantifiable manner. Moreover, the methodologies should assess multiple development outcomes, including indirect ones, in order to improve decision processes regarding future infrastructure needs and requirements.

Conclusion

While draft SDG #9 on "Infrastructure, Industrialization and Innovation," notably paras. 9.1, 9.4 and 9.a proposed by the U.N. Open Working Group on the SDGs in its "Outcome Document" does touch on some of the priorities discussed in this paper, USCIB believes that **further development of the SDGs and their support and implementation should reflect an integrated interpretation of what infrastructure consists of, the multiple dimensions that are managed at local, national and regional levels, the relevance and contributions of a wide range of business sectors to infrastructure and the opportunities for improved collaboration among private and public sector actors.**

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The Business Priorities for the SDGs series

This discussion paper is part of the Business Priorities for the SDGs series, a suite of papers developed by the United States Council for International Business (USCIB) intended to inform the thematic development of the United Nations Sustainable Development Goals (SDGs).

About USCIB

The United States Council for International Business advances the global interests of American business both at home and abroad. It is the American affiliate of the International Chamber of Commerce (ICC), the Business and Industry Advisory Committee (BIAC) to the OECD, and the International Organisation of Employers (IOE). As such, it officially represents U.S. business positions both in the main intergovernmental bodies and vis-à-vis foreign business communities and their governments.

USCIB addresses a broad range of policy issues with the objective of promoting an open system of world trade, finance and investment in which business can flourish and contribute to economic growth, human welfare and protection of the environment. It promotes open markets, competitiveness and innovation, sustainable development and corporate responsibility, supported by international engagement and regulatory coherence.

USCIB has participated in the Rio sustainability deliberations since 1992, as well as the UNFCCC, the UN DESA and OWG SDG discussions, the Finance for Development discussions and in UNEP's meetings in Nairobi and Paris. More information about USCIB's policy priorities for the SDGs can be found at <http://www.businessforpost2015.org/>.

About Bechtel

Bechtel is one of the most respected engineering, procurement, construction, and project management companies in the world. It delivers complex—often first-of-a kind—projects through unequalled know-how and experience. Bechtel is a member of the USCIB and concurrently serves as Vice chair of the USCIB Corporate Responsibility Committee and Co-Chairs the USCIB Task Force on the SDGs. For more information, please visit www.bechtel.com.