The next generation of infrastructure

By Aaron Bielenberg, Mike Kerlin, Jeremy Oppenheim, and Melissa Roberts

Sustainable projects will add trillions to the world’s infrastructure costs. Our report finds that private-sector investors must look at new ways to fill the gap.

The international consensus on sustainable economic development gained momentum in 2015, culminating last December in Paris with a broad global accord on reducing the level of greenhouse gases. A new McKinsey report—Financing change: How to mobilize private-sector financing for sustainable infrastructure—examines a key element of progress: ensuring that the transport networks, energy networks, and waste and water facilities in demand across the globe, notably in middle-income countries, will be climate resilient, be socially inclusive (by diminishing poverty or increasing employment), and reduce carbon emissions.

While business groups, development banks, and governments have all pledged significant increases in funding and research for sustainable infrastructure, the scale of the challenge is enormous: from 2015 to 2030, global demand for new infrastructure could amount to more than $90 trillion, almost double the estimated $50 trillion value of the world’s existing stock. That means we will literally be rebuilding our world over the next 15 years. Moreover, while such investments promise to multiply economic and business opportunities, a number of barriers must fall to attract the necessary finance.

Making it happen

The world needs to find $7.7 trillion annually over the next 15 years, up from $3 trillion today, to pay not only for additional infrastructure but also for sustainable projects, which are typically more expensive than traditional ones (exhibit). Our projections show that this sustainability “premium” could add $14 trillion to overall infrastructure costs between 2015 and 2030. Corresponding declines in investment for fossil-fuel projects and the lower cost of investing in densely configured urban areas will offset some of that. The bottom line: we estimate that an additional 6 percent in up-front capital will be required to raise the level of the new infrastructure to the sustainability standards achieved, for example, in Colombia’s recent Fourth Generation roadway expansion and Kenya’s Lake Turkana wind-power network.

This demand differs by sector and country type. Our research showed that much of the sustainable-infrastructure funding gap is likely to occur in middle-income nations—those with annual per-capita incomes from $1,045 to $12,745—whose continued development and increasing prosperity are vital to global growth prospects and business opportunities. We estimate that the energy sector, which will also be critical for higher living standards and levels of business expansion, accounts for more than 50 percent of the funding gap for sustainable projects in these middle-income economies.
The vast scale of what’s needed, combined with fiscal constraints in the public sector, suggests that private-sector financing will be crucial. Corporate and institutional investors, we estimate, could provide $1 trillion to $1.5 trillion in additional private capital for sustainable projects—up to half of the annual investment gap. But that will happen only if several structural barriers and market inefficiencies currently adding costs and hampering returns are removed. These include the following:

- **Poor transparency.** Only half of the G-20 nations publish their infrastructure project pipelines, so it is difficult for investors to learn which projects are available and to assess whether they are “bankable.”

- **A lack of scale.** Often, economies of scale are not sufficient for larger investments. A third of the outlays in new clean-energy capacity, for example, go to small-scale projects, like rooftop solar.

- **Shaky operating models.** In sub-Saharan Africa, for instance, 70 percent of the water utilities provide is wasted by leakage, unmetered, or stolen.

- **Corruption.** Notwithstanding the attractions of infrastructure investments, corruption often makes adjusting their return-to-risk ratios particularly difficult.

- **Taxes and regulations.** Tighter global banking regulations, such as Basel III, have the unintended effect of reducing the interest of big global institutions in longer-term cross-border infrastructure investments. Uncertain local tax regimes often raise the bar for investments by increasing the risk that returns will take a hit.

The efforts of development banks and international aid organizations may be particularly important. Bodies such as the International Finance Corporation could provide technical assistance to nations by helping them to prioritize projects and demonstrating the feasibility of returns to investors. (For example, they could counsel government officials on the relative risks and returns of new roadways as opposed to rapid-transit systems.)

Global organizations can also help finance the investment premiums that some projects demand. The European Bank for Reconstruction and Development, for example, finances higher up-front costs for sustainable energy projects after it audits the long-term savings from new energy efficiencies. (The savings are applied to the amortization of the investment premium over the life of the project.) Development banks can also offer loan guarantees, particularly for the higher-risk projects that may have difficulty attracting private lenders.

Governments too can play an important role by requiring potential bidders (or would-be private partners) to meet sustainability criteria. Suppliers bidding on Australia’s $8.3 billion North West Rail Link project, for instance, had to meet sustainability requirements covering materials, transport, waste, energy, and water.

Structural improvements in financial markets could also encourage greater private participation. The wider syndication of infrastructure loans by development banks, for instance, would significantly broaden the capital base. Establishing a secondary market for sustainable infrastructure-related securities would provide for the greater recycling of development capital, and more innovative financial instruments could give investors greater flexibility.
World leaders have committed themselves to sustainable economic development and to the heightened demands of climate policies. Accelerating the flow of private capital into sustainable energy, water, and transport systems will be a fundamental element of any realistic effort to reach these ambitious new goals.

*Download the full report on which this article is based, Financing change: How to mobilize private-sector financing for sustainable infrastructure* (PDF–2.76MB).

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New horizons for infrastructure investing

By Tyler Duvall, Alastair Green, and Mike Kerlin

The world needs new infrastructure—$57 trillion worth over the next 15 years, according to the McKinsey Global Institute. That’s an enormous sum, but as investors well know, there is no shortage of capital. Institutional investors are jumping in with both feet; indeed, infrastructure is now seen as an asset class in its own right. Limited partners and giant sovereign-wealth funds are putting money into play. Multilateral and development-finance institutions also are stepping up their efforts. Across all investor groups, we estimate that more than $5 trillion a year is available to build airports, roads, ports, and so on.

If capital is not the problem, then what is? Investors are having trouble finding attractive projects. At a recent Global Infrastructure Initiative Roundtable held in New York, a senior member of a leading global infrastructure investor pointed out that his challenge is to clarify risk and policy uncertainties associated with potential deals, rather than find the capital to pursue them.

It seems that, in some ways, investors have not yet turned over all the necessary rocks. New winning deals can be found if investors shift gears and try new approaches. Here are three principles that can guide the search.

Consider emerging markets and greenfield assets

Investors need to deal with each emerging market individually and harness local knowledge on the way. That may sound obvious, but it needs to be said. The fact is, many investors (or their limited partners) restrict themselves to Organisation for Economic Co-operation and Development (OECD) members or other investment-grade countries. Others will not take on “greenfield assets”—new-build infrastructure projects where investors must take on the risk of development and construction. Instead, they prefer to focus on already-built brownfield assets. As another infrastructure investor recently told us, one reason is that emerging markets’ greenfield assets present more severe information asymmetries to foreign investors.

As more money flows into brownfield OECD markets (industry-data provider Preqin has estimated that the number of institutional investors in the sector more than doubled between 2011 and 2014), heightened competition is placing pressure on returns. Although measuring precise changes in such investments is difficult, many institutional investors with long track records are looking beyond brownfield OECD infrastructure assets in response to rising prices.
Investors who want to consider these types of opportunities should be aware that doing so could mean taking calculated risks in emerging markets; adopting a country-by-country approach to risk assessment is important. But identifying appropriate returns for each market is not easy, in part because of the scarcity of reliable information regarding typical returns from infrastructure projects by asset class, region, and stage of investment. The rewards of emerging-market deals can be significant (for instance, power-plant deals can often generate project-level returns 5 to 10 percent higher than for a comparable OECD project, although they typically entail greater currency, political, or counterparty risk).

In addition, investors might want to ensure that limited-partner agreements allow them the flexibility to invest in what may be considered riskier countries, as long as these markets meet certain criteria. For instance, if investors consider a country like Croatia, they would find that though the three major rating agencies rate the country as sub-investment-grade, Croatia has an attractive regime of public–private partnerships (PPPs). The Economist Intelligence Unit rates it well ahead of its peers in southern Europe in many ways, and it has a more favorable legal and regulatory profile than a number of countries that do better at attracting capital. Infrastructure projects in countries like Croatia that fall just outside investment grade (rated BB+ through BB– by Standard & Poor’s) account for $4 trillion of infrastructure needs over the next five years.

Smart investors will deploy a variety of tactics—not least assessing the sometimes considerable risk profiles of potential investments and partnering with local sponsors and development-finance institutions—in order to pursue high-growth projects where fewer players are at the bidding table.

**Bid for overlooked public assets**

Many governments, particularly in developing markets, are sitting on a stock of cash-generating assets. The world’s infrastructure stock is valued at an estimated $48 trillion. Some of these assets are already profitable, while others could turn a profit if operations improved. There are examples at hand. Greece’s government recently agreed to sell a network of 14 regional airports to a consortium, and in 2013, the Brazilian government sold for nearly $800 million a 30-year concession to operate Confins Airport in the state of Minas Gerais.

Reforming or privatizing state-owned infrastructure presents challenges, of course. An asset may operate at a loss, have a difficult labor situation, or need to be untangled from other businesses unsuitable for privatization. Despite these complexities, purchasing these assets can yield greater returns from selling assets or turning money-losing assets into profitable ones. For example, Jordan’s Queen Alia Airport once required a government subsidy to operate; a private-sector operator not only has invested in its expansion but also makes enough money that it can now pay fees to the government and remain profitable.

**Deepen partnerships with infrastructure providers**

The infrastructure-finance market is plagued by a lack of information. Governments and businesses aren’t in the habit of sharing best practices or benchmarks with one another, much less the details of what went wrong (or even right). Governments, investors, developers, and operators alike would benefit from sharing more information, in more structured ways. Many governments recognize that developers can be a valuable source of ideas—for example, about which projects would have the best economic returns or how to attract private investment. Early evaluation of project plans can help prospective bidders warn governments if the project looks unviable.
One way to contribute ideas and expertise is to submit unsolicited proposals for infrastructure projects to governments that allow such proposals. Brazil and Colombia, two of the busiest and most promising infrastructure markets in South America, accept them. Other entities are seeking to open new channels of communication. For example, the Port Authority of New York and New Jersey has invited private investors and developers to share their perspectives on how to develop the region’s infrastructure. Tanzania’s government uses “delivery labs” of public-, private-, and social-sector experts to set infrastructure-investment plans. And Chile has developed a way of evaluating PPP projects that rewards developers for proposing low-cost solutions to national-infrastructure problems. These are just a few of the governments showing a growing interest in investors’ views.

It’s common today to hear that too much capital is chasing too few infrastructure assets. But the problem is not a lack of worthy projects; it’s a lack of expertise and, perhaps, daring. Finding attractively priced assets with solid economics is not easy—it requires a change to traditional ways of working. But the deals investors uncover can repay the effort.

This article was adapted from “Making the most of a wealth of infrastructure finance,” Rethinking Infrastructure, May 2015.

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Making the most of a wealth of infrastructure finance

By Tyler Duvall, Alastair Green, and Mike Kerlin

The world will need to spend almost $57 trillion on new infrastructure over the next 15 years, according to the McKinsey Global Institute. That’s an enormous sum, but contrary to popular belief, there is no shortage of capital; in fact, there will be more than enough as both governments and investors increase their focus on infrastructure.

The past five years, for example, have seen a steady rise in the number of institutional investors allocating assets to infrastructure, as well as the establishment of infrastructure as an asset class in its own right. At the same time, thanks to an increased appetite for direct investing by limited partners and the entrance onto the scene of giant sovereign-wealth funds, more money is in play. Meanwhile, multilateral and development-finance institutions are stepping up their efforts. The pool of capital available is deep. Across infrastructure funds, institutional investors, public treasuries, development banks, commercial banks, corporations, and even retail investors, we estimate that more than $5 trillion a year is available for infrastructure investment.

While capital is, of course, necessary, it is not sufficient to ensure success. The money has to be focused on the right projects and then spent judiciously. Here are five principles that can help infrastructure providers make good choices.

1. Establish realistic revenue streams to encourage private financing.

There are two primary sources of revenue for investors in infrastructure. The first is public funds and the other is revenue streams in the form of charges, such as tolls, paid by end users. Historically, government has assumed most of the burden, particularly in emerging markets. But the scale of infrastructure required makes attracting private investment critical.

To do so, projects in difficult-to-finance areas such as roads and water should take their cue from telecommunications. This sector manages to attract investors even in capital-poor countries because it offers a clear return on investment and predictable cash flows. In many cases, particularly in developing countries, people have become accustomed to paying little or nothing for water or roads. But they do, of course, derive benefits, economic and otherwise, from such projects; moreover, there needs to be a way to pay for maintenance. If charging users offers a realistic prospect of covering capital or operating costs, then doing so makes sense, assuming this arrangement makes provisions for low-income users, ensuring they are not overburdened.
To replicate the telecoms model for other kinds of infrastructure, governments should ensure that charges reflect the economic costs. Even a well-structured project will fail to attract private financing if prices are set too low; in that case, the public sector will be forced to cover all the costs.

The roads sector illustrates the difficulty of setting appropriate prices. Drivers in many countries are unaccustomed to paying for using roads and therefore resist such efforts; for example, violence and mass boycotts arose in response to efforts to introduce charges for heavy-goods vehicles in France and urban tolls in South Africa’s Gauteng Province. Moreover, persuading treasury departments to set aside toll revenues for road improvements is difficult. Tolls can be insufficient, and there is always a temptation to divert them elsewhere. Because of these factors, we expect around half of all proposed road projects to go unfinanced and thus unbuilt in the years ahead. That adds costs with respect to congestion and the difficulty of moving goods.

The same is also true of wastewater; the beneficiaries of sewage systems, meaning everyone, often do not contribute to the cost of cleaning up the water. This is particularly true of developing markets, due to the inability to impose and collect charges. In too many cases, that means wastewater is left to pollute the landscape or, worse, seep back into the water supply. However unpopular doing so may be, governments need to set prices for such projects so that investors can earn a reasonable financial return. Otherwise, the systems will not get built.

Once governments have structured projects to provide stable and appropriate revenue streams, they can begin to figure out which ones to do first. Setting priorities is important, particularly in developing countries that have severe fiscal constraints. South Africa’s National Development Plan contains dozens of road, port, and rail projects, including both public and private financing. Its Department of Public Enterprises has flagged several components, including a new coal terminal and a container port, for private investment. These represent investments that would be attractive to private firms.

One way of making investments attractive is to package smaller projects together; pooling project revenues and risks in this way can attract major investors who might otherwise see the individual projects as too small to bother with. The Metropolitan Waterworks and Sewerage System in Manila used this approach to partition and privatize its two water-service areas. The 1997 privatization resulted not only in significantly improved access for the city’s population, but also in healthy local-currency returns for the corporate owners of the Manila Water Company.

2. Focus on finding the right types of capital.

Having a lot of capital available for infrastructure doesn’t mean the right type of money will be there. Privately financed infrastructure projects require both debt and equity to manage risks and satisfy debt investors, who typically take the lion’s share of project costs. We forecast Brazil to have a surplus of debt for infrastructure in coming years but a shortfall in equity financing, due to public indebtedness, a devaluing currency, and highly leveraged corporate balance sheets. And Brazil is not alone. Consequently, many projects will fail to find financing simply because there isn’t enough equity to attract the debt required to complete the transaction.

Development banks can help to fill the equity gap, and in fact, many are scaling up their commitments. For example, the World Bank Group’s International Finance Corporation invests more than $1 billion per year in infrastructure equity and has increased its firepower in recent years by launching a global infrastructure equity fund alongside private-sector investors. In October 2013, the effort successfully completed a $1.2 billion fund-raising, well above the $1 billion target.
Capital is also flowing from nontraditional sources. Some countries require their mandatory pension funds to invest part of their resources domestically. This has helped generate a pool of resources suitable for domestic infrastructure investing. In the small town of Glyncoch, Wales, local crowdsourcing finances construction of a new community center without formal government support. Eliminating the legal barriers to crowdsourcing could ensure that personal, not just institutional, capital can help to build the future.

3. **Encourage investors to consider emerging markets and greenfield assets.**

A sophisticated understanding of countries, regions, and projects is necessary to match capital from investors, developers, and government sponsors alike with the infrastructure projects that need it. Simply put, investors need to deal with each emerging market individually and to harness local knowledge on the way.

That may sound obvious, but it needs to be said. The fact is, many investors (or their limited partners) restrict themselves to Organisation of Economic Co-operation and Development (OECD) or investment-grade countries. Others will not take on “greenfield assets”—new-build infrastructure projects where investors must take on the risk of development and construction. Instead, they prefer to focus on already-built brownfield assets. But as more money flows into brownfield OECD markets (industry data provider Preqin has estimated that the number of institutional investors in the sector more than doubled between 2011 and 2014), heightened competition is placing pressure on returns. Although measuring precise changes in such investments is difficult, many institutional investors with long track records are looking beyond brownfield OECD infrastructure assets in response to rising prices.

Investors who want to consider these types of opportunities should be aware that doing so could mean taking calculated risks in emerging markets; adopting a country-by-country approach to risk assessment is important. In addition, those investors would first need to ensure that limited-partner agreements allow them the flexibility to invest in what may be considered riskier countries, as long as these markets meet certain criteria.

For instance, if investors consider a country like Croatia, they would find that although the three major rating agencies rate the country as subinvestment grade, Croatia has an attractive public–private partnership (PPP) regime. The Economist Intelligence Unit rates it well ahead of its peers in southern Europe in many ways, and it has a more favorable legal and regulatory profile than a number of countries that do better at attracting capital. Infrastructure projects in countries like Croatia that fall just outside investment grade (rated BB+ through BB- by Standard & Poor’s) account for $4 trillion of infrastructure needs over the next five years.

Smart investors will deploy a variety of tactics—such as assessing the risk profiles of potential investments and partnering with local sponsors and development-finance institutions—in order to pursue high-growth projects where fewer players are at the bidding table.

4. **Realize value from cash-generating assets.**

Many governments, particularly in developing markets, are missing the chance to tap a viable source of cash in the form of generating value from existing assets. The world’s infrastructure stock is valued at an estimated $48 trillion. Some of these assets are already profitable, while others could turn a profit if operations improved and subsidies declined. There are examples at hand. Greece’s government recently
agreed to sell a network of 14 regional airports to a consortium, and in 2013, the Brazilian government sold for nearly $800 million a 30-year concession to operate Confin Airport in the state of Minas Gerais.

Reforming or privatizing state-owned infrastructure presents challenges, of course. An asset may operate at a loss, have a difficult labor situation, or need to be untangled from other businesses unsuitable for privatization. Despite these complexities, purchasing these assets can yield greater returns from selling assets or turning money-losing assets into profitable ones. For example, Jordan’s Queen Alia Airport once required a government subsidy to operate; a private-sector operator not only has invested in its expansion but also makes enough money to pay fees back to the government.

5. Deepen partnerships among infrastructure-finance players.

The infrastructure-finance market is plagued by a lack of information. Governments and businesses aren’t in the habit of sharing best practices or benchmarks with each other, much less the details of what went wrong (or even right). Governments, investors, developers, and operators alike would benefit from sharing more information and in more structured ways. Many governments recognize that developers can be a valuable source of ideas—for example, about which projects would have the best economic returns or how to attract private investment. Early evaluation of project plans can help prospective bidders warn governments if the project looks unviable.

One way to take advantage of the ideas and expertise of private-sector developers is to allow them to submit unsolicited proposals for infrastructure projects to government. Brazil and Colombia, which are two of the busiest and most promising infrastructure markets in South America, all accept such proposals. Other entities are seeking to open new channels of communication. For example, the Port Authority of New York and New Jersey has invited private investors and developers to share their perspectives on how to develop the region’s infrastructure. Tanzania’s government uses “delivery labs” of public, private, and social-sector experts to set infrastructure-investment plans. Chile has developed a way of evaluating PPP projects that rewards developers for proposing low-cost solutions to national-infrastructure problems. As each of these approaches becomes successful, private players become more comfortable and more willing to participate, and the public sector becomes more willing to pay attention.

It’s common today to hear that too much capital is chasing too few infrastructure assets. But the problem is not a lack of worthy projects; it’s a lack of expertise and, perhaps, daring. Investment opportunities need to be appraised and prepared properly, and investors need to educate themselves. Marrying investors to assets will require more effort, more innovation, and more thoughtfulness on the part of government and business, but this is vital in order to ensure that there is sufficient investment in infrastructure to support global growth.

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Using PPPs to fund critical greenfield infrastructure projects

By Thierry Déau and Julien Touati

The global infrastructure funding gap is now widely acknowledged: approximately $57 trillion must be invested in infrastructure to maintain GDP growth through 2030, according to the McKinsey Global Institute. The World Bank Group has offered similar estimates. Given the long life span of most infrastructure assets—from 15 to more than 100 years—a higher share of global savings will have to be allocated to infrastructure in coming years. The fast-growing savings managed by institutional investors—estimated at $75.1 trillion in 2011 by the Organisation for Economic Co-operation and Development—must play a central role.

Funding for infrastructure projects can take a number of forms, including non-infrastructure financial products (such as government bonds, infrastructure-related corporate equity, or debt products) and dedicated pure infrastructure financial products. The focus of this article is the latter. Dedicated infrastructure financial products include unlisted equity investment in infrastructure and infrastructure project debt. To date, these products represent a limited share of institutional investors’ asset allocation—less than 5 percent on average, but more than 10 percent for large investors, such as Canadian and Australian pension funds. However, this share is growing, and this asset class is becoming more noteworthy to investors and, subsequently, to regulators.

A particularly interesting area is so-called greenfield infrastructure—or new infrastructure—projects, which are developed as public–private partnerships (PPPs). While PPPs represent a limited share of total infrastructure investments, they are gaining speed. In the United Kingdom, the new framework to fund low-carbon energy-generation projects, the so-called Contract for Difference scheme, strongly resembles a traditional PPP. Also, PPP schemes are becoming more popular in mature economies like the United States and are expected to play a major role in addressing the infrastructure challenges of fast-growing economies like Africa’s.

Why greenfield infrastructure is attractive to institutional investors

Traditional infrastructure-market players, such as governments and utilities, are under financial pressure, and their budgets are strained. They are increasingly looking to private investment to fund infrastructure projects. PPPs can offer a number of benefits, including a whole-life costing approach that optimizes
construction, operation, and maintenance costs, better risk management, and efficient project delivery. Well-structured PPPs can help ensure that greenfield projects are delivered on time and within budget and at the same time generate attractive risk-adjusted returns for investors.

Investors that enter a project in its early stages can capture a premium of several percentage points. Such a return usually takes the form of patient capital, or long-term capital. Investors must wait for the end of the construction period before they can expect a project to begin generating yield. Depending on the complexity of the project, this can take five years or longer (Exhibit 1); for instance, high-speed rail projects are known to be on the longer end of this timeline. However, investors in patient capital are willing to forgo quick returns for greater long-term returns. Typically, while investors in patient capital expect a return, they also value the economic and social benefits of a project.

Exhibit 1
The indicative risk premium and timeline for an infrastructure investment varies by project phase.

To secure this premium, investors must ensure that the risks associated with a project are properly managed. Greenfield projects usually begin with a clearly defined contractual framework that allocates risks to the most natural owners. Exhibit 2 illustrates a generic, multicontract framework that will be familiar to project-finance professionals.

Contract frameworks bring structure and discipline to the execution of greenfield infrastructure projects. For example, the construction risk associated with greenfield projects is typically greater than brownfield projects. By transferring construction risk to experienced contractors and by establishing fixed prices and specific design and build deadlines, project managers and investors can protect against the delays and cost overruns that can plague infrastructure projects. The impact of such rigor can be significant: according to experts, the average cost overrun is below 3.5 percent for project-finance schemes—in particular PPPs—and close to 27 percent for a traditionally procured project.3

Exhibit 2
A project-finance structure identifies parties and agreements.

For investors to secure long-term returns, contracts must address the key risks inherent to all infrastructure projects, not only greenfield projects. Examples include revenue and volume risk, which relate to the effective use of the infrastructure at expected tariff levels (for instance, road traffic), or the availability and affordability of a critical input (for example, gas supply to a gas-fired power plant). These risks can be managed through risk-sharing mechanisms like minimum traffic guarantees from public authorities and long-term off-take agreements.

Political risk assessment and management is also essential over the long term. An infrastructure asset is captive by essence, and its performance relies on the willingness of local counterparties to respect the commitments made at inception. Managing this risk over the long term typically involves focusing on critical assets with proven added value (for example, a strategic urban-transportation project or a power plant essential to national energy supply), negotiating robust contractual agreements, and fully addressing the environmental, social, and governance aspects of all infrastructure projects. Project participants that do this are more likely to secure and sustain support from key government stakeholders and simultaneously protect their investment over the long term.

What government can do to encourage investment

As investment in infrastructure is based on specific assumptions regarding the stability of legal frameworks and public policy over a projected investment period, government agencies can take several steps to encourage PPPs. One, governments are more likely to attract long-term investment if they can provide a clear pipeline of investment opportunities. Investors will only develop internal knowledge and
skills in a specific sector, such as infrastructure, if concrete investment opportunities exist. Similarly, government agencies must establish clear guidelines and reasonable timelines from project announcement to award in order to convince investors to develop their internal skills. Put another way, to make development risk manageable for investors, procurement agencies must avoid any “stop and go” when launching infrastructure projects. This will be instrumental to building credible pipelines of investable opportunities and enabling institutional investors to actually engage.

Two, long-term investment requires visibility into cash flow. PPP frameworks, and in particular, contracted cash flows, provide this visibility and also ensure predictability. Predictability, in addition to the natural correlation of cash flows to inflation, contributes to the attractiveness of PPP projects for institutional investors seeking assets that match their long-term goals. Still, some industries that are of great importance to the public sector suffer from a lack of investment predictability. The power sector in Europe offers a case in point. Securing funding for critical facilities such as thermal power plants is proving more difficult when revenues are derived from European deregulated wholesale markets. In the United Kingdom, where merchant and regulated energy assets did not typically benefit from the visibility that private-finance-initiative assets could provide—specifically with regard to appropriate mitigation of a change in law or public policy, force majeure, or hardship risks—low-carbon facilities may be an inflection point.

This is also the case in the rest of Europe, where regulated power transmission and distribution networks are better suited to short- or medium-term private-equity strategies, because visibility on tariffs is typically limited to five years. In contrast, the power sector in Africa, which is dominated by PPP-like independent-power-producer projects, can be considered more predictable by long-term investors. By providing greater and enduring visibility to investors, typically under contractual arrangements akin to PPPs, European governments could attract long-term investors in the power sector.

Three, financial regulations help ensure economic and financial stability. They also affect long-term investment. Government agencies must think strategically about how regulations can encourage long-term investment in infrastructure projects and whether they reflect the risk-reward equation of these nuanced investments. For instance, it will be interesting to see how Europe’s forthcoming Solvency II framework evolves and potentially affects infrastructure investment. Regulations should also be built on hard data. For example, an academically validated index for equity investment in infrastructure projects will be instrumental to ensuring that all parties are aware of the financial realities associated with greenfield infrastructure.

Finally, government agencies can play a key role in addressing market failures, either directly or through public development banks. They can act as facilitators and provide credibility to infrastructure projects. By funding transactions or supporting active market players, development banks provide a powerful signal to the private sector. Their presence suggests political support and stability over the long term. In addition, dedicated financial instruments—such as guarantee instruments, long-term funding, seed investment, and early-development stage facilities—can encourage long-term investment. Channeling wealth and savings into productive investments, including greenfield infrastructure, will be essential for the global economy to grow. This is a historic opportunity for institutional investors and governments around the globe to secure both financial stability and performance and at the same time contribute to long-term growth fueled by efficiently managed infrastructure.

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Money isn’t everything (but we need $57 trillion for infrastructure)

By Robert Palter and Herbert Pohl

“Where will the money come from?” would seem to be the question of the day in infrastructure circles. Governments from India to Ireland are under pressure to find new sources of funding, preferably at cheaper pricing and longer tenors. Basel III hems in infrastructure development on one side and Solvency II on another. Shrinking economies don’t have money; growing ones face a swelling bill for new infrastructure.

There is no shortage of projects being proposed, some with price tags running into several billion dollars. But when investors are presented with a project, they do not always find it investable. Even where private finance is available, not every project can be made attractive for all parties; it may require expensive wrangling and restructuring to do so. Capital is left parked at a time when it is needed more than ever.

Infrastructure investors and builders do not have far to look for suggestions for addressing the funding crunch, from public- and private-sector project-bond initiatives to government-guarantee schemes and infrastructure-debt funds. These are important and valuable solutions to a problem of liquidity, but in reality the industry faces a greater problem of growth.

Less an infrastructure gap, more a chasm

Drawing on an extensive database of historical infrastructure spending as well as a new approach to roughly size infrastructure needs, new research from McKinsey’s Infrastructure Practice and the McKinsey Global Institute estimates that $57 trillion will need to be spent on building and maintaining infrastructure worldwide between now and 2030—just to keep up with global GDP growth.4

If anything, this estimate is on the conservative side. It is restricted to a number of core infrastructure classes—transport, power, water, and telecommunications. It does not include the cost of addressing historic backlogs in repair and maintenance, nor of “future proofing” infrastructure against the increasingly volatile effects of climate change, and it does not account for any efforts to accelerate development spending in the least-developed countries.
Yet the scale is daunting: fully 60 percent more than the $36 trillion spent in the same 18-year time frame just ended and greater than the estimated value of all the world’s infrastructure assets today. And this is a modest estimate.

Look at it that way, and the challenge of squeezing a few billion dollars more out of one country’s pension funds or another’s infrastructure bank—initiatives that do not always cross national borders—soon pales into insignificance. Even if institutional investors were to achieve their target allocation in infrastructure, it would mean additional funding of only around $2.5 trillion by 2030. Neither the public nor the private sector has acknowledged the scale of the infrastructure gap, much less admitted responsibility for it. Neither side can resolve this alone; both will suffer if nothing is done.

**How to save $1 trillion a year**

The solution the research proposes is as surprising as it is potentially game changing. It does not mean tearing up project finance, selling all public assets, or taking other radical approaches, because the evidence doesn’t show that they are effective. Instead, it suggests procuring and managing infrastructure more productively.

By making small but important adjustments at every step of an infrastructure project, from the outline business case to routine operation and maintenance, we estimate that 40 percent cost savings can be made on infrastructure investments across the world, the equivalent of $1 trillion a year, every year, until 2030.

This is not the result of a theoretical model but of identifying quantifiable benefits from proven best-practice methods in 400 case studies. These methods are the exception to the rule in an industry surprisingly resistant to performance enhancement. By implementing these practices globally and allowing for geographical variations, we believe that asset owners can attain the target.

The savings derive from three main levers: optimizing project identification and selection, streamlining project delivery, and getting more out of existing infrastructure. Our case studies, while focused on the actions carried out by governments, procurers, and contractors, open the door to investors to identify and call for best practices to be implemented from day one—particularly in asset-ownership models where the delivery of construction, renewal, and maintenance is often contracted out.

Streamlining project delivery can be taken up by investors from their earliest involvement. In most cases, in the absence of guidance from authorities or owners, project bidders and technical subcontractors have avoided designing and building for productivity. Design-to-cost principles, which can now prevent overspecification in project design, are just one example. In the operational phase, project owners can take advantage of operation and maintenance efficiencies such as a total-cost-of-ownership approach, allowing them to find the sweet spot between routine maintenance and major renewal.

In addition to saving money on existing assets, productivity means not spending money on new projects when it is possible to get more out of existing infrastructure for the same, or a better, outcome. Too often, notably in the transport sector, adding capacity simply stimulates demand, leading to yet more congestion. Demand management is a cheaper option, and one of the best tools is user charging.

User charges reduce the need for costly new construction and allocate demand that would otherwise put a greater strain on infrastructure. For instance, peak charging for electricity in California has resulted in the lowest consumption in the United States, while road pricing has reduced congestion problems significantly in London and Stockholm. Imposing charges on the public is inevitably controversial. But
shifting the burden of repayment from government to the end user breaks the demand-capacity feedback loop and captures the economic benefits that more productive infrastructure brings.

If the industry is to save $1 trillion a year, it must also stop investing in futile or badly structured projects. This will be a challenge, given the incentive for the public and private sectors alike to overemphasize the benefits of a project and favor eye-catching new builds over getting the most out of existing assets. The financial sector needs to engage early with government, even before an outline business case is on the table, to ensure that perverse incentives are resisted and financial structures—including a sufficient return to cover investment—are sound. Only then can capital be freed up for infrastructure renewal and construction that works and makes a difference by supporting GDP growth. By building less, the industry can build more of what it really needs.

Although some of these measures may sound like common sense, the scope for productivity gains in the infrastructure sector should not be underestimated. Indeed, while other industries have made dramatic advances in productivity over the past century, there have been no comparable gains in infrastructure investment. Many countries and project sponsors apply bits and pieces here and there, but few consistently apply all of the best-practice measures—all of which have been proved, tested, and had their impact measured in the past decade. Infrastructure productivity can be implemented in emerging as well as developed markets, irrespective of capital structures available.

Following these best practices can reap large benefits for the public sector. Better project selection as proposed above not only leads to better infrastructure but also lowers the risk premiums payable to private parties. Cheaper projects will better fit within funding envelopes and, in time, project-cost estimates should come down.

Contractors should welcome productivity savings as they increase their competitiveness and ability to budget for and win more contracts. Investors will see their rates of return increase and their capital go further. These substantial, tangible savings have profound implications for the financial modeling of new projects and accounting of existing assets. With a lower initial investment, the same revenues and coverage ratios can be achieved. Through tighter contract structures, risk profiles can be improved. Projects that were hitherto expensive or required unacceptable levels of subsidy may be transformed.

An interventionist, active approach to financing is essential. And while most investors may be less familiar with this method than private-equity players and those involved in project restructuring are, it is not necessary to exercise cure rights in order to practice active ownership.

If the infrastructure gap is to be closed through the championing of best practices, then it will require a new level of cooperation between public and private sectors: one that reflects the size of the challenge and how it puts whatever competing priorities they have in the shade. The imperative to deliver better infrastructure and meet the growing demands of the world population is a moral as well as an economic one; as global players, infrastructure investors are well placed to meet the challenge and do not need to wait for governments.

About the Authors

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Infrastructure and economic development: An interview with John Rice

By Bill Wiseman

Since joining GE in 1978, John Rice has worked all over the world in departments as diverse as auditing, power, finance, and transport. Based in Hong Kong, he leads the company’s global growth organization, which accounts for more than half of total revenues. In this interview with McKinsey’s Bill Wiseman, he talks candidly about the slowness of bureaucracy and the role of the private sector in encouraging sustainable growth.

John Rice biography

McKinsey: What role does infrastructure play in supporting growth in developing markets?

John Rice: Everybody is looking for “sustainable” or “inclusive” growth—growth that improves quality of life for all. Growth in and of itself is no longer good enough. If you’re not creating jobs, you are never going to have sustainable and inclusive growth.

But before you can create jobs, you’ve got to do a few things. You’ve got to have electricity. You’ve got to have healthcare—you can’t have sustainable growth if people die when they’re 45 or 50. You’ve got to have the basic building blocks of a society, and then you have to have a combination of financial and human-capital development. Only then do you have a shot at sustainable and inclusive growth.
McKinsey: Do you find that countries value that way of thinking?

John Rice: In many democratic countries (and not just developing ones), there is often a short-term focus on the next election cycle. In countries that don’t have elections, there might also be a short-term focus on keeping the population happy. Also, when budgets are constrained, you tend to punt the long-term stuff. Infrastructure is long-term stuff.

I think there has been what you might call a “cycle compression” when it comes to how fast governments want investments to pay back. When I meet with senior government officials, they want to know what can be done quickly—temporary power, quick investments in clinics and healthcare—so that they can show visible progress. But those kinds of actions do not necessarily address the broader challenges.

There’s no question that social media, and the ability of people to communicate and transfer information and assess their own circumstances, is increasing the pressure on governments. Even people who have very little disposable income are still connected. Expectations are being built up that problems are going to be solved quickly, and governments pick up on that and feel pressure to respond.

McKinsey: The McKinsey Global Institute has estimated that up to three billion people could join the global middle class by 2030. How will this affect the demand for infrastructure?

John Rice: The growth of the global middle class is creating another, higher set of expectations. For example, the growth in China’s aviation industry over the past several years is evidence that the middle class will want to travel; the roads can’t handle the increase in demand, and as a result, you are seeing the government invest in both aviation and rail infrastructure. Across emerging markets, there is broad recognition that problems need to be tackled, that people aren’t going to wait forever for the ability to travel, to read at night, to treat their sick child, and so on.

At the same time, I think you also have to remember that something like 1.3 billion people still don’t have electricity, most of them in Africa and South Asia. You’re not going to get to the middle class if you don’t have the basics.