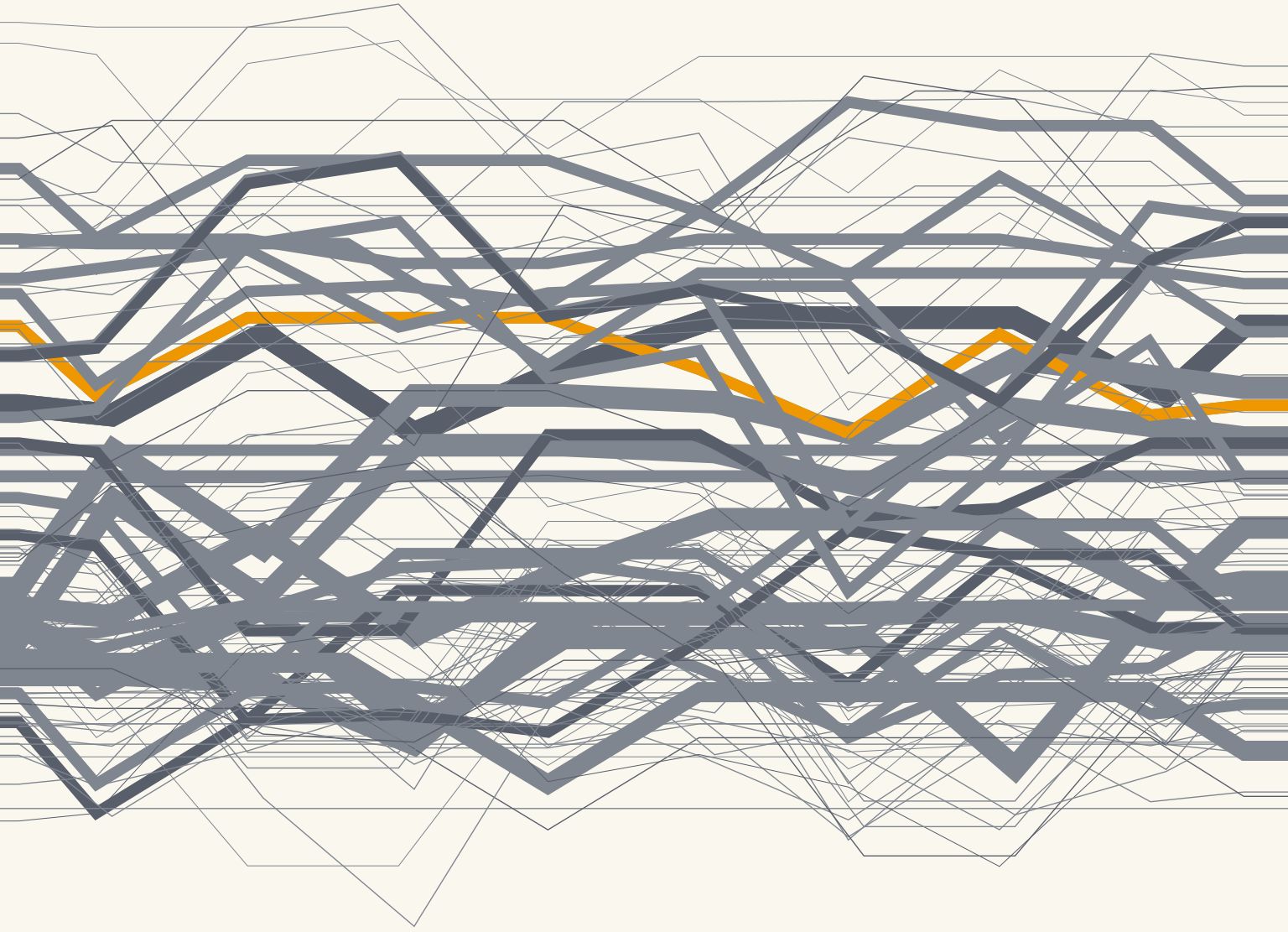
Global Infrastructure

VOLUME 1

SPRING 2011



Published by
Bingham McCutchen LLP

Global Infrastructure

Edited by Joel H. Moser
Published by Bingham McCutchen LLP

BINGHAM

Editor: Joel H. Moser
Publisher: Bingham McCutchen LLP
Editorial Office: 399 Park Avenue, New York, NY 10022
Tel: 212.705.7482
Website: www.bingham.com/globalinfrastructure
To request additional copies of *Global Infrastructure*, email globalinfrastructure@bingham.com

Table of Contents

Editor's Note

The need for global investment in infrastructure development with a velocity that meets the challenge has become an urgent topic throughout the world. Pathways for Chinese investment in U.S. infrastructure were discussed by United States President Barack Obama and Chinese President Hu Jintao at the White House during Jintao's January 2011 state visit. Meanwhile, the Chinese government announced that 150 new infrastructure projects will be undertaken as part of the preparations for a unified megacity to encompass five existing cities, including Guangzhou and Shenzhen, a move reminiscent of the creation, more than 100 years ago, of the greater regional municipality of New York City—but 10 times the size with a projected mid-century population of more than 120 million.

In Brazil, observers fret over how the market will transition from an excessive reliance upon BNDES, the national bank, to global capital markets in order to finance the hundreds of billions of dollars needed to support a myriad of projects from stadia for the FIFA World Cup in 2014 and the Rio Olympics in 2016 to the TAV, the Rio to São Paulo high-speed rail, and the development of the "pre-salt" oil fields in the Santos Basin far off the coast.

In India, the world's second-fastest growing, large economy, the pace of sorely needed infrastructure development has been boosted by a surge in foreign direct investment. Still, the need outstrips the flow of capital and this country's historic underinvestment in infrastructure continues to impede growth.

In all, the need for global infrastructure investment is thought to be more than US$40 trillion over the next decade or two, which is about two to four trillion U.S. dollars a year depending upon the pace of the investment. This is no surprise. Major parts of the developed world, notably the United States, suffer from aging assets—the U.S. interstate highway system is more than a half-century old. The developing world is experiencing unprecedented urbanization, with global urban population expected to reach 6.5 billion by mid-century, up from about 3.5 billion today and a mere 1 billion in 1950.

These are the challenges that the infrastructure investment community works to address every day and to which this publication is dedicated. This issue starts with a look at oil—the world's current principal source of energy. Marco Alverà, CEO of ENI Trading & Shipping, takes apart the puzzle of the oil market that drives not only the current energy supply chain, but also the economics of alternative energy investment that often tracks oil price trends.

Greg Gajewski, Ph.D. and Vice President of Economic Development at The Louis Berger Group, Inc., has contributed a report on the outlook for donor-funded transport infrastructure that includes a regional global survey. Sergio A. Laclau, Partner, and Paula Surerus, Associate, of Xavier, Bernardes, Braganca Sociedade de Advogados, provide a review of the projects and investment opportunities surrounding Brazil's upcoming world-class sporting events; and Nick Chism, Head of Global Infrastructure and a Partner at KPMG, takes a bit of a crystal-ball look at the world in 2050 and plots a course for meeting the infrastructure challenges to get there.

On the more practical side of infrastructure development, Addison Smith, Communications and PPP Consultant, has written a guide to the politics of public-private partnership (PPP) development; Sabrina Hanitz, Associate Director for Aon's Global Center of Excellence on Alternative Project Delivery, has submitted a piece about risk mitigation products inside PPPs; Steven Fox, Managing Partner, and David Stevens, Project Manager, of Veracity Worldwide have provided an analysis of political risk in emerging markets; and finally, John Larew, Associate Partner in the Corporate Finance & Restructuring Practice, and Mark Robson, Partner in the Corporate Risk Practice of Oliver Wyman, have offered an introduction to stochastic risk modeling in infrastructure investments.

This issue also contains a report on infrastructure in Asia. Asia is a huge collection of countries, and no single report could possibly cover the entire region. This report includes articles and commentaries about aspects of the infrastructure plans of China, Japan, Indonesia and the Philippines. The report is introduced and guest edited by my Partner and colleague, Satoru Murase, Chair of the Japan Practice Group at Bingham McCutchen.

We hope you enjoy this issue.

Joel H. Moser, Editor
Partner, Bingham McCutchen

Oil:
Commodity or Financial Asset Class?

Marco Alverà, CEO of ENI Trading & Shipping

For many observers, instinctively, the price of oil is still very much a function of the dynamics of the 1970s and 1980s, with the emergence of OPEC as a cartel capable of controlling the market. Our view is that profound structural changes have occurred in the oil markets, making crude oil evolve from a commodity to a financial asset.

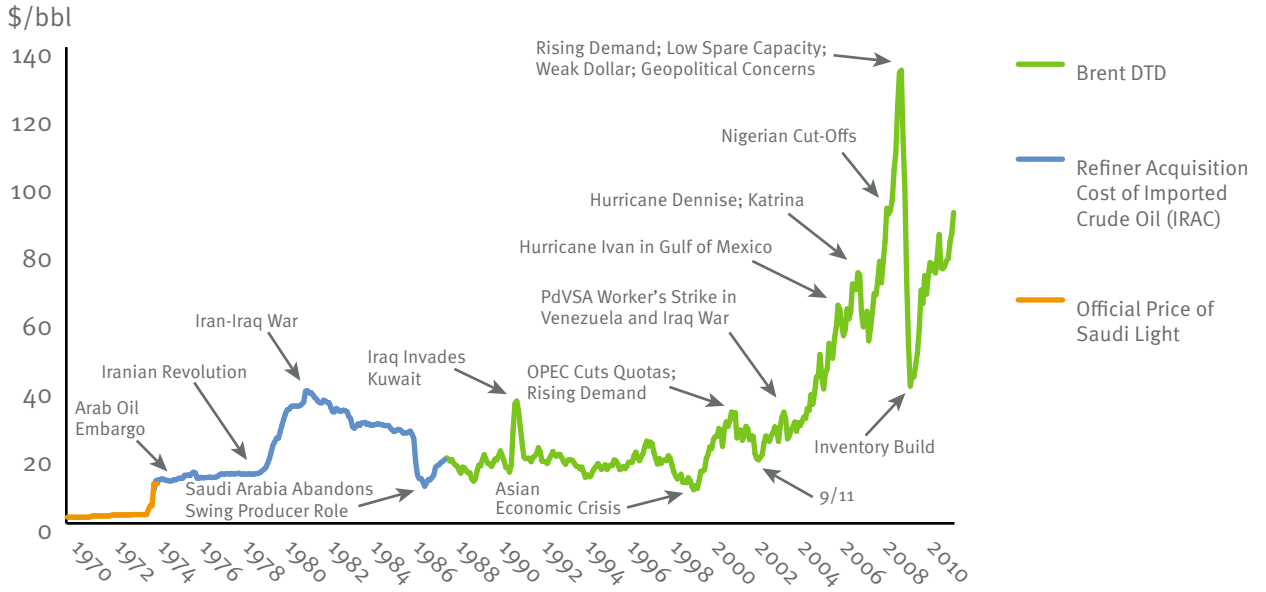
Over the last decade, most financial players significantly increased their exposure to commodities in general and the oil market in particular. Since then, oil price trends have been driven more by the expectations of the financial investors than by the actual dynamics of demand and supply of physical crude oil.

This financial nature of the oil market became explicit in 2008 when an oil bubble boom and bust in a few months — typical of a financial asset — pushed the price almost to $150 and then back to $40.

Most interestingly, when the liquidity dried up and many financial institutions temporarily exited the market, particularly during the 2008–09 winter, the behaviour of the oil price was once again driven by oil market fundamentals, revealing that somehow an underlying physical nature of oil persisted.

Since the end of 1998 (Figure 1), the market has entered a period of instability and volatility, with most observers and analysts significantly missing their oil price forecasts. Indeed, in the late 1990s, the investment budgets of most of the oil companies and the financial programmes of the oil-producing countries assumed a maximum price level of around $20/barrel in the long run.

Figure 1. Brent dated 1970 – 2010 and main historical events



Source: *EIA*

As prices kept rising beyond anyone's prediction, many theories emerged, attempting to explain the increase in oil price:

- Limited supply, apparently unable to satisfy the growing demand for oil and a decrease in the crude reserves/crude production ratio (peak oil)
- Erosion of spare capacity in the entire oil supply chain (upstream, refining)
- Emergence of new large consumers such as China
- Greater geopolitical uncertainties in the Middle East and other key producing regions
- Re-emergence of oil nationalism in many oil-producing countries

Those are widely appealing justifications; however, they seem unable to convey the more complex nature of the oil market. The classic economic model, which assumes that price is determined by the direct interaction of supply and demand for crude oil, seems incapable of explaining the recent trends in the oil market, especially as the steady rise from $9/barrel in 1998 to $150/barrel in 2008 occurred in a constant potentially oversupplied market.

What is commonly called the “oil market” is in fact the combination of three different markets, which operate independently but which are linked by complex forms of correlation, as Figure 2 shows.

1) The traditional **Crude Oil Market** (raw material)

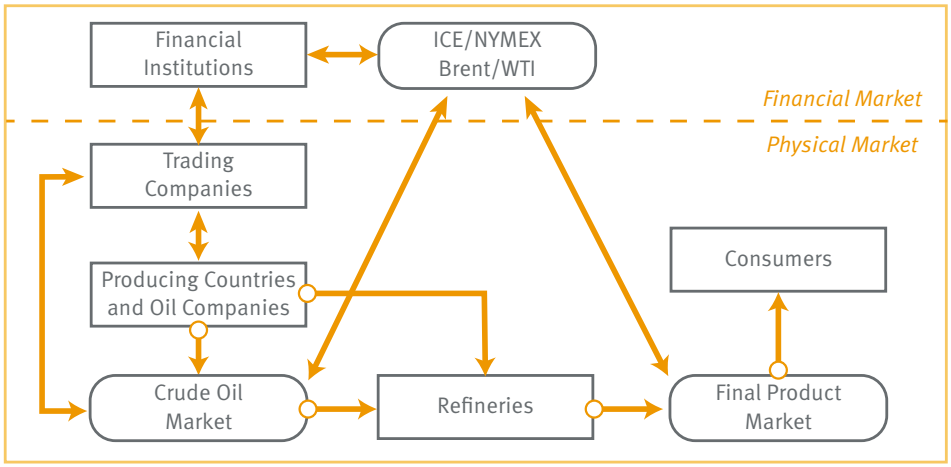
2) The **Final Product Market** (gasoline, diesel, jet fuel, fuel oil, chemical feed stocks, lubricants)

3) The **Financial Market** for crude and finished products (futures)

Each of these markets responds to different behavioural patterns and involves players with very different interests, cultures and objectives (producers, refiners, trading companies, consumers, financial institutions).

A complete model should therefore take into account all these inter-relations and their individual dynamics to describe and try to predict oil price behaviour.

Figure 2. Complexity and interdependence in the oil market



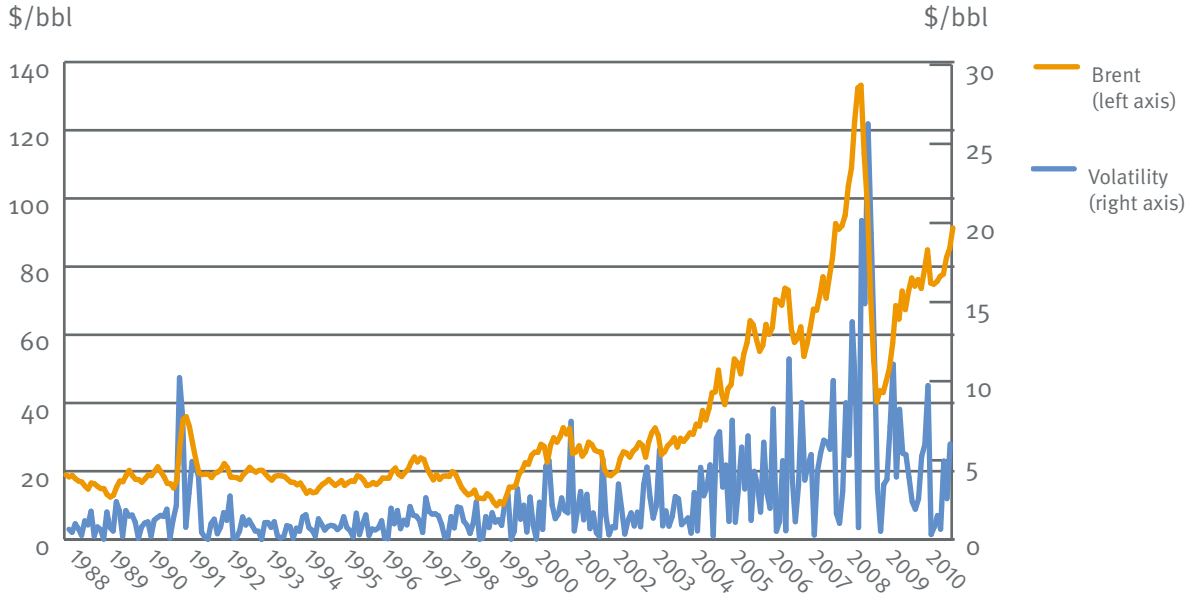
THE MAJOR IMPACT OF FINANCIAL MARKETS

What happened during the rise of 2005 – 2008? Nothing industrial, as the oil market was potentially oversupplied and even the acute crises of 1973 and 1979 were unable to cause price swings of such size and speed. In the four years leading to 2008, there were two very powerful forces at play: greater liquidity entering the oil market and a subsequent greater focus on future expectations of oil prices.

As oil became more of a financial asset, the combination of new liquidity coming in and out of oil (mainly in) as well as the immediate price impact of future expectations, regardless of the underlying industrial equilibrium, meant a steady rise in volatility.

Figure 3 shows the volatility of the price of Brent between 1988 and 2009, where volatility is defined as the difference between the highest and lowest value recorded during the same month. Historically, the volatility index of the price of oil remained between $1 and $2/barrel until the end of the 1990s.

Figure 3. Brent and inter-monthly volatility (1988 – 2010)



Starting from the early 2000s, volatility indices over $10/barrel have become a constant feature in the market, even in the absence of factors engendering tension in the market comparable to times of war in the Persian Gulf area.

Figure 3 also shows that there is a date in the evolution of the dynamics of the oil market, after which the break with the past takes shape. This date marks the increasing dominance of the financial markets on the price formations.

From the moment that Saudi Arabia, back in December 1988, decided to no longer fix the price of its crude (Arabian Light), but to index it to the value of the so-called Brent crude, the global reference for the price of crude has lost its direct relationship with the physical market.

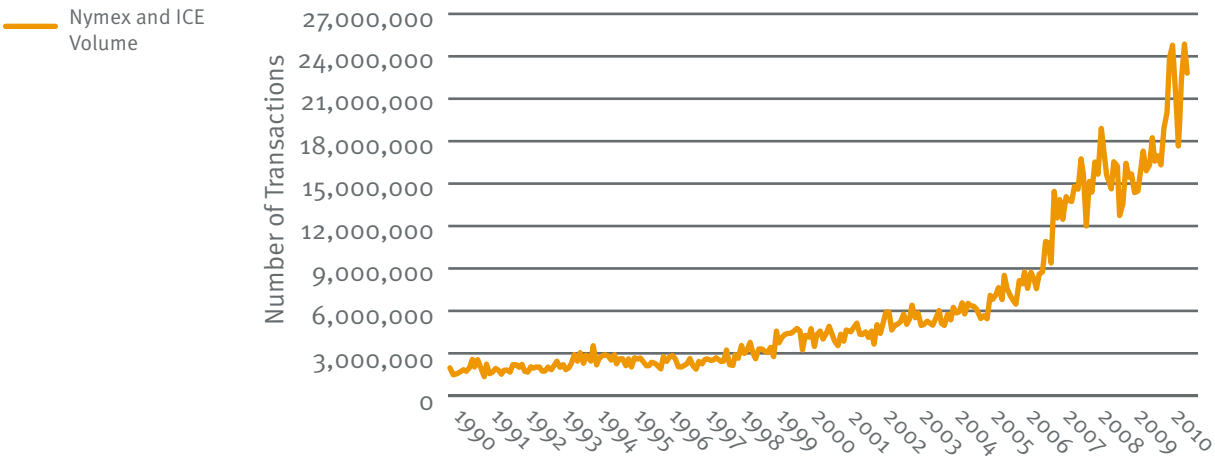
When we speak of the price of Brent, we may think this refers to the purchase price of a physical barrel of this crude. The reality, however, is very different. Brent is a contract on the Crude Oil Exchange (ICE, Intercontinental Commodities Exchange) that can be bought or sold like any other title in the Exchange.

This specific financial market shares with the oil market, apart from the name Brent, the historic fact that it was born to support the trading operations of oil companies. Originally, Brent was used as a financial instrument to provide risk hedging against oscillations in crude prices.

The last years have seen a large entry of a wide range of financial players and funds into the oil market. At the start of the year 2000, the oil futures market detached more significantly from its original nature, and became a market mainly for financial purposes.

As shown in Figure 4, the volume of business on the crude oil futures market has risen tenfold in the last 10 years, closely following the entry of the great financial institutions into this field. This has reshaped the internal dynamics of the oil market.

Figure 4. Number of transactions on Nymex WTI and ICE Brent



Source: *ICE*

Brent (on paper, financially) is now traded in most cases simply for investment purposes or financial speculation, to protect capital by parking it in a safe place for a certain period of time (even just for a few minutes), to profit from a momentary wave of speculation, to hedge against currency fluctuations or to ride a trend on the commodities' prices.

The size of this market is remarkable: world crude production is around 80 million barrels/day. About half is consumed locally in producing countries, and the other half is sold (physically marketed) internationally. Last year on the Exchange, around 500 million barrels/day were traded, over 25 times all the marketed oil and six times more than the entire world oil production. These "paper barrels" have little or nothing to do with the "real" oil market and the demand/supply of oil for energy consumption.

In theory, the futures market for Brent was created to stabilise crude prices after the epic oil crises of the 1970s and 1980s. The daily quotation for Brent was supposed to permit greater transparency in transactions and thus a stabilisation of prices in the short- and medium-term. In the early years this was the case; the volumes of crude traded on the futures market never exceeded the physical quantities produced and sold. This indicates that the oil companies operated on the paper market to stabilise the price of their crudes by hedging operations. Today, with over 500 million paper barrels of oil equivalent arriving each day on the market—which we continue to call an oil market—we can assume that the hedge funds and financial institutions buying and selling this financial asset class have no direct interest in real barrels of oil. Nonetheless, physical and paper barrels are called the same, and the price of the physical commodity that refiners have to buy is directly driven by the demand and supply balance of the paper barrels.

This price link works both ways (at least in the short term), as was evident in the second part of 2008. As the liquidity more or less dried up, with financial investors exiting almost every asset class, including oil, the oversupply of paper barrels and significantly reduced volumes of paper barrels traded on the Exchange drove oil prices to below $40/barrel, below the industrial equilibrium of a marginal cost per barrel of around $70.

During the second part of 2008, the exclusively financial activities of the banks almost entirely disappeared from the crude oil futures market, leaving mainly oil

companies and physical oil traders and shippers to operate and manage the risk of price oscillations: in other words, we have gone back to a market structure closer to that of the late 1990s. From the end of 2008 to last December, without much interference from financial institutions, oil traded quite nicely in a band between $70 and $80/barrel, which is very close to a theoretical industrial equilibrium.

WHAT ABOUT REFINED PRODUCTS AND THEIR IMPACT ON OIL PRICE?

The recent introduction of environmental limits on the petrol and diesel used in cars significantly reduced the availability of finished products marketable in the industrialised regions of the West. Clean gasoline and gasoil have become short. In total, the shortfall in the US amounts to about 50 million tons/year of gasoline and about 40 million tons/year of gasoil in Europe. To cover these gaps it is necessary to import from other geographical areas, which deprives local consumers of these products or forces them to pay the higher prices that consumers in strong countries can pay to get their hands on the missing products.

The deficit of these high-quality finished products has bolstered the rise in crude prices, particularly the light varieties like those from the North Sea. It is somewhat similar to what would happen if a rule was introduced to allow the sale of only choice cuts of meat (fillet steak, entrecote, silverside): the price of these would rise but so would the price of the cow.

American environmental legislation allows for each US state to request gasoline specifications differing from the national standards. About 40 different types of gasoline are thus on sale, distributed in the various states and counties of the nation, creating big challenges for production and logistics (transport, storage, etc.). As of today, the volume of high-octane components imported into the US remains well above 1 million barrels/day, keeping up a certain level of tension in the international market, which serves to prop up the crude prices.

So the regulatory and demand-driven dynamics of petroleum products has an impact on the “industrial” price equilibrium for Brent, which in turn is impacted by the financial behaviour of the oil as an asset class.

Another key piece of the equation is weather. Had the last two winters not been as cold, oil prices, with a reduced activity on the financial side of the equation, would

have perhaps fallen to below $40. A significant demand for heating oil, however, particularly in eastern Europe, means that cheaper, heavier oil is being absorbed to produce heating oil. Thus, lighter and more expensive oil has to be purchased to produce automotive products, driving higher prices for light oil.

CONCLUSION

In summary, we have had the rare opportunity to see what happens when huge liquidity quickly moves into the oil market, making it lose its supply and demand-driven commodity behaviour (2005 – 2008). We then saw it come straight back to its original commodity nature during the big liquidity crisis and move back toward a hybrid since 2009. Even the financially inflated volume of oil trading is still a fraction of equities and fixed-income trading. As such, the liquidity entering or exiting the oil market will be impacted by portfolio decisions around equities and bonds and currencies. Should that make oil prices more volatile and unpredictable? The optimists argue that, as the financial use of the oil market becomes more evident, volatility will diminish because financial investment decisions will be based on visible price signals. In the absence of major geopolitical or industrial shocks, the best price signal is the marginal cost to produce the last barrel needed. Indeed, that is where oil nicely traded for 2010. Speculators seemed quite content by taking profit as oil prices moved up and down within a neat $10/barrel band rather than having to drive prices way up or way down. But that may be because big money was so focused on Eurozone liquidity.

Recent events in North Africa have added at least a $15 per barrel premium on the price of oil. As we analyse the flows, we see financial oil trades increasing very significantly and actual physical disruption in North Africa more than compensated by extra Saudi volumes available on the market. Some would argue that the contagion risk means that future expectations of physical shortages bring prices to $115 per barrel, others would argue that oil is now mainly (or even purely) a financial asset class, and that, during the Libyan crisis, we are getting a vivid glimpse as to how it has lost all connection to the physical supply and demand balance of oil as a physical commodity (as it did in the collapse of 2008).

The Future of Donor-Funded Transport Infrastructure in the Developing World[1]

Greg Gajewski, Ph.D. and Vice President of Economic Development at The Louis Berger Group, Inc.

INTRODUCTION

Over the next 10 to 20 years, the nature of transport infrastructure assistance will shift into more environmentally friendly approaches and modes, and be more focused on the needs of urban areas. The UN forecasts that today's urban population of 3.2 billion will grow to 5 billion by 2030. The growth is expected to be uneven on a regional basis, weighted towards the developing world. Much of the growth is expected to be in Southeast and East Asian megacities. The need for more sustainable methods of transport is made evident by projections of vehicle ownership, fuel consumption and land use devoted to roads. While worldwide growth rates in passenger-kilometers traveled has been 4.6 percent per year, in developing countries the rate of growth is 6.4 percent. With people travelling more, vehicle ownership is increasing at the same rate as overall national economic growth. Predictions say that by 2030, the global population of vehicles will require 200,000 square kilometers for highways and parking places. This is enough land area to potentially feed 80 million people (Whitelegg and Haq). Given that there are opposing legitimate views as to the adequate availability of land for agriculture in 20 years, this is an overly valuable resource to use for automobiles when alternative transport solutions are available.

The goal is to combine several modes of transport in order to achieve minimum cost and minimum environmental impacts through modern logistics systems. Thinking and implementing these systems to minimize the carbon footprint requires a new set of concepts and must be accompanied by a change in culture among transport planners. More rail and inland waterway transit is needed to take advantage of the new logistics systems, which will help reduce carbon footprints and lower costs.

Many nations and development banks are coming to this same realization. However, many in the auto industry and some city planners are refusing to move away from the petrol-based vehicle. There is new technology being developed that will produce "smart cars" that will be capable of driving themselves. This will permit automobiles to move on limited-access highways in tight packs, at high speeds and without accidents (Whitelegg and Haq). This type of solution is bad for land use as it encourages larger highways, causes pollution that leads to public health problems and promotes global warming.

There are more technically efficient methods to move people in large numbers into megacities (those with populations in excess of 10 million people) and other urban areas that have a much smaller carbon footprint. Rail and light rail transit are alternate solutions. Mass Rail Transit (MRT) is expensive to establish—building the track networks, which will be greenfield operations in many cases—and, as such, developing nation city managers will be concerned with finding the appropriate financing for such solutions. The development banks have a role to play here that is important, providing subsidized loans or no-cost grants to build these new MRT systems. And for the most part these banks are stepping into this new role. In many cases they are the leaders in promoting this newer solution for mass transit. The Asian Development Bank and the World Bank have now devised a comprehensive set of transport solutions aimed at minimizing pollution and the carbon footprint generated by transport. These extend from the center of megacities to the farm gate. Some megacities have some form of fixed-track mass transit; for example Bangkok has both a subway system and an LRT system, and Kuala Lumpur and Manila have LRT systems as well. These were in many cases donor-funded (ADB, IBRD, JBIC, 2005).

THE G20 STEPS FORWARD

Quite appropriately, and at an opportune time, the G20 has put new infrastructure at the top of the development agenda. At the Nov. 11–12, 2010, G20 meeting in Seoul, South Korea, the members adopted a common approach to development. The first, and perhaps most important, component is having the appropriate infrastructure. Countries are to draw up new plans for infrastructure development. The G20 set of documents lays out a comprehensive plan for sustainable growth for Low Income Countries. The first action is for the countries to develop their own infrastructure plans. The document pays attention to the types of financing, including public, semi-public and

private. The first step is to conduct a needs assessment, followed by an evaluation of internal practices, continuing with a way forward to improve the investment climate for infrastructure investment, and then placing the emphasis on regional integration followed by a call for transparency and sustainability. This plan of action will be implemented under the guidance of a high-level panel for infrastructure investment.

Despite the G20 action, the Great Recession of 2007–11 has had an adverse effect on funding for infrastructure. Private investment in public-private partnerships (PPPs) declined during the period and became more concentrated in fewer countries. For example Brazil, India, China and Mexico received about 75 percent of private-sector money for transport infrastructure in 2009. Total private sector investment in transport-sector infrastructure was $21.7 billion in 2009, down 37 percent from the peak reached in 2006 (Grigg, 2010). The donors have tried to offset the decline due to the Great Recession, with mixed success. The impact of this recession on medium- to long-term economic growth will be significant and reduce overall spending on transport infrastructure (Nabli, 2011). The extent of the decline is subject to debate at this time. This article does not focus on these impacts despite their significance.[2]

This paper draws on the stated policies of the donors in light of past trends in transport infrastructure funding, the author's knowledge and experience, and the art of what is deemed probable by 2020 to 2030.

DEVELOPMENT BANKS SHIFT POSITIONS

Prior to the G20 meeting, the World Bank and the regional development banks had all been developing new strategies or updating strategies for their work spanning the next five to 10 years. Donor funding for transportation infrastructure will accelerate compared to the past decade. An estimated $2 trillion was spent on infrastructure in 2010, about half of that for transport infrastructure. Already $51 billion in official development assistance and aid was invested in transport infrastructure by the World Bank in 2008, nearly 40 percent of its total budget (World Bank, 2010). The regional development banks also spent about 40 percent of their budgets on transport infrastructure (Asian Development Bank, 2010). The coming increase is in response to tremendous pressure due to rapid population growth concentrated in developing nations. Nonetheless, the nature of projects funded will change from just "more roads" or "more airports" to a more complex mix of interventions, driven by the changing needs of the developing and developed world. Transportation outcomes

will also be more closely tied to the Millennium Development Goals.[3] The institutions that will carry out an initial needs assessment based on the G20 accord are the Infrastructure Project Preparation Facility (IPPF), the New Partnership for Africa's Development (NEPAD), the African Water Facility (AWF) and the Asian Infrastructure Financing Initiative (AIFI).

Transport interventions will be more environmentally sound, socially sensitive, gender-sensitive and more urban-oriented, with a higher proportion serving megacities. MRT transportation will receive more funding than in the past. Nonmotorized transport projects will become more numerous. Transport needs will be tied to the needs of climate change adaptations and the continuing problems of fragile states. New approaches will be tried to enhance the quality of transport services in rural areas to ensure food security. Transportation safety will also receive much more attention than before. Projects that more easily yield measurable results will be in favor. The new methods in logistics will be an integral part of these changes.

Within cities, offering more pedestrian and bicycle solutions as an alternative to the automobile is needed if a modal shift away from the automobile to MRT is to be accomplished. There is research showing that offering light rail transit solutions in urban areas is not sufficient to get people to move away from automobile transport. Research by Mayer Hillman (in Whitelegg and Haq, 2010) shows this result. Further, the research shows that the network of walkways and bicycle paths needs to be in place well before the MRT solution is expected to shift commuting and intercity transport modal choices. In most developing nations, there are already informal networks for these nonmotorized modes of transport in the urban slums and informal settlements. However, in the heart of these cities, walking is next to impossible either because the allocated space is inadequate or because there is no space. No space is common in many Southeast Asian cities, while inadequate space is common in South Asian and African cities. Cairo is a prime example. Further, developing nation cities do not allocate formal space for bicycles and other forms of nonmotorized wheeled transport.

The Asian Development Bank, together with the World Bank, is making attempts to put these forward-looking transport solutions into place.[4] But both face large hurdles. Rebuilding major cities to make dedicated pedestrian walkways and bicycle pathways will require property setbacks and resettlement of millions of people. This is an expensive set of undertakings. Given the complexity of

this mission, it will take a very concerted effort to make headway over the next 20 to 30 years. The MRT and light rail solutions alone will not take as long because there will be fewer resettlement issues involved in spite of the expense.

The G20 vision and the new development bank missions of an environmentally sound transport policy will require nations to revise their National Development Plans. The World Bank requires each nation in which it makes soft loans and grants to go through a development planning exercise which reflects grassroots support for the direction of each sector of the economy. Government officials, typically aided by consultants, use stakeholder meetings and focus group discussions at local levels to guide the planning process. As the plans become more formalized at higher levels of the government, for instance at the ministry level, each ministry as a key stakeholder further shapes its sectoral plan. The executive formulates the final plan with the World Bank, and the result is termed the Poverty Reduction Strategy Paper (PRSP). Then the product is renamed the National Development Plan by the developing country. However, these are five-year plans, so the transport-sector and energy-sector components of each of these plans will need to be updated to reflect a more environmentally sound policy. This may cause problems because host countries could resist the changes, at least at the grassroots level. However, the new Cancun climate change agreements augur well for this kind of change. Still, the donors are expected to pay for this. How this will be paid for is yet to be faced.

SHIFT TO URBAN TRANSPORT

By 2030, the global population will have grown from 6.8 billion to between 8 and 9.5 billion. Five billion will be living in urban areas. In developing nations, where most of the population growth is expected, there will be an even higher concentration in urban areas. Of the 25 megacities in existence now, 16 are in the developing world. Yet 2 billion of the 5 billion in urban areas will live in urban slums, and quick improvement in this arena is not reasonable to expect (UN, 2010).

While the donors have not taken the lead in preparing urban areas for this transition, they are making up for lost time by dramatically shifting resources towards urban transport solutions that involve small carbon footprints. Bicycle lanes and pedestrian plazas will be supported by the donors. Light rail systems are believed by many to be more important in moving people, and these are supported by the donors. Thus, the Asian Development Bank plans to devote 18 percent of its

transport budget to urban transport, up from 2 percent between 1970 and 2009. The World Bank's plan for South and East Asia likely will follow a similar pattern (ADB, 2010).

Rail and bus fares may be subsidized, where feasible. Expect cities to receive technical assistance to implement differential rush-hour tolling for passenger cars and trucks, similar to the system in London. Transport in cities will be made to carry the full environmental costs of using the different modes. This is the goal; by 2030, it likely will only be partially fulfilled.

THE ROLE OF THE PRIVATE SECTOR

There will be more private-sector engagement by the multilaterals, resulting in more PPPs and thus more funds to develop transport infrastructure. This will be especially true for airports and ports using Build Operate Transfer (BOT) or Build Own Operate (BOO). For railways, the most common form of private-sector participation will continue to be through franchises to single operators. There will be more toll roads, especially as the new technology for tolling vehicles is made available to the developing world. This technology sharply reduces the cost of using tolls. Further, using tolls that vary depending on the time of day will be one tool in reducing emissions for cleaner air and combatting global warming. Both ports and airports have a variety of models to draw on for involving the private sector (World Bank, 2004). The plan is for the private sector to follow trends started in the 1990s. The Great Recession, however, may have long-lasting impacts on private-sector participation that could stretch out a decade.

In 2009, 50 transport projects with private participation reached closure in 20 developing countries. Private-sector activity by number of projects had declined by more than the dollar decline from the 2006 peak. New projects fell by 58 percent compared with 2006. By subsector, roads accounted for most of the activity in 2009. These covered over 6,000 kilometers of road under various types of concessions. There were 32 projects in eight countries. For ports, investments were implemented in 10 countries and 12 ports in 2009. There were investments in two small airports completed in 2009. This represents the lowest level of activity since 2002, when investments in airports were affected by the terrorist attacks of Sept. 11, 2001. Four greenfield private-sector railroad projects were completed in 2009. Two of these included metro lines in India and China and an investment in rolling stock in Peru. These annual statistics are important because they show how small private-

sector activity was and call into question the vision of an expanded private-sector role in transport infrastructure held by the development community. Even doubling the pre-Great Recession private-sector investment in transport infrastructure brings us to an investment of a bit under $60 billion, which does not compare to the $1 trillion estimated to have been invested in transport infrastructure globally in 2009 (World Bank website, 2010).

In terms of contracting for road maintenance and rehabilitation, the donors have made great strides in moving developing nations to use private-sector firms as opposed to government staff. Where this type of government activity still is in effect, it most likely will be phased out by 2020 and developing nations, with a few exceptions, will be using private contractors for road works. This will also apply to rail maintenance, rehabilitation and even greenfield trackage. And the same will apply to port as well as airport construction and rehabilitation.

DONOR COORDINATION

A very positive trend that has emerged is that some major donors are coordinating their strategies to the point where the strategies are jointly formulated. This is the case for the World Bank and the Asian Development Bank. Yet the African Development Bank, because the types of problems it faces are more diverse and generally more serious by orders of magnitude, has tailored its transport strategy to the earlier stages of regional integration. Unlike the ADB, the AfDB is increasing the share of its resources going to infrastructure to build roads. The Inter-American Development Bank is in the process of updating its strategy in transport, also taking into account its continental context within the new development framework. It too must adopt the theme of regional integration because the Regional Economic Communities (RECs) are joining so that there will be a single customs union of South America in the coming year or two. For the first time, the member states of the Andean Community of Nations and Mercosur will be joined in a continental trade union, ultimately with a single external set of tariffs for South America.[5]

The African Union through its RECs also is aiming for a continental integration though its attempts have been less successful. Some of its RECs are less active, such as the Maghreb Union (UMA), while some countries belong to multiple RECs. These common-trade areas include the Common Market for East and Southern Africa (COMESA), the Southern African Development Community (SADC),

the East African Community (EAC), the Intergovernmental Authority on Development (IGAD), the Economic Common Market for West African States (ECOWAS) and the Economic Community of Central African States (ECCAS). The AfDB will continue lending to develop transit corridors that link the countries within the RECs and also between the RECs under the rubric of regional integration.

In many of these countries in Africa, there is the problem of different gauges for the rail systems. Now there are a number of government proclamations stating that all rail lines will be converted to standard gauge, which will be a very expensive undertaking. In the meantime, improvements to existing rail infrastructure will be economical and will take place for at least a decade before standard gauge replaces narrow gauge and other gauges.

TRADE FACILITATION

Regional integration, such as developing the Pan-Asian Highway network and the Africa corridor network, will be a priority, especially for the regional development banks such as the African Development Bank, the Inter-American Development Bank and the Asian Development Bank. Transport corridors link nations and facilitate trade by lowering transport costs. These consist of rail as well as roads plus an occasional pipeline. These corridors are critical for regional integration. To the extent possible, these systems will now be changed to rely more on MRT, inland waterways and modern logistics systems, though the transition is likely to be difficult in terms of expense and in terms of culture. Regional integration is a must, given that countries must have an internal market of a reasonable size for its firms to first expand, take advantage of economies of scale and thus lower the average cost of production. Regional economies are divided into RECs, where there are no tariffs, quota barriers or other trade barriers between nations that are members of that REC. RECs provide a larger "domestic" market for producers. Thus, within the RECs, firms can benefit from import substitution because there are common external tariffs and quotas for trade between members of a REC and the rest of the world. Once the economies of scale are reached for the REC market, the common tariff barriers can be lowered and firms can break into world markets. However, many African governments are still giving priority to their national interests by maintaining nonphysical barriers to trade at their borders.

Bilateral donors such as the United States Agency for International Development (USAID), Department for International Development (DfID), AFD (France), NZAID and AusAid

are cooperating more closely with the multilaterals, yet many of their interventions remain instruments of their national foreign policy goals. They will work on the softer side of developing the transit corridors to promote trade facilitation and food security. DfID and USAID are working to reduce the number of nonphysical barriers to trade that still exist in Africa. For those nations on the fringe of the EU that may be considered developing or emerging markets, they will find the European Investment Bank strongly supporting transport infrastructure projects that help with EU integration via financing and technical assistance for transit corridors.

Donor support for airports, and to a lesser extent, ports, will become even more private sector-oriented because the private sector has proven to be a credible source of these transit modes in most regions. Best practices from the World Bank have ports operated as concessions or using the landlord model, even though this will take time to spread throughout the developing world. Development banks provide technical assistance on institutional reform for ports, waterways, airports and rail so that developing countries are able to leverage donor money with funds from the private sector. While this causes some issues, generally the private sector increases the efficiency of the transport infrastructure under its purview. This is true for all aspects of trade facilitation and freight as well as passenger traffic.

For example, the World Bank has a toolkit for managers of ports so that they can better understand the risks and benefits of different levels and types of involvement with the private sector. Each port has its own features and, as such, no single private-sector answer will fit all. For some ports, such as Maputo, the entire port is concessioned out to a private operator. For ports like Dar es Salaam and Mombasa, only container facilities are operated by the private sector under more limited concession agreements. The World Bank, as with other donor banks, will provide sample agreements and technical assistance to fit each port's unique position.

A problem with PPPs is that there can be an unequal sharing of risks between the public and private sectors, with the public sector holding a large contingent liability. For example, on a concession for a toll road, the private sector may be permitted to keep the proceeds if the traffic is higher than forecast. However, if traffic is substantially below the forecast, the concessionaire may go to the government and ask for a renegotiation of the PPP, where the government may either pay the concessionaire an additional lump sum, or grant the new concession on

more favorable terms for the concessionaire so that the road remains open and maintained to the agreed-upon level of service. Put simply, the private sector may retain the right to walk away from a PPP, but the government must keep the transportation hubs and arteries open and maintained (Bracey, 2004).

ADAPTATION TO CLIMATE CHANGE

This will involve, at an engineering level, changes in design and building standards. The World Bank and other development institutions will implement changes as to how they do business in the construction of all transport infrastructure including ports and airports. Even in cases where the donor is only providing political risk insurance, or demanding a given level of service, contracts will explicitly request the contractors to incorporate improved designs and construction to cope with new, erratic and more powerful weather-related events.

Long-term trends in mitigating climate change look promising. The Cancun meetings produced a commitment from almost all nations to a new form of regulation of greenhouse gas emissions. There remain many difficult issues to address. During the Great Recession and its aftermath, no country wants to impose constraints on industrial development. Once the globe emerges from the Great Recession (which is happening faster in the developing world than the developed world), the climate change issue will be addressed with more specifics. One main problem is for developed nations to ask developing nations to bear the same burdens of reducing greenhouse gas emissions, while it was the developed nations that generated most of the current greenhouse gasses. This is one aspect of the "north-south" divide. A "cap and trade" system, where developing nations are given pollution rights credits to use or sell, is a popular option among those nations. For transportation, this will place one more constraint on relying on fossil fuels. Road transport accounts for nearly a quarter of manmade greenhouse gasses contributing to climate change (World Bank, 2007).

FOOD SECURITY AND THE RURAL POOR

Global warming will cause production patterns to shift and require major innovations in agriculture research, extension and marketing chains. As in Sub-Saharan Africa, desertification will become a more severe problem in many locations, compounding the hardships faced by the poor. Food crop production will become more concentrated where possible to minimize transport costs.

Donors envision multipurpose trips for people in rural areas so as to minimize transport costs while minimizing the carbon footprint in meeting food needs.

While this is a lofty goal, the reality may prove to be more traditional, ensuring that feeder roads connect farmers with markets, and connect smaller markets with larger markets for inputs and outputs. There will also be an increased emphasis on transport asset management. Road asset management using road funds has gained in popularity. Maintaining the network of feeder roads is essential to food security, or farmers will remain at subsistence levels.

In many regions such as the Sahel, at the southern edge of the Sahara desert, arresting desertification will involve improved farming techniques, such as drip irrigation, and minimizing the use of wood for charcoal as a source of energy. Despite all innovations, outmigration may be the best solution, but that compounds the problems in urban areas. This type of activity will require much coordination between the donors and host country governments to manage urban growth.

USAID will maintain the Famine Early Warning System, which has been in existence for 30 years and has proven quite useful. The system is updated continuously, and its results are available to the UN's Food and Agricultural Organization and also locally. It can help pinpoint which feeder, tertiary and secondary roads may be in need of immediate service. This does not solve the long-term problems but USAID and DfID are heavily engaged in transport infrastructure in Africa, a region plagued with frequent food crises.

TRANSPORTATION AND DEVELOPING FRAGILE STATES

The international community is committed to strengthening fragile states for international security purposes. Nations listed as homes for "the Bottom Billion" people are in need of special assistance regarding their national and regional transportation networks.[6] Now that it is widely agreed that transportation infrastructure leads to poverty reduction, a comprehensive national transport master plan (at minimum) is required for these nations. The World Bank is well-known for such studies and will be conducting more similar studies as the bank commits more resources to transport. Notable here and under the food security heading is the multinational Sub-Saharan Africa Transport Program (SSATP). The program is helping to build corridors that transit much of the continent, linking weaker states with stronger nations. Bilateral aid agencies will play a role here as well, relying in part on transport-led trade facilitation using new logistics

techniques to strengthen nations. The Regional Economic Communities are also ways in which weaker members can improve their economies and thus become stronger.

For example, the East African Community recently admitted Rwanda and Burundi. There are two transit corridors being improved by numerous donors, one that comes in from the north through Rwanda into the port of Bujumbura, and one from the south through Tanzania to Lake Tanganyika. The corridors will meet at the port of Bujumbura, the capital of Burundi. Burundi recently emerged from a period of civil strife. It is a very poor country, and at this time has only one secondary school. The new transit corridor that is planned from Lamu Port, Kenya, will pass near Somalia and go to Uganda and South Sudan to collect oil products, which are yet to be developed. This will help bring stability to a region that has known more instability than perhaps any other area in the world.

Within countries with active insurgencies, transport is vital. People need food, water, shelter, access and power, roughly in that order, according to numerous studies by the author. The access is needed for connectivity to markets, schools, hospitals, and for social and political purposes. Good counterinsurgency policy will apply the corridor concept, where market areas near the road are paved, and bus stations are covered with separate waiting areas for men and women in accordance with the culture. Gender sensitivity is critical for the success of a roads project. For example, washrooms near the bus stops must have separate facilities for men and women. This facilitates the movement of women, who do the bulk of the farming while raising families. Drinking-water wells are also placed within the catchment area of the road. This approach helps counterinsurgency efforts and food security efforts, and facilitates local governance (Tornieri, Ihara and Gajewski, 2007).

UPCOMING REGIONAL TRENDS

Sub-Saharan Africa: The bulk of World Bank assistance will be to the 75 percent of the African population that lives in rural areas. But this assistance will be tied to easier access to urban areas and thus markets. The approach will fit well with AfDB's focus on regional integration to reach economies of scale. What must not be neglected are the networks of secondary and tertiary roads needed to reach rural residents. Assistance provided to municipal governments to help manage these local road assets through bilateral aid programs has proven to

be beneficial. The AfDB will be promoting more regional trade corridors. The hope is that they emphasize MRT. One problem is the plethora of different gauges for the rail lines. Virtually every country in Africa has imposed the switch to standard gauge as a national priority. This expensive option may make economic sense in the future, but improving service on existing lines is a higher priority. Once it is demonstrated that the region's economies can operate the rail networks they have now, then the growth in rail traffic will justify the switch to standard gauge.

The PRC is the most highly publicized investor in Africa's transport infrastructure in exchange for resources, usually minerals and ores. When the PRC makes these investments, it does not generally adhere to the social and environmental restrictions placed on host governments for transport infrastructure by the donors. But the PRC is not the only nation looking to secure resources for current use as well as for future generations. Many Middle Eastern nations have been contracting with countries in Sub-Saharan Africa for 99-year leases of farmland and other resources in exchange for cash or infrastructure finance. Libya has done this in Mali. Likewise, Saudi Arabia has leased farmland in Sudan. As population pressures grow, more of this type of activity by more developed nations is expected (Foster et al., 2009).

Often weak developing national governments, as unequal bargaining partners, get a less than optimal exchange of infrastructure or cash for their resources. And the weak governments are sometimes corrupt, so the returns to the resource use do not filter down to the nations' citizens. The African Union has developed a number of charters and provides technical assistance which a developing African nation may use to receive a more equitable exchange. The use of nonrenewable resources in developing nations by developed nations is a major issue the global community must address. Suffice it to say that the trades of infrastructure for these resources will prove to be short-sighted in light of the projected population growth in the region.

East Asia and the Pacific: From the World Bank, the region will see more effort to link in remote peoples while improving the environmental soundness and safety of urban transport. The ADB will be more in line with the urban strategy and helping people in remote areas perhaps with transport subsidies. The ADB will also be promoting regional integration and improved logistics management through the use of transit corridors. Both the World Bank and the ADB will be focusing on reducing congestion and pollution in the region's megacities and other large urban

areas. The PRC is actively building its portion of the Asian Highway Network and linking the region with standard gauge rail lines.

The Pacific Islands face a different challenge. Most are too small to support a major port. They are often poorly endowed with natural resources. The incidence of poverty is high. Moreover, rising sea levels due to climate change are erasing the real estate to the point where many Pacific Island governments have agreements with Australia or New Zealand for phased immigration to these larger nations. The development challenge will remain to provide adequate port services and roads so that the population is connected to markets, schools, and the rest of social and economic centers.

For example, the Asian Development Bank is making a grant of $12 million to enhance land, sea and air transport infrastructure in the Solomon Islands. The project aims to improve the quality of roads, bridges, interisland shipping services and other transport systems. The grant will fund technical assistance to help the Ministry of Infrastructure and Development develop and carry out civil works nationwide, and implement technical and managerial capacity development for the ministry's staff (ADB, DEVEX.com, 2010).

Eastern Europe and Central Asia:
The World Bank will be focusing on transport asset management in Eastern Europe, and fighting the extreme poverty in Central Asia. This will call for strong transport linkages, in sync with the Asian Highway Network. The EIB will be focusing on transit corridors between member nations and also those acceding to the EU. These include Croatia and Turkey. EIB will also build corridors to Norway and Liechtenstein as part of the European Economic Area, and to Mediterranean Partner Countries as well as Russia, Ukraine, Moldova and Belarus. These will link up with the Asian Highway Network as well.

The EU has taken the lead in the region with the Trans-European Network Program which features railways and the use of inland waterways. Through the EU Neighbor policy, links are also built with the former Soviet Union nations and Central Asia. The TRACECA program is a good example of this. The TRACECA corridor follows the old Silk Road network through Europe, Central Asia and into China.

Results in Central Asia depend on covering large distances to exploit resources, including hydropower. In Kazakhstan, for example, the transportation sector is expected to grow substantially. Infrastructure requirements through 2030 are likely to be more than $25 billion, with 23

percent of that for highways and 12 percent for air and waterway transport. Funding is mostly expected from private firms as foreign direct investment (U.S.-Kazakhstan Business Association, 2010).

Tajikistan is another story. The Tajik road network is nearly 30,000 kilometers long, but roughly one-third of this is unpaved. The mountainous rugged terrain means that most of the country is linked by road, not rail. On the whole, in a legacy from Soviet times, Tajikistan's road system is relatively extensive, although years of civil war and economic difficulties have degraded the system's quality. Roads in the mountainous areas of the country are usually closed between early November and May due to difficult weather conditions. Iran and the PRC have given substantial sums to renovate roads linking the country with Iran and the PRC as well as into Uzbekistan. All road links are part of the Asian Highway Network (Personal Visits, Janes.com, 2010).

Tajikistan operates a section of the former Soviet Central Asian Railway network, running from Uzbekistan to southern Tajikistan. Government officials also announced in March 2009 that construction on a 146 kilometer rail line to Afghanistan had begun. This will form an integral part of the overland supply route through Russia and Central Asia that NATO secured access to in early 2009. Also in the planning stages is a plan to build a 250 kilometer rail link connecting Tajikistan with Turkmenistan via northern Afghanistan to bypass its northwestern neighbor Uzbekistan. The national rail carrier, Tajik Railways, is regulated by the deputy prime minister's office and is self-financing (Janes.com, 2010).

These two countries are examples of the types of development expected in Central Asia. Those routes of the Asian Highway System that are critical to the extraction of natural resources will be built along with transit infrastructure of strategic importance. The long distances to traverse to international markets make transit solutions rely on rail in the long run.

Consider Uzbekistan: the country has long been politically isolated from its historical trading partners to the south. Uzbekistan's transportation infrastructure is largely designed to tie the region to Russia. The only rail outlets are northward. Uzbekistan's nearest rail-connected ports are in St. Petersburg, 3,500 kilometers to the northwest; the Black Sea ports, 3,000 kilometers to the west; and Vladivostok and the main Chinese ports, 5,000 kilometers to the northeast and east, respectively. Such distances add significantly to export prices. For example, the transportation of one ton

of cotton sold in Western Europe adds as much as $175 to the selling price. Land routes to potential customers rely on the stability and the transport system reliability of the several countries through which Uzbekistani goods must pass. Because of these conditions, transportation planners have emphasized the availability of alternative routes and modes, relying mainly on roads and railroads (Nations Encyclopedia online, 2010). At this time, such transport costs only can be covered if growing cotton is subsidized, which indeed it is. Prior to 1989, and similar to Tajikistan, Uzbekistan relied on exporting cotton to various parts of the Soviet Union. Even though this is uneconomical, the pattern persists out of habit and the conservative nature of the farmers in the region to resist switching to other crops.

Latin America and the Caribbean: The World Bank will be investing heavily in transport infrastructure to make up for the lack of investments in the area since the 1980s. Yet the IADB has been very successful in involving the private sector in tolling concessions of major highways in the region. Almost all railways in the region have been concessioned. The IADB will continue not only investing in transit corridors, but also dealing with the problems of urbanization. The region already has three megacities and more are on the way. Moving to more pedestrian, bicycle and MRT solutions will be very difficult both because of cost and culture. IADB is committed to the same urban solutions as the World Bank and the ADB.

In Brazil, for example, before the 1930s, roads and railroads primarily linked production centers to seaports, and there were some connections among major urban centers. By the 1980s, a start had been made on a national road system connecting the various parts of the country. However, construction and maintenance costs were high, slowing extensions to the system as well as the addition of feeder roads. In a country as large as Brazil, with its difficult terrain, a well-developed transportation system remains many years off.

Brazil's national highway network totals about 2 million kilometers. Paved highway totals only about several hundred thousand kilometers; the remainder is gravel or earth. Paved roads link the capital, Brasília, with every region of Brazil. Roads are the principal mode of transport, accounting for 60 percent of freight and 95 percent of passenger traffic, including long-distance bus service. Major projects include the 5,000 kilometer Trans-Amazonian Highway, 4,138 kilometer north-south Cuibá-Santarém Highway and the 3,555 kilometer Trans-Brasiliana Project, which will link Brazil to Uruguay.

Railroads total at least 30,000 kilometers, most of which are meter gauge. Rail projects from mining areas to ports have accounted for the bulk of investment in the railroads since the mid-1980s. Mining companies operate several privately owned railroads. The Federal Railroad System is responsible for suburban networks throughout Brazil. By 1994 the government had approved plans to privatize RFFSA. A new railroad running westward from Santos through agricultural lands, then north reaching near the Amazon's southwestern margin, is being built by a private entrepreneur's railroad company (Nations Encyclopedia, 2010).[7] Privatization and use of PPPs are widespread and most successful in Latin America compared to other regions of the developing world.

Middle East and North Africa: The World Bank is intent on increasing private-sector participation in this area, since the private sector is not well-represented in transport here. This will be no easy task. The Regional Economic Communities are not very active until one moves further south in Africa. The AfDB is intent on the Cairo-to-Johannesburg corridor, but this very ambitious undertaking is based primarily on highways.

Still, there is some movement in North Africa toward using the private sector more aggressively to finance and operate large transport projects. Algeria has a huge self-financed railway development program. Morocco just awarded to the private sector the construction of a high-speed rail line, which will connect Tangiers and Casablanca.

Nonetheless, the public sector looms large in the Middle East and much of North Africa. Take Israel as an example. The transport systems in and around Israel are dense, and the public sector remains more heavily involved. In Jordan, a railway line is used to carry phosphates to Aqaba for transshipment to world markets. In Iraq, transport is less dense, but adequate to carry expected near-term trade flows. As stated above, the region is characterized by a heavy involvement of the state in both transport services and in provision of transport infrastructure.

For another example, the African Development Bank and the Islamic Development Bank have combined forces to provide additional financing for development projects in the organizations' common member countries. AfDB and IsDB will contribute $500 million each in financing for infrastructure, water, education, social infrastructure, agriculture, regional integration, capacity-building and food

security projects in common member countries such as Somalia, Burkina Faso, Egypt, Togo, Mali, Sierra Leone, Nigeria and Algeria.

The objective of the joint effort will be to foster economic development and social progress by coordinating co-financing projects and thus promoting economic development and technical cooperation in Common Member Countries (AfDB, DEVEX.com, 2010). This goes to the themes in this article of regional integration, strengthening fragile states and improving food security.

South Asia: Like Africa, this region suffers from many poor rural residents that are not connected with society. Yet the region is also grappling with rapid urbanization and rapid economic growth. The PRC is investing in transit links into Pakistan as part of the Asian Highway Network. The PRC is also investing in a rail link between China and Afghanistan to extract copper in Afghanistan from the second-largest undeveloped copper deposit in the world.

Despite the urban problems, donors are, at least in the short run, still committed to "more roads." In Afghanistan, the donors have rebuilt the ring road and the connectors to Pakistan and Tajikistan. Pakistan will benefit from a massive road rehabilitation program after the recent floods.

India is really two worlds: one, the urban new emerging markets; and the other, large areas of land covered with poor farmers. The donors are committed to tackle both problems. MRT does exist on a wide scale in India, but badly needs upgrading from years of overuse. To rectify the situation, India is investing a large sum to rehabilitate its rail system, and is widening links to standard gauge.

The new government is making infrastructure a priority, where roads are a particular focus of attention. The government's goal is to build 20 kilometers of new highway a day, and it is seeking $41 billion in private-sector investment over the next three to four years to help fund the construction. Of India's 70,000 kilometers of highways, 16,000 are in poor or very poor condition; reports say that 40 percent of India's fruits and vegetables rot before reaching market because of delays from poor roads and rail lines.

One thing in India's favor is an active stock market for raising funds. Infrastructure companies have raised about $6.3 billion since the beginning of 2008 on the Bombay Stock Exchange, according to Dealogic. Much of that has been for power projects, though road companies have gone to market as well. The most recent, IL&FS Transportation Networks Ltd., raised $138 million in an offering that began trading

March 30, 2010 (WSJ.com, Oct. 11, 2010). Financing infrastructure through the private sector is an ambitious goal given the record to date in the developing world, even for the BRICs. Moreover, this will fund highways for concessioning, and India needs thousands of kilometers of secondary and farm-to-market roads constructed or rehabilitated, which are not amenable to private-sector financing. Expect the donors to fill some of this gap in the coming decades.

TRENDS IN TRANSPORT PROJECTS 1990–2010

The World Bank Group committed nearly $32 billion to transport projects during 1996–2006. The donors concentrated on interurban transport and, to a lesser extent, intercity transport. The private sector was engaged to the extent that it was used for contracting construction and rehabilitation work instead of the use of force account—government workers in the construction business. Road asset management went through a revolution as independent road funds emerged as best practices. These funds are supported by road user charges such as a tax on gasoline and toll collections; the money is then used only to maintain the road network to a level of service acceptable to the communities served. The old method, where road user charges went into the national budget and treasury, meant that oftentimes the money was spent on non-transport-related activities and roads were allowed to deteriorate. The International Monetary Fund generally objected to independent road funds on the grounds that the fund represented one more leakage from the budget that gave rise to another avenue for corruption, especially in states with weak governance. We are finding that even in places like Afghanistan, it is possible to move toward a road authority, which is several steps away from a road fund, which will manage the national highway system to an internationally recognized level of service using private contractors. Despite the IMF concerns, a recent evaluation of the 38 existing road funds in Africa showed that they have had a significantly positive impact in improving road conditions.

The top 10 recipients of transport projects during 1995–2000 from the World Bank Group were China, Brazil, India, the Russian Federation, Argentina, Indonesia, Mexico, Bangladesh, Vietnam and Poland. During 2001 to 2006 this changed little, with Russia, Poland and Bangladesh dropping off the list, and with the addition of Colombia, the Democratic Republic of Congo and Egypt. India, China and Brazil accounted for about 40 percent of the lending during both periods. The donors favored roads

over rail. In many places, rail was allowed to decline in effectiveness and competitiveness. In Africa, this held true even for bulk commodities. For the World Bank, as an example, there were 15 greenfield roads projects, 51 road rehabilitation projects, 15 rural road projects, 17 urban road projects, three aviation projects, 13 port and waterway projects, and only 14 rail projects between 1995 and 2005 (World Bank, 2007). Railways have often proved to have intractable management issues because the state controls rail system employment. This has resulted in many railroads being overstaffed with under-qualified persons.

During this time donor coordination was weaker than it is now. Further, environmental, social and risk management received less attention than is the case today and as we look to the next decade. Risk management includes health issues, road safety and awareness of the HIV/AIDS problem that roads often pose. Truckers on long hauls with overnight stops often spread HIV/AIDS. In Bangladesh, when the new Jamuna Bridge was first opened to traffic, the truckers still preferred the ferries because they could then stop overnight on the far shore to stay at "comfortable" lodgings.

Much research went into showing that roads indeed had moderate to severe impacts on the environment. Social science research proved that roads, especially rural farm-to-market roads, were an excellent means to reduce poverty. Road safety statistics showed that rehabilitated roads often led to an increase in traffic deaths. These lessons are now being applied and will be important for the decade to come. Gender-sensitive approaches to transport planning also made progress (ADB, 2008).

OUTLOOK FOR 2020 AND BEYOND

The outlook is for an expanded role for donors in providing transport infrastructure in the next decade or two. Road maintenance and road asset management systems are virtually solved by now. A good set of best practices has evolved, using the private sector as much as possible. Devoting road user charges to pay for road maintenance and rehabilitation has become a common practice, except where governments are corrupt and institutions weak. The importance of reaching the poor through farm-to-market roads has been established. Health, road safety, gender, environment and social aspects of roads have been tackled. The best practices are now being applied and will only improve in the coming decades.

The greatest challenge will be to switch modalities to more

environmentally friendly modes of transport such as MRT and the "Motorways of the Seas" promoted by the EU. The goal is to combine several modes of transport in order to achieve minimum cost and minimum environmental impacts through modern logistics systems. Thinking and implementing modern logistics systems to minimize the carbon footprint is new and must be accompanied by a change in culture about transport.

In many regions, railroads have been neglected, especially in Africa, where the largest population growth is expected. Further, to reduce the dependence on fossil fuels, the entire urban landscape will need to be reshaped in urban areas in the developing world. Research has shown that it is not enough to provide light rail transit systems to help with interurban trips. Rather, safe, wide pedestrian walkways need to be provided as well, along with bicycle paths. When one considers New Delhi, Cairo, Nairobi or other developing world cities, the costs of this transformation seem prohibitive, but are there really any sustainable alternatives?

When donors start to move in on the local city officials with these proposals, the response is likely to be: "…please go back to building trunk roads and rural roads." Rural poverty is a problem that will only worsen as the population grows. There are conflicting views on this, and it is certainly true that progress by the donors has reduced poverty. But in Africa and in Central Asia, as well as in South Asia, many contend that it has been very difficult to manage to get sustainable poverty reduction accomplished.

The opportunity cost of not providing one more farm-to-market road versus a wide pedestrian walkway in downtown Nairobi will continue to be high. One might think that all farm-to-market roads can be built and then the donors can move to urban issues. There are strong weather-related events that frequently wash away the rural roads. This is true in typhoon-prone Philippines as it is in monsoon-prone Kenya or earthquake-prone Bolivia. Thus, the vision of wide pedestrian walkways, bicycle paths and MRT in urban areas will be out of reach by 2020. That does not mean that progress will not be made. Progress towards greening of developing nations' urban areas will be substantial if the local political will is also strong.

Regional integration will be accomplished in the next 20 years through donor efforts with input from the host country governments. Most if not all of the Asian Highway Network will be constructed, and will link to trunk roads in Europe. Europe will also become more integrated from the Mediterranean nations to the Baltic States,

Finland, Norway and Sweden. Latin America, now on the road to a single Regional Economic Community, will also be regionally integrated by road and rail. Ultimately, in Africa, there will be at least 20 major transit corridors in good operational state by 2020.

The big question is rail transportation. This will be solved in Latin America, China and Southeast Asia. However, rail transportation in Africa and in South Asia will remain a challenge. The hurdles of rural poverty, political instability and a lack of political will, combined with the needs of the urban poor, will make MRT an unreachable goal in these regions by 2020.

APPENDIX

The Structure of Some of the Donors

The World Bank Group is composed of the International Development Association, the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Center for Settlement of Investment Disputes (ICSID). IBRD typically makes near- or at-market-rate loans for poverty-reducing projects to middle-income countries. But IBRD is also offering more sophisticated products to its clients in the areas of risk management, knowledge services and similar tools. Nearly 70 percent of the world's poor, defined as people who earn less than $2 per day, live in middle-income countries. These countries borrow from the IBRD and have a large social agenda that includes meeting and surpassing the Millennium Development Goals. The International Development Association (IDA) makes interest-free loans and grants for programs to increase economic growth, reduce inequalities and improve living standards. IDA credits and grants an average of $13 billion a year; in recent years about half has gone to Africa. The IFC develops private-sector financial markets and a host of other market-oriented financial interventions. For example, the IFC will extend credit to a private-sector partner in a PPP for transportation in a developing nation. The IFC has made about $200 million of such transport loans in 2010. MIGA insures foreign direct investments in developing nations, in particular fragile and conflict-affected nations. The insurance is against political risk. MIGA is active in all developing regions,

with concentrations in West Africa and Central America. According to MIGA, FDI was to increase 17 percent in 2010, and the political risk insurance is often vital to a successful PPP in transport. The ICSID can be used to settle disputes arising from PPPs in developing countries (World Bank website, 2010).

The Asian Development Bank has recently issued a new Vision 2020, and also voted to increase its capital base from $55 billion to $165 billion, partly to help offset the effects of the Great Recession, but also to expand the bank's purview. The mission is still focused on poverty reduction. By 2012, 80 percent of ADB lending will be in infrastructure, environment, regional cooperation and integration, financial sector development, and education. To encourage private-sector activity such as transport PPPs, the ADB will provide direct financing, credit enhancements, risk-mitigation guarantees and innovative new financial instruments (ADB, 2010).

The African Development Bank has facilities to lend on nonconcessional and concessional terms, make grants, and participate in private-sector activities as well. The AfDB's mission is to contribute to the economic and social progress of its regional member countries. It manages the African Development Fund, the Nigeria Trust Fund, the Arab Oil Fund, the Special Emergency Assistance Fund for Drought and Famine Relief for Africa, and a Special Relief Fund. In 2009, all forms of lending increased by more than 150 percent. For the private sector, the bank also operates the Global Trade Liquidity Fund, the Main One Cable System-Phase I and the Emerging Africa Infrastructure Fund. AfDB loans to the private sector to facilitate trade by small- and medium-sized enterprises (SMEs). Project lending accounts for 70.3 percent of AfDB's budget, policy-based lending for 27.2 percent of the budget, and the bank provides small amounts for debt relief and grants. The AfDB's Medium Term Strategy 2008 – 2012 calls for poverty reduction, equitable growth through regional integration and, through these, wider opportunities for Africa's poor. The AfDB can participate in transport PPPs through a variety of mechanisms. It can also lend and make grants to transnational institutions such as RECs and transit corridor management agencies. The World Bank Group is constrained to lend directly to nations (AfDB, 2008).

The Inter-American Development Bank supports the efforts by Latin America and the Caribbean nations to reduce poverty and inequality through loans and grants. They have a concessional arm, the Fund for Special Operations. They also have ways to support the private sector and have been big

supporters of the tolled concessions on highways that have been so successful in the region.

The European Investment Bank's (EIB) main mission is to promote regional integration of the European Union. As such it promotes transport corridors in the countries of the wider European neighborhood. There is also a focus on EU neighbors, specifically Accession Countries (Croatia and Turkey); the European Economic Area (Norway, Iceland and Liechtenstein); the Balkans; the Mediterranean Partner Countries; and Russia, Ukraine, Moldova and Belarus.

---

1 *Authored by Greg Gajewski, Ph.D. and Vice President for Economic Development, The Louis Berger Group, Inc. The author would like to thank Rene Cousin of Louis Berger for a review and helpful comments. The views expressed in this article are the author's own, and not attributable to The Louis Berger Group, Inc. or any other institution. Numerous web sources from the donor institutions were used to prepare this article.*

2 *The reader is directed to* The Great Recession and Developing Countries: Economic Impact and Growth Prospects, *by Mustapha Nabli, Editor, World Bank, 2011, for more on this topic.*

3 *The MDGs are 1. eradicate extreme hunger; 2. achieve universal primary education; 3. promote gender equality and empower women; 4. improve maternal health; 5. combat HIV/AIDS, malaria and other diseases; 6. ensure environmental sustainability; and 7. develop a global partnership for development. Most are related to improving access.*

4 *The Inter-American Development Bank is in the process of updating its strategy, and the newest document is not ready for release; however, it also supports this position as does the African Development Bank. Material used here on IADB and the AfDB is sourced in the article's Reference section, or available on their respective websites.*

5 *The Andean Community of Nations includes Bolivia, Colombia, Ecuador, Peru and Chile. Mercosur includes Argentina, Brazil, Paraguay, Uruguay and Venezuela.*

6 *See Paul Collier (2007)* The Bottom Billion: Why the Poorest Countries Are Failing and What Can Be Done About It. *Oxford University Press.*

7 *This online resource is based on research from the U.S. Library of Congress.*

REFERENCES

African Development Bank Group, *Medium Term Strategy 2008 – 2012* (2008)

Asian Development Bank, *Strategy 2020*, Manila (2008)

Asian Development Bank, *Sustainable Transport Initiative: Operational Plan*, Manila (2010)

Asian Development Bank, Japan Bank for International Cooperation, and World Bank, *Connecting East Asia: A New Framework for Infrastructure*, Manila (2005)

Barbero, Jose A., *Freight Logistics in Latin America and the Caribbean: An Agenda to Improve Performance*, Technical Notes IDB-TN-103, Infrastructure and Environment Department, Inter-American Development Bank, Washington, D.C., USA (2010)

Bracey, Najja and Moldovan, Sonia, *Public Private Partnerships: Risks to the Public and Private Sector*, Presented at the 6th Global Conference on Business and Economics (Boston, MA), The Louis Berger Group, Inc., Washington, D.C., USA (2007)

European Investment Bank, *Corporate Operational Plan 2010 – 2012*, Luxembourg (2009)

Foster, Vivian, Butterfield, William, Chen, Chuan, and Pushak, Nataliya, *Building Bridges: China's Growing Role as Infrastructure Financier for Sub-Saharan Africa*, World Bank, Public-Private Infrastructure Advisory Facility, Washington, D.C., USA (2009)

Grigg, Neil S., *Infrastructure Finance: The Business of Infrastructure for a Sustainable Future*, John Wiley and Sons, Hoboken, NJ, USA (2010)

Kessides, Ioannis N., *Reforming Infrastructure: Privatization, Regulation, and Competition*, World Bank, Washington, D.C., USA (2004)

Nabli, Mustapha K., Ed., *The Great Recession and Developing Countries, Economic Impact and Growth Prospects*, World Bank, Washington, D.C., USA (2011)

Tornieri, Francesco, Ihara, Miho and Gajewski, Gregory, *Designing Socially Inclusive and Gender-Responsive Transport Projects: A Case Study of the ADB Timor-Leste Road Sector Improvement Project*, Manila, Asian Development Bank, Peer-Reviewed Monograph (2007)

United Nations, *World Population to 2300*, Economic and Social Affairs, New York, USA (2010)

Whitelegg, John and Haq, Gary, *World Transport: Policy and Practice*, Earthscan Publications Ltd. USA (2003)

World Bank, *Safe, Clean, Affordable Transport for Development*, Washington, D.C., USA (2008)

World Bank, *Infrastructure at the Crossroads: Lessons From 20 Years of World Bank Experience*, Washington, D.C., USA (2006)

World Bank, Independent Evaluation Group, *A Decade of Action in Transport: An Evaluation of World Bank Assistance to the Transport Sector, 1995 – 2005*, Washington, D.C., USA (2007)

World Bank, *Reforming Infrastructure: Privatization, Regulation, and Competition*, Washington, D.C., USA (2004)

2014 World Cup and Rio 2016 Olympic Games: Business Opportunities

Sergio A. Laclau, Partner, and Paula Surerus, Associate, of Xavier, Bernardes, Braganca Sociedade de Advogados

BRAZIL HAS GOT IT ALL: TWO PREMIER SPORTING EVENTS

Over the next six years, the sporting world will turn to Brazil as we host the world's two most important sporting events.

On Oct. 30, 2007, Brazil was selected as the host nation for the 2014 FIFA World Cup, the world's most widely viewed sporting event.

Shortly after being appointed as one of the host cities for the 2014 FIFA World Cup, Rio de Janeiro was awarded the 2016 Olympic Games ("Rio 2016") on Oct. 2, 2009, the first-ever Olympic Games in South America.

Brazil's selection as host of these two major sporting events coincided with the most favorable moment ever in the country's economy. Following the global financial crisis, Brazil has been attracting billions in investments, going through an unprecedented level of economic and social progress. The country's economic stability has been internationally recognized by foreign rating agencies that have upgraded Brazil to an investment grade country.

It is only the fourth time in history that a country will host both events within a two-year time frame (the other occasions being Mexico in 1968 (Mexico City Olympic Games) and 1970 (FIFA World Cup); Germany in 1974 (FIFA World Cup) and 1976 (Munich Olympic Games); and the United States in 1994 (FIFA World Cup) and 1996 (Atlanta Olympic Games)).

In order to successfully host these two events, Brazil must overcome several major structural challenges. Over the next few years, massive investments

in infrastructure improvements and construction work will be necessary to comply with the requirements and standards set by the International Federation of Association Football (FIFA) and the International Olympic Committee (IOC).

Among the infrastructure sectors that demand urgent and huge investments, civil construction and transportation are considered special business opportunities in the current macroeconomic environment and stability achieved by Brazil, attracting the attention of both public and private investors.

Besides directly related investments, other businesses that naturally accompany these events are also being carefully analyzed. Since the election of Brazil to host the 2014 World Cup and Rio 2016, we have witnessed a significant increase in the number both of nationals and foreigners seeking advice in a range of sectors in order to understand the regulations and structure of their investments in Brazil.

2014 FIFA World Cup

The World Cup is a soccer tournament in which, in its current format, 32 national teams compete. It has been organized by FIFA every four years since 1930,[1] and Brazil has won the most titles—five (1958, 1962, 1970, 1994 and 2002)—and is also the only country to participate in every single championship held so far.

Soccer is returning home. Held in Brazil for the second time (the first was in 1950), the 2014 tournament is scheduled to take place from mid-June to mid-July in the following Brazilian host cities: Rio de Janeiro/RJ, Fortaleza/CE, Porto Alegre/RS, Belo Horizonte/MG, Cuiabá/MT, São Paulo/SP, Brasília, Recife/PE, Natal/RN, Salvador/BA, Manaus/AM and Curitiba/PR.

The organization of the 2014 World Cup presents plenty of business opportunities in a huge range of sectors/industries scattered all over our country.

Topping the list of sectors that will benefit the most from World Cup projects, it is estimated that civil

construction will increase by R$8.14 billion[3] between 2010 and 2014. Investment in the civil construction sector for the World Cup will essentially be directed to the construction of new soccer stadiums and the improvement of existing ones, as well as to the construction of new hotel rooms.

The construction and improvement of stadiums is a priority for all of the World Cup host cities, since even the largest and most modern Brazilian stadiums do not fully meet the standards required by FIFA. According to information divulged by the Brazilian Ministry of Sports, Brazil will invest R$5.8 billion in the 12 stadiums hosting the 2014 games, of which (i) R$3.7 billion is expected to be invested by the federal government and (ii) R$2.1 billion is expected to come from local and private resources. The renovation works of the Maracanã Stadium in Rio de Janeiro alone are expected to consume a total investment of approximately R$1 billion.[4]

The projects for the 12 stadiums hosting the World Cup games include:

(i) **Rio de Janeiro — Maracanã Stadium:** The stadium, which was recently modified for the 2007 Pan-American Games, is undergoing a major renovation for the 2014 World Cup and Rio 2016. The refurbishment project envisages the modernization of the stadium by the expansion of its grandstand's covered area, enlarging its capacity from 82,238 to 87,000 seats, as well as increasing the capacity of the stadium's parking. The work has already started and is being exclusively financed with public resources.

(ii) **Fortaleza — Castelão Stadium:** The project for the renovation of the stadium envisions the expansion of its roof to cover all of the seats, the construction of an underground parking lot with capacity for 4,200 vehicles and the moving of the lower grandstand nearer to the field by 20 meters. The work is being implemented through a public-private partnership (PPP).

(iii) **Manaus — Vivaldão Stadium:** The existing stadium will be demolished to make room for an all-new stadium called "Arena Amazônica," a modern architectural project designed in the form of an Indian basket, with capacity for 48,000 spectators and 12,450 vehicles.

(iv) **Brasília — Mané Garrincha:** The stadium will be rebuilt and transformed into the "Estádio Nacional," with capacity for 70,000 spectators — 25,000 more than its current capacity. The work is being implemented with public resources.

(v) **Belo Horizonte — Mineirão Stadium:** The project for the improvement of the

stadium includes lowering the level of the field, increasing the capacity of the media and parking sectors, and closing the stadium roof. The work has already started and is being implemented through a PPP.

(vi) **Porto Alegre—Beira-Rio Stadium:** The main improvements foreseen in this project to meet FIFA requirements are the placement of chairs in all sectors of the stadium and the refurbishment of changing rooms, bathrooms, elevators, suites and cabins. The work, which is being conducted with private resources, has already started.

(vii) **Natal—Arena das Dunas Stadium:** The "Arena das Dunas" is a new stadium that will be built in the space occupied by the "Machadão" stadium. The project, notable for being self-sustainable, foresees the construction of 45,000 seats and parking capacity for 6,000 vehicles. The conclusion of the bidding process is expected by April 2011.

(viii) **Salvador—Fonte Nova Stadium:** The stadium will be rebuilt and its reformation works will include the construction of 55,000 seats and a parking area able to accommodate up to 5,292 cars. The work, which has already started, is being implemented through a PPP.

(ix) **Recife—Arena Olinda Stadium:** In Recife, a new stadium will be built to host the 2014 World Cup, with capacity for 46,150 spectators and 6,300 vehicles. The work is also being conducted through a PPP.

(x) **Cuiabá—Verdão Stadium:** The stadium will be demolished and rebuilt with 48,500 seats—8,500 more than its current capacity—and a parking area with capacity for 3,600 vehicles. The work, which has already started, will be exclusively financed with private resources.

(xi) **Curitiba—Arena da Baixada:** The capacity of the stadium will be increased from 25,000 to 41,000 spectators. Also, a new parking area will be developed with capacity for 1,150 vehicles. The work will be exclusively financed with private resources.

(xii) **São Paulo—Corinthians New Stadium:** Originally, the stadium "Morumbi" was expected to host the opening ceremony of the 2014 World Cup, with matches to take place in São Paulo. However, due to the project's financial incompatibility, FIFA has announced, together with the municipality of São Paulo, that the stadium selected to host the World Cup soccer matches in São Paulo will

be the new stadium of the soccer team Corinthians, with an expected capacity of 65,000 seats. The work required for the construction of this stadium will be financed with private resources and is estimated to start on March 1, 2011. The construction of new hotel rooms and the adaptation of existing ones are also attractive investment opportunities in light of the increase in demand for accommodations in Brazil in the coming years, not only directly related to these events, but also due to Brazil's extensive exposure in the worldwide media. Information disclosed so far appoints R$3.16 billion in investment in hotel expansion that would enable the construction of up to 20,000 new hotel rooms in the 12 World Cup host cities.[5]

Between June and July 2014, 25.2 million additional passengers are expected in Brazilian airports. To accomodate this increase, the federal government announced around R$6 billion of investments in the modernization and expansion of Brazilian airports, of which R$5.5 billion is intended to be allocated exclusively for the improvement of airports located in the host cities.

Moreover, in order to reduce the demand for air transportation, two alternatives are being planned: (i) the improvement and expansion of federal highways and (ii) the construction of a high-speed train.

The construction of a high-speed train (Trem de Alta Velocidade — TAV) is planned to connect the cities of Rio de Janeiro and São Paulo, the two largest and most important Brazilian cities. TAV-related studies appoint 511 kms of extension to be financed with approximately R$35 billion of investments, of which R$20.8 billion is to be financed by the Banco Nacional de Desenvolvimento Econômico e Social (BNDES), with the difference to be made up by the federal government together with the company or consortium that wins the bidding process expected to be concluded in early 2011.

The initial plan was to have the TAV fully operating by the World Cup. However, delays in disclosing the project's technical details and the terms of the bidding process made such aspirations unachievable, and the new target for completion is the 2016 Olympics in Rio.

World Cup Projects	Estimated Investment (R$)
Soccer Stadiums (Construction/Renovation)	5.8 billion
Lodging Expansion	3.16 billion
Modernization and Expansion of Airports	6 billion
Construction of TAV	35 billion

Rio 2016

The Olympic Games are a major international, multisport event occurring every four years, during which thousands of athletes from all over the world participate in a variety of competitions.

The first Olympic Games held in South America and in a Portuguese-speaking country, Rio 2016 is scheduled to be held from Aug. 5 – 21, 2016, in Rio de Janeiro, the tourism gateway to Brazil, and will involve competition in 28 sports. The venues for Rio 2016 will be located in the following zones of the city:

(i) **Copacabana Beach**, where the competitions of speed canoeing, rowing, swimming, marathon, triathlon, beach volleyball, sailing, cycling and race walking will occur.

(ii) **Maracanã**, where soccer, volleyball, archery, marathon and rugby competitions will be held. Maracanã will also host the opening and closing ceremonies of Rio 2016.

(iii) **Deodoro**, which will host the equestrian, shooting sports, modern pentathlon, fencing, BMX, canoe slalom and mountain bike competitions.

(iv) **Barra da Tijuca**, where the "Olympic Complex" will be located, concentrating the majority of Olympic competitions, including basketball, handball, judo, wrestling, tae kwon do, field hockey, tennis, track cycling, water polo, diving, swimming and synchronized swimming, artistic and rhythmic gymnastics, badminton, boxing, weightlifting, and table tennis.

During the six years preceding Rio 2016, many projects must be implemented in Rio de Janeiro in order to comply with the international standards required by the IOC and to prepare the city's infrastructure for an extraordinary number of tourists in a very short period. These include the construction of several sports facilities and new hotel rooms, the modification of existing ones, and the improvement of Rio de Janeiro's transportation sector.

Investments in sports facilities are estimated at R$1.3 billion, the most important project being the improvement of the world-famous Maracanã stadium, the largest stadium in Brazil and South America, which has already been closed for two years for refurbishment.

Furthermore, in the civil construction sector, Rio de Janeiro plans on building 17 new hotels in the next five years, adding up to 9,000 new rooms in the city's hotels to accommodate the domestic and foreign tourists attracted by Rio 2016. Currently, there are

approximately 29,000 hotel rooms in the city of Rio de Janeiro — 11,000 less than the expected demand for the Olympics. The expectation is that the largest part of this investment comes from private resources.

In addition, a strategic revitalization of Rio's historic port zone has been in progress since the beginning of 2010, aiming to create a major new entertainment, accommodation and tourist district reconnecting the harbor to the rest of the city. Projects include the construction of 60 new restaurants, eight new hotels, an Olympic Museum and the head office of the Brazilian Olympic Committee (COB), with investments valued at R$26.8 million.

Regarding the transportation sector, several local projects are being designed in Rio de Janeiro, including (i) the construction of two express lanes exclusively for buses (the Bus Rapid Transit — BRT); (ii) the acquisition of 120 new trains by 2015 and the modernization of another 94; and (iii) the construction of a new subway — a 13.5 km line connecting Barra da Tijuca, the main competition center for the Olympics, and Rio de Janeiro's south zone, where most of the major hotel chains are concentrated, with investments estimated at R$5 billion.

Rio 2016 Projects	Estimated Investment (R$)
Construction and Improvement of Sports Facilities	1.3 billion
Revitalization of the Historic Port Zone	26.8 million
Extension of the Subway Line	5 billion

Indirect Opportunities

Reflecting the increasing economic importance of Brazil and the hosting of the 2014 World Cup and Rio 2016, several economic sectors are being positively affected as exemplified below.

The upcoming sporting events will undoubtedly boost the tourism sector. The Inter-American Development Bank (IDB) has already approved two loans, totaling US$187 million, directed to the development of the tourism sector in the states of Rio de Janeiro and Pernambuco.

These two major sporting events are also propelling the Brazilian real estate market. Massive investment in the construction of several residential buildings combined with increased demand for housing (both for owner occupancy and rental) is expected to

boost the real estate market for several years. A substantial increase in the prices of real estate in Rio de Janeiro can already be easily identified.

An additional factor is the development of new shopping centers and similar projects.

Impelled by hotel expansion and the development of tourism, the furniture and textile industries also expect significant growth in the next five years.

Further, certain telecommunications projects are being planned in several Brazilian cities to improve the infrastructure sector and support the increase in tourism, including the Plano Nacional da Banda Larga, a federal government project aiming to raise the number of households with broadband Internet access from 12 to 40 million by 2014. Public investments for the implementation of the Plano Nacional de Banda Larga are estimated to be approximately R$13 billion.

Another telecommunications project is the construction of a public network of Wi-Fi Internet covering the whole urban area of Rio de Janeiro by 2016, guaranteeing free Internet access to all visitors.

Infrastructure investments also include the installation of fan parks in all World Cup hosting cities — similar to the ones installed in Germany for the 2006 World Cup — with entertainment activities attracting tourists, sale of foods and beverages, screens to display games, and stages for shows and artistic presentations. Investments for the installation of such fan parks are estimated at R$204 million.

HOW TO PARTICIPATE

The participation of private companies in the infrastructure projects related to the 2014 World Cup and Rio 2016 can be implemented in alliance with the public sector through (i) the execution of concession agreements, (ii) the development of PPPs or (iii) direct investment in specific projects.

Concession Agreements

Concession agreements are executed between a public and a private entity winner of a respective bidding, having as their purpose the concession to the private entity of the right to exploit a public asset and/or render a public service. Under this type of agreement, the concessionaire (private entity) is compensated by collecting specific tariffs from the users of the executed service.

Concession agreements are usually adopted in financially self-sustainable projects, the implementation of which is fully transferred to the private

initiative. An example of a project being implemented through a concession agreement is the construction of the TAV, the concession of a public rail service for the construction, operation, maintenance and conservation of the TAV.

Public-Private Partnership (PPP)

A PPP is a long-term cooperative venture between the public and private sectors with the appropriate allocation of resources, risks and rewards. The main purpose of a PPP is, therefore, to provide a way to implement projects that are not self-sustainable by requiring large financing, which is not covered by the traditional concession system.

Under this type of agreement, the private entity is compensated, in whole or in part, by payments made by the public entity. Based on the compensation criteria, a PPP may be divided into two different categories: (i) the sponsored concessions, whereby the private entity is compensated either by collecting tariffs charged from the service users and by direct payments from the public entity; and (ii) the administrative concession, under which there is no financial compensation from the service users, just from the public entity.

Among other projects related to the 2014 World Cup, the restoration and revitalization of soccer stadiums, especially the Maracanã, is an example of the type of infrastructure project being implemented through a PPP.

Financing Alternatives

BNDES has announced the concession of two different credit lines available to specific infrastructure projects developed in connection with the 2014 World Cup and Rio 2016.

The first credit line announced by BNDES was R$4.8 billion, with a limit of R$400 million for each soccer stadium hosting a World Cup game, provided the amount does not exceed 75 percent of the total amount to be invested in the respective project.

The amount of the second credit line, announced by BNDES in February 2010, was R$1 billion for the improvement, extension and construction of hotels.

Aside from the above financing lines, the federal government has announced the availability of a R$9 billion credit line drawn from resources of the Severance Guarantee Fund (Fundo de Garantia por Tempo de Serviço — FGTS) for infrastructure works directed to facilitate access to sports stadiums, airports and ports in the 12 World Cup hosting cities. Such FGTS resources integrate the federal Growth Acceleration Program of Urban Mobility (Programa de Aceleração do Crescimento — PAC da

Mobilidade Urbana) and prioritize public transportation, such as the construction of express lanes for buses and subway extensions and modernization.

REGULATORY ASPECTS AND INCENTIVES

A set of regulatory changes is being gradually implemented by the federal, state and local governments, including fiscal and tax exemptions aiming to create mechanisms to attract investments from private entities, as follows:

World Cup General Law — A set of laws and regulatory measures in connection with the 2014 World Cup (including tax exemptions and changes in the immigration and importation rules).

Guarulhos ISS Exemption — A law project by the city of Guarulhos (SP) providing exemption of ISS (Service Tax) for services and projects related to the 2014 World Cup and Rio 2016. The project includes an exemption of ISS for companies that provide services for domestic and foreign individuals or legal entities related to the organization of the referred sporting events.

REIDI — Revision of the Special System of Incentives for the Development of Infrastructure (REIDI), which benefits the owners of infrastructure projects by suspending the enforceability of PIS and COFINS taxation for imports in the cases of sales or imports of machinery, equipment, instruments or building materials to be used or incorporated in infrastructure works.

State Tax Incentives (e.g., Conv. ICMS CONFAZ 108/08, authorizing, until July 13, 2014, the states to grant ICMS exemption in the transactions with goods destined to the construction, extension, restoration and modernization of stadiums to be used in the 2014 World Cup).

Olympics and World Cup Package — Rio de Janeiro recently issued a package composed of three local laws named "Legislative Package for the 2014 World Cup and Rio 2016," aiming to stimulate mainly the hotel expansion in the city, as follows:

(i) Law No. 5,229/2010: Creates the "Empresa Rio 2016 — E-Rio 2016," a public company incorporated to develop, implement and survey the programs and projects related to the organization of the 2014 World Cup and Rio 2016.

(ii) Law No. 5,230/2010: Provides for fiscal incentives and benefits related to the 2014 World Cup and Rio 2016, among which are: (a) remission of fiscal credits related to the IPTU (Municipal Real Estate Tax) overdue

until November 2011 for real estate purchased by Dec. 31, 2012, to operate as a hotel or hostel whose construction is finalized by Dec. 31, 2015; (b) exemption of the IPTU for real estate indicated in the item above as of the fiscal year following the beginning of the respective procedure for obtaining the work's licensing until the issuance of the respective Local Permit ("Habite-se"); (c) exemption of the ITBI (Transfer Tax) for onerous transmissions occurring up until Dec. 31, 2012, related to real estate designed to operate as hotels and hostels; and (d) exemption of ISS (Service Tax) for entities involved in the 2014 World Cup and Rio 2016 organization.

(iii) Complementary Law No. 108/2010: Approves flexible rules regarding licensing criteria and urban standards for real estate designed to operate as hotels and hostels for Rio 2016.

Finally, it is important to mention the incorporation of the Autoridade Pública Olímpica — APO, a public consortium integrated by the three levels of government (federal, state and local) to coordinate public services as well as implement and deliver the infrastructure works required for Rio 2016.

CONCLUSION

These upcoming sporting events are clearly fostering Brazil's development — not only because of the anticipated strong economic growth due to all investments, but also because of the projected legacy and sustainability these events may create when looking back at the successful examples of other hosting cities.

The expected short-term and long-term benefits will help create a favorable environment for investment, and business opportunities are thus a reality.

1 *With the exception of the expected 1942 and 1946 tournaments, which were canceled as a result of World War II.*

2 *Picture published at www.copa2014.org.br.*

3 *Source: a study conducted by Ernst & Young published in June 2010.*

4 *Source: an article published at www.globoesporte.com.*

5 *Source: a study conducted by Ernst & Young published in June 2010.*

Infrastructure 2050

Nick Chism, Head of Global Infrastructure and a Partner at KPMG

My 10-year-old son was doing a history project recently, and his teacher asked him to bring in a piece of "family memorabilia from the early 20th century." Given that this was a Wednesday night and we were doing our best to unclutter "memorabilia" from the late 20th century, I am sorry to report my son did not win his class prize.

At some point, 100 years from now, our great-grandchildren will probably be doing similar projects, only they will be armed with a digital library of photos, YouTube clips, Facebook archives, Google extracts, tweets and who knows what else. As they look back at our lifetimes, what will they think? With the benefit of clarity and hindsight, what themes will their teachers explore?

I think our junior historians will reflect on 1950 – 2050 as perhaps the most momentous period of change in human history.

Over those 100 years, the human population will have exploded from 2.5 billion to 9.2 billion — growth equivalent to the population of London every month over the course of a century. This will have been accompanied by an extraordinary rise in living standards. The global middle class will have expanded from 500 million people in 1950 to more than 5 billion by 2050, as global GDP rocketed from $5 trillion to more than $200 trillion. They will also have seen a dramatic rise in life expectancy. Most children born in developed economies today will live to be 100, and some may live to 140 or more.

This unprecedented combination of changes — many more people, living far longer and enjoying much higher standards of living (albeit unevenly distributed) — creates a series of unprecedented challenges, all with implications for infrastructure, which will further mark this period in history.

Firstly, the challenge of urbanisation. Over 100 years, the global urban population will have grown from 1 billion to 6.5 billion. In 1950, New York was the greatest city on Earth, with a population of 10 million people. By 2050, the largest city on Earth will be the Hong Kong-Shenzhen-Guangzhou megacity of 120 million people. We will have seen many new cities born, others grow and many die as they fail to reinvent themselves. Rapid growth brings great challenges, already evident in the transport and housing problems of a city like São Paulo. For the 70 percent of the global population that will be living in urban centers, infrastructure will determine their quality of life.

The second great challenge relates to energy. As more people demand greater levels of energy to fuel consumption, there are challenges of supply, sufficiency and sustainability. Infrastructure must support growth, but do so responsibly.

Thirdly, the less well-known, but equally vital challenge of water. Fresh water is a finite resource and is more critical than oil. Usage has risen fourfold since 1950—an unsustainable rate. Already, 20 percent of us lack clean drinking water, and 40 percent lack basic sanitation. As this global divide becomes even more acute, it is going to drive radical changes in awareness and behaviours around water usage and management, as well as the energy intensity of our consumption, notably in relation to food production. Infrastructure is vital in addressing this challenge.

The fourth great challenge relates to social infrastructure and the question of how we—collectively and as individuals—finance the costs of more people, living longer and having fewer children. Again, the current position is not sustainable, as illustrated by the position of social security and healthcare in the US. Long-term decisions on infrastructure need to take into account the social implications of these changes: how attitudes to healthcare change, how we use education to boost the productivity of the young and prolong the working lives of the old they must support, and how pensions and taxes must adapt to new realities.

Midway through this century of change, infrastructure has taken on a new urgency. KPMG and the Economist Intelligence Unit surveyed hundreds of global business leaders in 2010 and found that 90 percent regarded infrastructure as a critical issue.[1] Why has this issue become so acutely critical recently?

Firstly, it has been neglected for too long. Tragedies in New Orleans

and Minneapolis highlighted the obsolescence of much of US transport, water and social infrastructure. In the UK, investment in energy and transport last peaked in the 1960s and 1970s, respectively. In India, lack of infrastructure is regularly cited as the primary constraint on economic growth. For example, Indian road capacity expanded eightfold between 1950 and 2010, but traffic increased two hundredfold. Infrastructure failings are now a front-page issue in most countries around the world.

Secondly, there is a gradual recognition that the challenges outlined above require long-term planning. The lead times associated with infrastructure development mean that decisions taken now will shape the world of the future. The UK, for example, is debating investment in nuclear and renewables that will provide energy for the next generation and is pushing forward on a high-speed rail project that will not be fully completed until the 2030s.

Thirdly, it is expensive. Globally, we must spend at least $40 trillion in the coming decades merely to provide basic levels of infrastructure. To put this figure in context, the long-term cost of the current financial crisis is estimated at $10–15 trillion. The cost of World War II, in today's money, would be about $12 trillion. Given that this investment is ultimately funded by you and me, whether through taxation or user charges, it is a cheque that must be written only once and spent wisely.

These challenges are not simply met with a shovel and a deep wallet. There are numerous complexities to be confronted as well.

The first concerns the question of who takes leadership of these issues. The answer—at least in recent generations—has been government. But governments around the world have already taken on a dizzying array of new responsibilities at a time of financial crisis, while also struggling to retain talent. Trust in government has fallen. In the US, less than 20 percent now claim to trust government, down from 75 percent at the time Eisenhower was delivering the interstate highway system. The KPMG/EIU survey found that around 85 percent of both public and private sector respondents had concerns over government's long-term ability to deliver infrastructure.[2] Increasingly, therefore, government looks to the private sector as a partner. However, the relationship between government and markets is more complicated now. The private sector is grappling with an evolution in capitalist thinking and how it balances profit motives with other stakeholder considerations. So, effective models for co-working between public and private sectors need to be devised.

The second great complexity concerns climate change. Governments and businesses must make vital strategic decisions now and promote changes in behaviours and long-term thinking before the speed and severity of changes are fully known.

The third great complexity concerns technology. This evolves at a truly mind-boggling speed—I struggle to comprehend the imminent reality of mobile phones that are 100 times more powerful than the one I now own, let alone the concept of a computer knowledge base that is a trillion times more powerful than today. New technologies, like high-speed broadband and smart grids, are already part of infrastructure thinking. Others, like nanotechnology, are to follow. Innovations in wireless technology and building design will make infrastructure more efficient and sustainable. And, at a day-to-day level, industry best practices evolve to extend the life of assets and improve their performance. To the extent possible, planning must take account of these changes and the interdependencies between them—for example, between electric cars and grids.

The fourth great complexity is financial in light of the GFC. Put simply, where will $40 trillion of essential funding come from? To what extent do we pay through general taxation or user charges? As costs become clear, how will governments and taxpayers/consumers prioritise between projects? And what data is available to monitor and learn lessons on delivery? Financing is also an issue, particularly how to draw institutions into the infrastructure market. Solutions to this will follow, provided sensible strategies and risk-sharing models are in place. Thus, long-term decisions are being taken without many of the basic tools in place to inform them.

The fifth complexity concerns globalisation and skills. Infrastructure is an issue of global concern. It affects national competitiveness and shapes the future of individual societies. The circumstances of every economy differ, and there are finite skills and resources at present to deliver infrastructure effectively. So, governments may plough ahead with major infrastructure investment and not always have the means to learn lessons from other markets.

The last great challenge concerns resilience and interdependency. The challenges and complexities highlighted above are often addressed in "silos" because each issue requires a high degree of technical understanding. Yet, an understanding of all these complexities is required in order to address infrastructure

challenges. As the financial crisis has taught us, complexity is not an excuse to ignore interconnectedness. Events in the Gulf of Mexico precipitated crises in government and business, in financial and global markets, in technological thinking, and in relation to climate policy. An increase in natural disasters and unpredictable events like volcanic ash clouds or sunspots will test the resilience of infrastructure, not just in terms of reconstruction, but in terms of disruption to supply chains. A serious disruption to power infrastructure, whether provoked by climate or terrorism or systemic failure, has the potential to quickly halt transport and social infrastructure, at which point supermarket shelves go empty and ATMs no longer dispense cash. Resilience is not an issue to take for granted.

These challenges and complexities are to be taken seriously. They are not going to disappear; indeed, they will define the age that we live in and our great-grandchildren look back on. However, I am optimistic that these challenges can and will be tackled.

It is vital that those involved in the infrastructure market share global experiences, particularly with governments, to develop best practices. It is also critical that effort go into developing methodologies that work, such as:

- Planning tools for assessing the value of projects
- Effective risk-sharing models for procurement and financing
- Transparent data and sound management tools to ensure project delivery and efficient long-term operations
- Robust markets for infrastructure investment
- Responsive systems of taxation

Most important, infrastructure professionals must discuss these issues together and find a voice to explain these issues to governments and the public. Working in infrastructure forces you to plan for the long term and to realise that planning for the future must start today.

1 The Changing Face of Infrastructure, *KPMG International in cooperation with the Economist Intelligence Unit, January 2010.*

2 The Changing Face of Infrastructure, *KPMG International in cooperation with the Economist Intelligence Unit, January 2010.*

The Politics of PPPs

Addison Smith, Communications and PPP Consultant

In the United States, public-private partnerships (PPPs) remain a developing market. While some high-profile deals have reached financial close, and there has been broad bi-partisan interest in PPPs, several have experienced difficulty closing because of the politics surrounding the projects.

As the public sector continues to grapple with significant budget and transportation shortfalls, the private sector has the opportunity to frame and promote the benefits of private investment in infrastructure. To date, there have been some successful initiatives to encourage state legislators to examine and consider the concept of PPPs. However, when it comes to finalizing actual deals, less is being accomplished. There are still significant political hurdles, as PPP opponents have become more brazen based on previous successes in stalling and disrupting deals.

CONSIDERING THE PPP OPTION

Ideally, PPP legislation should be in place before a procurement process commences. It is also helpful if the public sector has established a PPP program, as this shows commitment to establishing a pipeline of projects. Yet, often neither of these things has taken place. Instead, the public sector, usually led by the executive branch and motivated by an immediate financial need that the up-front payment for the asset will bring, moves forward with the procurement. They bet that the up-front money will be sufficient to entice the legislature into voting for deal-enabling legislation.

To date, the private sector has taken this bet, but now there is a growing amount of distrust among potential investors and operators. Based on previous failed procurements, and the rigorous scrutiny the private sector has faced both during and after the preferred partner selection process, potential bidders are now considering political risk more than ever prior to entering a market.

To quell distrust with bidders, the public sector should conduct its own due diligence, study possible alternatives, and work from the beginning to build consensus among stakeholders. In addition, it is critical that they proactively

make the case to the media since PPPs are a new topic. It is also important to manage expectations. This can be done through conducting a baseline valuation study setting both a price floor and a range for the up-front payment. All of these steps should be taken before a deal is brought to market.

MOVING FORWARD WITH A PPP

After a decision has been made to move forward with a PPP, the executive branch needs to demonstrate leadership. Though it is clear elected officials require some flexibility to maintain political capital, they should not push multiple competing proposals at the same time. Clear support from the top is critical in keeping a supportive coalition together throughout a procurement.

The elected officials responsible for voting on the deal are primarily concerned with the opinions of the voters and the stakeholders who have elected them to office. Monetary incentives and the threat of dire consequences are not enough to sway voters to support the lease of a public asset. In addition, voters are frequently reluctant to trust the public sector with the management of the up-front money considering the current financial conditions that initially motivated the PPP. Various stakeholders, like unions and commissioners, are also commonly reluctant to change due to the threat it poses to current political fiefdoms.

To counter negative sentiment about PPP deals, advocates in both the public and private sectors need to develop a positive narrative selling the deal. Messages must go beyond how the up-front money translates into benefits and how the public maintains control of the asset. Some key points include: 1) a PPP provides for best practices and technological innovation that enhances the user experience; 2) a PPP transfers risks to the most appropriate party, allowing for the government to focus on managing its core assets; and 3) a PPP can help streamline inefficient agency bureaucracies.

Public outreach—from public-driven task force committee reports to public meetings to stakeholder one-on-ones—has been used to demonstrate political will before and during the procurement. These actions help clarify where stakeholders stand, generate buy-in on the terms of the concession agreement, educate the public and media about the deal, and send positive signals to the private sector, which will encourage more robust bidding.

All communications should reflect that the deal is in the best interest of the public and attempt to be inclusive. At

the same time, campaign preparations need to be made that will hold opponents politically accountable if they refuse to act in a cooperative spirit.

A PARTNERSHIP IN MANAGING THE OPPOSITION

The biggest challenge is overcoming the status quo. Antiquated commissions or appointed authorities have vested interests in keeping their power structure in place. Often, they will actively campaign against the deal, sometimes even using taxpayer dollars. In addition, council members or state legislators will frequently guide decision-making based on their own political agendas or personal ambitions rather than on the terms of the deal. For some, politics are more important than good policy.

Likewise, opponents regularly spread misinformation about the deal to prevent enactment. Common opposition messaging includes loss of asset control, foreign takeover, lease length, higher rates for consumers, and job losses. Opponents will go to the local press and raise questions about the PPP and spread malicious gossip about the bidders attempting to lay the groundwork for alternatives. In such cases the alternatives generally consist of a flawed financial scheme that would require more debt and latent tax and fee increases. Rather than fix the problem, the scheme obfuscates and leaves it for a future generation.

Hasty legislative activity against a PPP is common. It happens at different points during the procurement, particularly if the opposition is emboldened by the inactivity of PPP advocates. Typically, the legislation is rife with insider dealing and arcane parliamentary maneuvers. Yet, while the results of this approach have proven catastrophic (i.e., Act 44 in Pennsylvania), the elected officials responsible for such poor decision-making have positioned themselves as protecting the public when in fact they are only protecting themselves.

Addressing this hostility is critical to ensuring a smooth procurement and to setting a successful path for deal closure. History shows us that entrenched interests can cause delays even if there is broad consensus to move forward with a PPP and the up-front payment is endorsed by a third-party valuation study.

The private sector should be financially prepared to campaign against political backlash and personal attacks. The campaign should be led by professional operatives who understand the political and media dynamics as well as how and where to drive the message. Here, the private sector has an important strategic advantage over the public

sector—it can be more flexible in its actions. The private sector does not face an electorate, has few interests besides completing the deal, and has the resources to finance sophisticated campaigns.

In sum, the best way to deal with the politics is to limit the opposition's use of them.

CARRYING OUT THE TRANSITION

Introducing the preferred partner successfully is critical. The governor or mayor should project his or her excitement about the deal and how it is vital to address a public need. The private partner should introduce the team as a responsible corporate partner to the community and sell the future user experience. Both sides need to remain on the offense, selling the project's benefits as they move forward with the transition. They must also reiterate the parameters of the deal, such as how the concession agreement holds the private partner accountable during the lease.

At this time, the preferred partner and the public sector should meet to review the stakeholders and assess what needs to be done to get the votes if it is necessary to pass deal-enabling legislation. If there is excess funding above the bid floor, the public sector should develop a plan regarding how to use it so as to shore up needed votes. A primary purpose of the meeting is to develop a campaign plan that will address the opposition and set a clear decision-making process.

The strength of the campaign lies in having the right mix of instruction, education, entertainment, and politics. The preferred partner should make rounds with editorial boards introducing the company and talking about strategies for capital expenditures, technology upgrades, and user enhancements. The preferred partner should also create a website as a vehicle to disseminate information, house documents, solicit feedback, and interact with voters. The website is a place where PPP advocates can truly control the message and refer people to the facts.

With an agreed-upon plan and appropriate resources, a successful campaign can be accomplished on a deadline. The public will receive better service, the government will receive the funding it needs, and the private sector will have a strong investment in its portfolio. Moreover, when these deals aren't completed, PPP advocates should remain persistent. The underlying funding problem still remains after a failed deal, and an important lesson is learned, setting the stage for a future deal and for the next election cycle.

Assessing Risk:
Security Solutions for PPP Objectives

Sabrina Hanitz, Associate Director for Aon's Global Center of Excellence on Alternative Project Delivery

REDEFINING INSURANCE

Risk. What does it mean to you? Do you consider risk in all aspects of a public-private partnership (PPP) project? If not, you may want to reconsider. A PPP is defined by the NCPPP as "a contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, *each party shares in the risks* and rewards potential in the delivery of the service and/or facility."[1] Risk is a core element in PPPs, yet, historically, managing risk has typically been treated as a discrete process to reach financial closings and is generally satisfied by purchasing traditional insurance policies or surety bonds.

Insurance has been treated as simply a line item on the checklist to mark off—it is "minor" compared to the other items that must be completed before the project can reach financial and commercial close. Yet, when a loss happens and it is improperly insured, it can bring the entire project to a complete halt. Therefore, insurance is more than just a line item to check off. Insurance can allow the many parties involved to rest assured that should any "what-ifs" happen, they will be properly indemnified.

Today, risk should no longer be dismissed as just a compliance issue to satisfy closing requirements. Risk is embedded throughout an entire concession agreement and should be addressed at the front end of the capital formation stages of a project. Each party is contractually obligated to address and potentially retain risks associated with the project, making it critical to stop dismissing this issue with little or no concern.

When risk is improperly treated or ignored, it becomes greater, creating a larger probability of project frustration and/or failure. This is why proper risk analysis is so important. PPPs are large, complex projects involving significant capital and present more than just construction risks; they present life-cycle risks and should be assessed in a holistic view.

Proper risk assessment identifies the party best able to manage risk. It reduces unnecessary risk contingencies and uncertainties, has proven better claims experience, and accentuates the need to create innovative products while utilizing existing products to meet the needs of the PPP model. "Unknowns" associated with a project are typically treated as embedded contingencies; however, conducting a peril-focused risk assessment should clearly identify and clarify potential impacts of these contingencies, creating overall project savings. For example, a contractor carried a $3 million contingency because he believed property damage to a turbine could lead to a project delay costing $3 million. A risk assessment pointed out that specific insurance coverage was available to cover this risk at a much lower cost. From 2005 to 2009, Canadian PPP projects utilizing a thorough risk assessment had an average value for money (VfM) of 10.6 percent. In comparison, projects not utilizing this assessment averaged an 8.6 percent VfM.[2] *Infrastructure Ontario's (IO) Guide to Assessing Value for Money* states, "A comprehensive risk assessment not only allows for a more accurate value for money analysis, but also assists IO and the public sector sponsors in ensuring that the party best able to manage, mitigate and/or eliminate the project risks is allocated the risks under the project agreement."[3] IO requires a risk assessment during the evaluation process to determine if a project should be sourced through the PPP model.

An action plan should be structured for all parties to thoroughly understand how losses are handled with a large focus on who should manage each risk element. This allows losses to be handled in a proactive, rather than a reactive, manner. Failure to conduct a thorough analysis can leave unnecessary project costs on the table, increase chances of project frustration and/or failure, and create unnecessary consequential costs.

PRODUCT INNOVATION

There are many contributing factors demanding new products in the marketplace along with creatively using products already available. Some of these factors include new and/or different risks arising from the differences in the traditional bid-build

model and the PPP model. In the current economy, financiers place increased emphasis on liquidity; however, a letter of credit must be offset by a contractor's assets, increasing the contractor's leverage. Conversely, North American contractors often prefer performance bonds for familiarity and flexibility, but these instruments may not satisfy a financier's liquidity requirements. This then poses the question: What is the best solution to satisfy all stakeholders' requirements and concerns in the most cost-effective manner? One answer is performance security.

Performance security is designed to meet alternative delivery security needs through the combination of surety, contractor default insurance (CDI), liquidated damages coverage and letters of credit. CDI is first-party insurance covering one of the top-five construction risks—subcontractor default. Responsiveness and average liquidity within 22 days of proof of loss[4] are two key elements that make CDI a great alternative to surety for PPP projects. Coverage is triggered with a default notice from the general contractor to the insurer. The general contractor is afforded a step-in-right remedy, which is advantageous over traditional surety, where the bond issuer selects the remedy. Furthermore, rating agencies have increased credit ratings based on this structure and have accepted CDI to fulfill a portion of the liquidity requirements. For example, a recent project had a liquidity requirement of 40 percent of project capital value to earn an S&P A- credit rating. The concessionaire proposed 10 percent liquidity through a letter of credit and 20 percent through CDI, which resulted in a BBB- rating. An additional 10 percent of CDI coverage increased the rating to an A-, resulting in several million dollars of savings.

Another product available in the performance security suite is liquidated damages insurance. This insurance is designed to protect the general contractor for liability assumed under the contract in the form of liquidated damages payment to an owner for late completion and/or performance shortfall. This coverage has large retentions with no indemnity above the retention; therefore, the contractor's assets are not impaired. Financiers find liquidated damages insurance attractive because it provides a high level of liquidity and strong financial support by insurers. Currently, there is limited capacity of this coverage in the market.

RISK IS YOUR REWARD

Risk should no longer be underestimated and should be looked at as an opportunity to protect the parties' interests as well as generate cost savings. Performance security is one answer in meeting the needs of all

parties in a PPP project and can be integrated into the project finance negotiations. Financiers and rating agencies are becoming more interested in innovative products such as the ones mentioned above. This convergence between the financial and risk capital communities is getting stronger, and those able to leverage this alignment will reap the greatest benefits.

1 *The National Council for Public-Private Partnerships (NCPPP),* How PPPs Work*, www.ncppp.org.*

2 *Canadian PPP Project Database, The Canadian Council for Public-Private Partnerships, Project Risk Analysis completed by Aon, http://projects.pppcouncil.ca.*

3 Assessing Value for Money: A Guide to Infrastructure Ontario's Methodology *(2007), http://www.infrastructureontario.ca/en/projects/files/VFM%20GUIDE%20WEB.pdf.*

4 *Zurich Insurance Company.*

Constructive Engagement:
Managing Political Risk in Emerging Markets

Steven Fox, Managing Partner, and David Stevens, Project Manager, of Veracity Worldwide

Expanding urban populations, decades of neglect and rising national incomes are driving new demands for transport, water and electric power infrastructure projects in many emerging markets. These projects offer potentially attractive business opportunities for international investors, but the countries in which they are located feature opaque operating environments characterized by frequently contentious politics and widespread corruption. Mitigating the resulting risks necessitates careful management of a range of relationships and an especially rigorous approach to due diligence, requiring investors to develop skill sets that encompass elements of diplomacy and intelligence gathering.

An in-depth understanding of political dynamics and engagement with a broad array of stakeholders is key to successful investment in a range of emerging market sectors, but such initiatives may be particularly indispensable when engaging in infrastructure projects. In places like Brazil, India, Indonesia, Kenya, Peru, South Africa or Turkey, the "public" nature of infrastructure development increases projects' susceptibility to contestation among community groups and elite factions, who may maneuver aggressively to steer contracts or displace foreign investors associated with rivals. In addition, government agencies' central role in funding projects and granting permits further increases investors' vulnerability to political turbulence, while also risking exposure to politically motivated work stoppages and bribery solicitations.

Mitigating problems in these areas begins with an understanding of the potential challenges of operating in environments where government decision-making lacks transparency and may be subject to sudden shifts.

This article provides an overview of major sources of risk and outlines central issues that infrastructure investors should consider when entering unfamiliar overseas markets.

MANAGING POLITICAL POSITIONING AND HEDGING AGAINST POLITICAL SHIFTS

Cultivating the right government connections is a central element in winning infrastructure contracts. This requires the identification of key actors and a deep understanding of the formal and informal power structures that shape government decision-making. While high-level ties are indispensable, a range of contacts that is too narrow can leave contract holders vulnerable in the event of political infighting or government change. Competition between political factions and the potential transfer of power from one group or party to another can trigger the transfer of economic benefits from the perceived allies of the *ancien régime* to those of the new reigning authorities.

The existence of multiple, and potentially competing, centers of government authority further complicates the tasks of striking and maintaining a neutral posture. Whether the national government or a state- or province-level authority awards a particular public infrastructure contract, contract holders are potentially exposed to political shifts on either level as well as to clashes between them. Adopting a balanced stance with links to major factions at all relevant levels can facilitate passage through political transitions. A transparent approach to business deals and an emphasis on fulfilling commitments may help cement a reputation for professionalism that buttresses an image of neutrality.

Example 1: Enron in India. Failure to develop productive relations with national and state authorities was a prominent element in the collapse of Enron's Dabhol power plant project in India's Maharashtra state. In collaboration with Bechtel and GE, Enron began development of the plant in the early 1990s as one of the first major international companies to undertake significant investment in a country that had long been hostile to foreign investment. Enron enjoyed strong backing from the ruling Congress Party, which awarded Enron the plant contract without a public tender and likely played a prominent role in brokering a secret agreement committing the Maharashtra State Electricity Board (MSEB) to purchase 100 percent of the plant's electricity at elevated rates.

Enron's reliance on national-level ties to the Congress Party, its consistent failure to engage Maharashtra authorities and stakeholders, and its maintenance of a pricing scheme perceived as usurious damaged the

company's standing. Its high-handed approach reinforced widespread suspicion of foreign investors and contributed to a breakthrough electoral victory by the opposition Bharatiya Janata Party (BJP), which took control of the Maharashtra state government in March 1995 on its way to a strong showing in national elections in May 1996. Upon taking office, the BJP Maharashtra chief minister launched an investigation and began moves toward cancellation of the MSEB contract. U.S. government intervention and several concessions from Enron—including the transfer of a 30-percent stake in the plant to MSEB—kept the project moving forward, but did little to blunt local opposition, resulting in intermittent work stoppages and interruptions of the plant's water supply.

Dabhol began operations in May 1999, but MSEB experienced mounting difficulty in meeting its financial obligations, contributing to Enron's increasingly precarious overall financial position. Dabhol ceased operations in June 2001 and eventually passed into the hands of an Indian consortium following Enron's bankruptcy.

ADDRESSING COMMUNITY ACTIVISM

Infrastructure projects have significant distributional effects and thus contain the seeds of rivalry and contestation. The development of roads, ports, power generation facilities and water systems sustain and encourage overall commercial activity, but the benefits of such investments are not spread uniformly across society. The location of roads and ports, as well as the reach and condition of water and electricity grids, can dramatically shape the flow of commercial activity and infrastructural elements that provide advantages to some groups, while withholding them from others and can spur controversy and opposition. Taxi drivers whose livelihoods are threatened by a mass transportation system, the residents of a village excluded from an electricity grid expansion that delivers power to their neighbors or the storeowners in the vicinity of a soon-to-be-relocated airport have natural incentives to block or attempt to reshape projects contrary to their economic interests. Protests, work interruptions and sabotage are potential expressions of this opposition, and excluded groups also may mobilize political allies positioned to withhold permits or otherwise slow progress.

Environmental and cultural groups, as well as communities that face relocation to make way for infrastructure development, constitute additional potential sources of opposition. Objections of the former may reflect sincere ecological concerns, but environmental claims may in some

instances serve to mask the opposition of groups with commercial interests in a project. In addition, local cultural and environmental nongovernmental organizations can often draw upon support from like-minded international organizations.

Avoiding such obstacles calls for a comprehensive assessment of potential sources of project opposition. Early engagement with critics—including accommodation of reasonable demands and clear communication of environmental standards and safeguards—can diffuse tensions and limit the number of prospective allies available to hard-core opponents. Mitigating the challenges posed by the latter requires careful tracing of their influence networks and monitoring of their activities.

Example 2: Opposition to Hydro Projects in Turkey. Controversial Turkish efforts to use water resources in the country's largely underdeveloped eastern region for electricity production illustrate infrastructure projects' ability to create influential and far-reaching opposition movements. The 1.2-GW Ilisu Dam in southeast Turkey, which would flood a valley containing archaeological and historical sites, has emerged as a particular lightning rod. The dam has drawn criticism from a range of environmental and cultural nongovernmental groups (NGOs) as well as neighboring national governments concerned about the project's implications for their own water access. A succession of European public and private sector investors has withdrawn its financial backing under this pressure. Criticism from the World Bank and the Arab League of Ilisu's infringement on Iraqi and Syrian water rights likely played a role in these decisions, but more consequential has been local opponents' ability to frame the cause in human rights terms and to gain the support of allied European NGOs. Activism by these groups contributed to the German, Swiss and Austrian export credit agencies' 2009 withdrawal of project support, triggering the subsequent withdrawal of a consortium of European banks.

Perhaps reflecting the lessons of Ilisu, international investors have steered clear of involvement in the construction of more than 20 smaller-scale dams and hydroelectric plants in northeastern Turkey that have become focal points of local political contestation. In a sparsely inhabited region, protests against these dams have drawn 10,000 or more participants who claim the dams threaten pristine wilderness and will flood areas of religious and

cultural significance. Separatist guerillas fighting under the banner of the Kurdish Workers Party (PKK) are active in the area and have attacked project construction sites in a show of solidarity intended to boost the PKK's local legitimacy.

LIMITING CORRUPTION RISK

In intermittent surveys by the anticorruption nongovernmental organization Transparency International, respondents have consistently identified the "public works contracts and construction" sector as the primary locus of bribery of public officials.[1] The U.S. Foreign Corrupt Practices Act provides strict sanctions for U.S.-based or U.S.-listed corporations that pay bribes to foreign officials and makes parent corporations responsible for the conduct of overseas agents. The infrastructure sector's association with corruption raises the likelihood that even companies determined to operate cleanly will face bribery solicitations, requiring companies to vet thoroughly the backgrounds of agents potentially positioned to assist in winning contracts. Direct implication in past instances of corruption would be a clear red flag, but even circumstantial indications of an agent's links to dubious figures or groups may give pause to a potential investor.

Many emerging markets possess weak public records systems likely to provide relatively little information of value in a due diligence inquiry on agents or local business partners. Relying on local media can also leave considerable blind spots, as press coverage may be limited or journalists may be unwilling to report negatively on well-connected local figures. Independently sourced reputation information from industry peers and credible local authorities is generally the best line of defense. Gathering such intelligence typically requires an in-depth understanding of the local market and a broad network of contacts able to report and corroborate information.

CONCLUSION: ASKING THE RIGHT QUESTIONS

The challenges outlined in this article highlight the importance of understanding the political dimensions of infrastructure projects through comprehensive due diligence, monitoring relevant parties and issues, and targeted intelligence gathering. The following list of questions highlights key issues to assist investors in assessing their potential vulnerabilities.

The distributional effects of infrastructure development and other characteristics of the sector endow

projects in this area with an inevitably political character, and investors must anticipate and prepare to manage the accompanying risks. A secure political position is the first thing infrastructure investors should build upon when entering a new overseas market, and early engagement with a broad range of stakeholders across factions and all relevant geographical areas should be a priority.

Key Questions for Emerging Market Infrastructure Investors

Managing political positioning	• How close is our association with the current national government?
	• Do we have ongoing contact with members of the opposition?
	• How many political parties control the entities that have awarded the contracts that we hold?
	• Have we developed contacts across the political spectrum at the state and local levels in areas where we work?
	• What is the probability of a change in government or significant turnover in officials at the national level or in relevant local jurisdictions?
Addressing community opposition	• Are we familiar with local political dynamics and with the experiences of past infrastructure investors?
	• Have we assessed potential sources of opposition on the local, regional and national levels?
	• Have we mapped the political and social networks of key opposition figures and groups to gauge their influence?
	• Have we engaged moderate critics in a dialogue?
	• Do we have a system to monitor the activities of opponents and to warn of impending action?
Limiting corruption exposure	• What is the general corruption profile of the countries in which we are operating?
	• What is the corruption profile of the government entities that have awarded our contracts?
	• To what degree do we depend on local agents to win our contracts?
	• Have we conducted a thorough background investigation of our local agents?

1 *See, for example, Transparency International,* Bribe Payers Index 2008, *p. 11.*

Dynamic Risk Management:
The Missing Link in Infrastructure Finance

John Larew, Associate Partner, and
Mark Robson, Partner, of Oliver Wyman

There is a paradox at the heart of investing in infrastructure. On the one hand, investors are typically attracted to infrastructure assets because they are seeking stable cash flows over long-time horizons. At the same time, greenfield infrastructure projects represent huge and often risky bets—bets that can go spectacularly bad.

It's no wonder, then, that infrastructure funds in recent years have found it easier to find interested investors than to find investments that suit their investment strategies—even as global infrastructure needs continue to outstrip the capacity of public sources to fund them.

Today more than ever, infrastructure investors need tools to bridge the gap between their risk appetite and the inherent risks of projects requiring massive capital outlays against time-distant revenue streams. In our work with large infrastructure projects, we have found that the tools of dynamic risk modeling are a valuable and underused resource for project sponsors, lenders, and equity investors alike.

THE UNTAPPED POTENTIAL OF RISK MANAGEMENT

Infrastructure projects, be they roads, ports, power lines, waterworks, etc., have certain characteristic features. These typically include:

- High upfront investment
- "Chunky" capacity with significant scale economies
- Building ahead of demand (often uncertain or speculative demand)

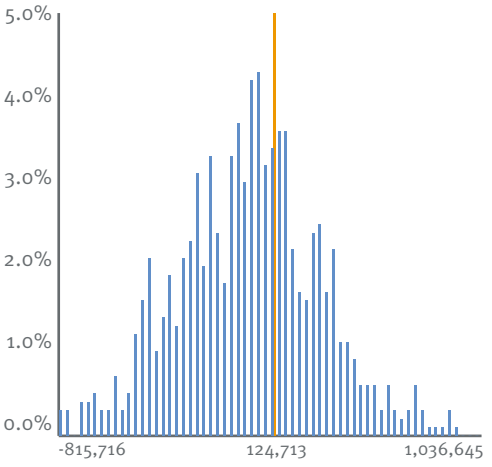
- Uncertain cost to create capacity
- Uncertain timing of revenue
- High leverage (typically 60 – 80% gearing)
- Extraordinarily high sensitivity to financing costs

Numerous academic studies have come to the conclusion that greenfield infrastructure projects systematically disappoint their backers; cost overruns, schedule delays, and overestimates of revenues seem to be the norm more than the exception. It is no exaggeration to say that mastering risk — understanding, quantifying, and managing it — is the key capability to successful infrastructure investment.

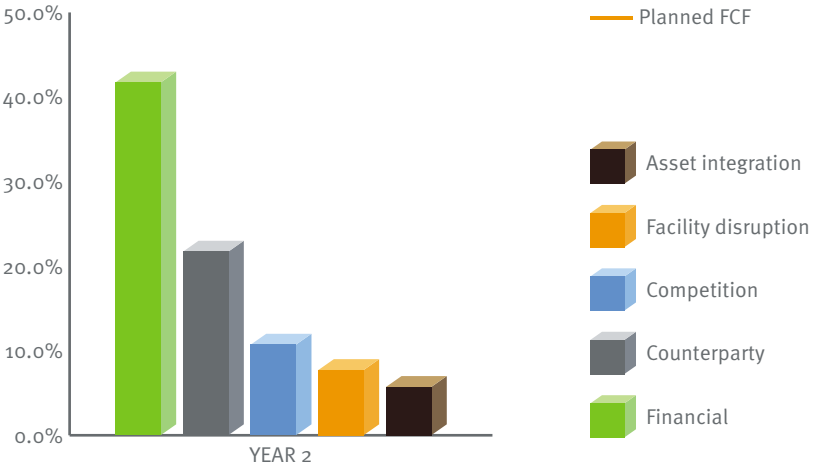
In this environment, sophisticated investors have learned to appreciate the value of dynamic financial modeling (e.g., Monte Carlo simulation) in assessing the likely performance of prospective investments. Unlike traditional static financial modeling, a stochastic risk model recognizes that key drivers of financial results (capital costs, operating costs, volumes, prices, timing of cash flows, etc.) are inherently uncertain and can interact in unexpected ways. Instead of assigning a discrete value to these variables in a spreadsheet, the Monte Carlo method models key variables in the form of a probability distribution function. These are further extended to include the dynamic interactions between the simulated outcome of the risks.

The output of such an analysis is a much richer view of the financial prospects of the investment. Instead of looking at, say, the results of three or four scenarios, a decision-maker

Distribution of cash flow/earnings



Impact of different risks on cash flow



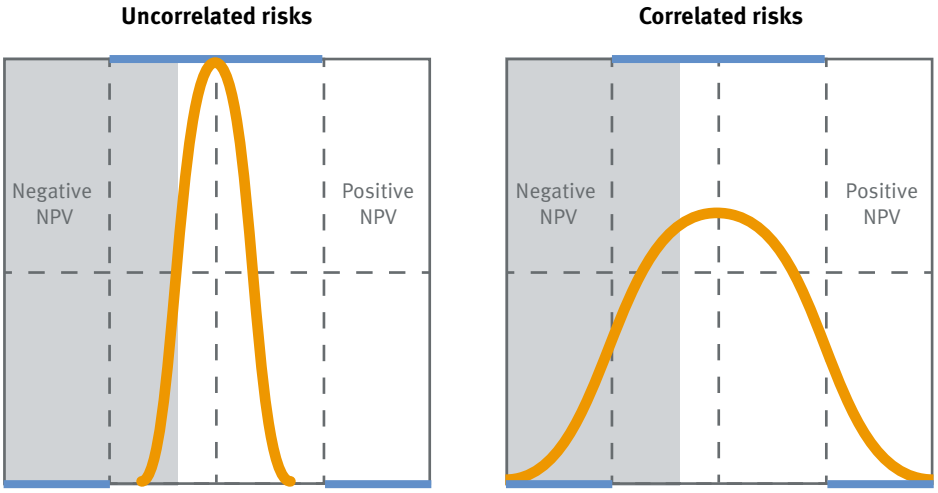
can see the consolidated results of thousands or tens of thousands of simulation runs. And while a traditional financial model might answer the question, "What is the sensitivity of cash flows to a 1% change in interest rates?" it cannot reliably tell you, "What is the probability that this project will meet its IRR target?" or "What is the probability that the project will remain in compliance with all its financial covenants?"

The stochastic risk modeling approach *can* answer those questions, which is one reason it has become the acknowledged gold standard for financial analysis of infrastructure investments.

In our experience, however, many project sponsors and investors do not capture the full value that stochastic risk modeling offers. Value is typically left on the table in two ways: the risk model itself may be faulty or incomplete; and the risk model is too often abandoned after the initial investment decision is made.

The first major pitfall in dynamic risk management is getting the model wrong. When it comes to stochastic risk modeling, there is wisdom in the old adage that a little knowledge is a dangerous thing. The very precision of the outputs ("In 95% of the cases, the project will meet its IRR target.") can lead to a false sense of confidence if the appropriate care has not been taken in constructing the underlying model. The recent proliferation of easy-to-use spreadsheet add-ons such as Crystal Ball and @Risk may have encouraged a tendency toward overreliance on unreliable models.

There are many ways to go wrong in modeling risk (just ask anyone who invested in collateralized mortgage obligations), but one example will serve to illustrate the point. Imagine a project in which the net present value is sensitive to two variables: the price of crude oil and the dollar exchange rate. With the help of a spreadsheet add-on and a few databases, it's a simple exercise to generate a probability distribution function for both variables based on historical ranges. After running a Monte Carlo simulation of the project, the expected NPV of the project might look like the figure on the left in the exhibit below. But our analysis implicitly assumed that the oil price and dollar exchange rate are independent of one another, when in fact they are correlated. After modifying our model to account for the correlation between the two variables, our expected NPV might look more like the figure on the right. What once looked like a sure thing is revealed to have a nontrivial chance of failure.



Across many projects in diverse industries, Oliver Wyman has seen our belief confirmed that there is no substitute for a disciplined modeling approach, rigorously applied by skilled practitioners.

The second major pitfall in dynamic risk management is getting the model right, but not doing the right things with it. A common shortcoming is the disjunction between the risk analysis that goes into the concept, design, and finance phases and the risk management approach that guides the engineering, procurement, construction, and operations phases.

Oliver Wyman's approach to risk analytics looks at the variability of cash flow versus plan ("cash flow at risk") as the primary metric. While this metric usually makes intuitive sense to project sponsors and investors, it stands in contrast to the engineering-driven approach to risk analytics that often prevails in a contracting and construction environment. To be sure, there can be value in the typical tools of engineering-driven risk management: comprehensive risk registers, heat maps, and the like. But this approach falls short of the needs of senior management. While notionally comprehensive, it fails to distinguish the merely important from the absolutely critical. And it leaves senior decision-makers without the tools to understand potential tradeoffs in risk and reward.

A BETTER WAY

Our experience shows that investors and sponsors who incorporate a dynamic risk management approach can avoid these pitfalls and extract substantial additional value from their

investment. The benefits of a more robust risk management approach are numerous, and accrue to infrastructure funders, operators, and users alike.

Focuses on the right risks. The dynamic risk management framework gives management visibility into the impact of risks on the bottom line. In one recent engagement, the project sponsor intuited that the major risk to cash flow was demand risk, and was prepared to sacrifice substantial revenues to mitigate that risk through takeoff agreements. Oliver Wyman's risk analytics showed that risks related to internal execution were far more important, leading the client to devote mitigation resources to those risks.

Supports a wide range of management decisions. Armed with the right analytical tools, management can compare and contrast the value created by investing in different risk mitigation measures for different risks. Funding strategies, hedging strategies, sourcing strategies, and technology choices are among the tools that become more effective with a reliable understanding of cash flow at risk. In one recent example, our client used the risk model to quantify a heretofore underappreciated supply risk. The client subsequently modified its technology strategy to shift emphasis to a more expensive, but more secure source of raw material.

Supports efficient allocation of risk. Infrastructure projects increasingly involve multiple investors and stakeholders—for example, with the growing popularity of public-private partnerships and customer-supplier co-investment. Efficient allocation of risk can be a significant lever of value creation, not to mention a vehicle for making deals possible that might otherwise founder on stakeholder resistance. In a recent deal involving a major expansion to a transportation asset, risk analytics revealed that the infrastructure developer faced substantial exposure to steel price inflation—an exposure that could not be conveniently hedged. Faced with the prospect of paying for the steel risk through a price premium, the infrastructure users found it more efficient to accept the risk themselves, as they had some upside risk exposure to steel prices. The natural hedge was a win-win for the developer and the users.

Prioritizes value improvement opportunities. Dynamic risk management is not just about avoiding downside risks, but enabling upside opportunities.

Lowers financing cost. Dynamic risk management is ultimately about making risk transparent—to sponsors, operators, and investors.

Based on concrete project experience, we have been able to identify a set of factors that underpin the success of risk management in infrastructure projects or, indeed, any large capital project.

- Adopt a cash flow at risk framework, and apply it consistently throughout the project life cycle.
- Get the model right. Take a rigorous approach to constructing a pyramid of risks that describes the network of interrelated risk drivers.
- Calibrate the model carefully. Pay attention to the choice of statistical distributions, to the impact of "tail risks," and to the correlation of risks.
- Anchor the responsibility for risk management in the organization. Decision-making processes and governance should adhere to the risk framework.

The universe of infrastructure investment opportunities grows larger every day. But comparatively few of those opportunities have the "ideal" risk profile investors seek. If every infrastructure investment had known capital costs, predictable revenues, and stable margins, there would be no need for sophisticated risk management techniques. Until then, savvy sponsors and investors will need the best tools at their disposal to master risk.

Focus Report: Asia

Satoru Murase, Partner and Chair of the Japanese Practice Group of Bingham McCutchen

Saying that the golden age of Asia infrastructure has arrived may already be a cliché. The extent of infrastructure development plans throughout Asia boggles the mind. Whether it is China's plans for 16,000 km of high-speed rail lines, India's ongoing plans for building 7,000 km of roads a year every year, Indonesia's offering up last year of 100 public-private partnership infrastructure projects worth $47 billion, the newly elected Philippine president's hope of raising a $10 billion fund to invest in infrastructure projects, or any of the diverse portfolio of comparatively more modest undertakings in the vast region of the globe known as Asia, this is surely the center of global infrastructure development.

Asian countries are key investors and sources of funding. High-profile investments by the Chinese Investment Corporation and other Chinese and non-Chinese regional pools of capital, both sovereign and private, have been made in infrastructure assets and funds around the globe. The capital flowing from and through Beijing, Shanghai, Hong Kong, Singapore, Seoul and Tokyo is ending up in roads, bridges, school buildings and power grids in Africa, Latin America, the United States and everywhere else, including back into projects within the Asia region.

The story of China's infrastructure plans is splashed almost daily across the news, with megacities underway and megainvestments planned. No Asian infrastructure report would be complete without a discussion of this megatrend. In this report, Patrick Chovanec, Associate Professor at Tsinghua University's School of Economics and Management, provides his take on the Chinese high-speed rail system, cumulatively perhaps the single largest infrastructure project undertaken in human history. Less well-known, but of great significance, are the plans of

many other Asian nations—this report covers a few programs and initiatives of the other nations active in this area.

As of the publication of this issue, Japan remains the second-largest economy in the world despite the negative views expressed by Standard & Poor's in its January action to downgrade its sovereign rating. While China will overtake Japan to become the world's second-largest economy, the United States may be the next country to be surpassed. However, these macro trends could push Japan toward becoming a major infrastructure player. Japan remains a vibrant industrialized nation with many of the world's greatest technology companies, huge pools of savings and large financial institutions. In his contribution to this report, Sadanori Ito, Chief of Staff to the DG Economic and Industrial Policy Bureau of the Ministry of Economy, Trade and Industry (METI), Government of Japan, writes of Japan's New Growth Strategy, which will combine the investment capital and talent of the nation with its technological strength to make Japan a global infrastructure investor and exporter of infrastructure technology and expertise.

Southeast Asia is another infrastructure engine. Long-time Asia experts Leopoldo and Lilia Clemente, the President and Chief Investment Officer, and Founder and Chairman of Clemente Capital, respectively, have contributed significant treatises on the infrastructure investment opportunities in the Philippines and Indonesia. These two ASEAN nations each provide a rich array of infrastructure investment options. The Clementes have brought their thorough and seasoned approach to this topic.

This report just scratches the surface of the Asia infrastructure story in this dynamic industry, but it does provide context by looking at part of the plans of two of the world's largest economies and a more in-depth look at two that are up-and-coming. All four countries are connected by the China Seas, whose shipping lanes have historically been the routes of consumer goods to the West. The coming years will likely see heavy construction materials and equipment criss-crossing those waters as this region becomes the world's infrastructure capital.

On March 11, 2011, shortly before this report went to print, northeastern Japan suffered a devastating earthquake and tsunami. With a subsequent nuclear power plant crisis still ongoing, our thoughts and condolences go out to those affected by the tragedy. While the outcome is not yet clear, the effect on infrastructure projects globally will be substantial.

China's Been Working on the Railroad (All the Livelong Day)

Patrick Chovanec, Associate Professor at Tsinghua University's School of Economics and Management, Beijing, China

China has a dream. That dream involves crisscrossing the nation with the most modern, high-speed rail system in the world, capable of ferrying hundreds of millions of passengers at speeds of over 200 miles per hour—cutting the travel time from Beijing to Shanghai, for instance, from 10 hours to four.

It's a dream that's becoming reality at an astonishing pace. Over 5,000 km of new high-speed rail (HSR) lines came into service in 2010, for a total HSR network of over 8,000 km—the world's longest. The plan is to have 13,000 km operational by the end of 2012 and 16,000 km by 2020, expanding China's total rail network (HSR and conventional) by a third. To achieve this, China expects to invest more than $100 billion per year for the next several years, which is more than half of all railroad investment in the world.

The vision of an advanced China linked by ultrafast bullet trains looms large in domestic propaganda and in the image China is eager to promote to the rest of the world. Chinese officials boast of achieving "40 years of high-speed rail development in just five years." But critics question whether such a rapid build-out is sustainable and worry that China's fascination with

HSR may divert funding and attention for less glamorous, but more essential, infrastructure needs.

The theory behind China's HSR push is relatively straightforward. Currently, China's conventional rail system is stretched to capacity carrying two kinds of cargo: people—namely, the more than 200 million migrant workers who regularly journey from their homes in the rural interior to jobs along the more prosperous coast—and coal. Because passengers take political priority, there isn't much room left over for coal, most of which must be transported by truck—leading to monumental traffic jams like the infamous 10-day, 62-mile backup that took place outside Beijing last August—forcing many parts of China to import coal from abroad.

By shifting all of that passenger traffic onto "the fast track," high-speed rail advocates argue China can open up capacity on its existing rail network to move not only more coal, but also other types of goods, thus relieving the road backups and boosting both productivity and regional development. According to planners at China's Ministry of Railways (MOR), a two-track HSR line can carry 160 million people per year, which is twice as much passenger traffic as a four-lane highway.

The question, though, is at what cost? High-speed rail is expensive both to build and operate, requiring high ticket prices to break even. Typical HSR tickets in China cost five or six times what passengers are used to paying for regular trains and on long-distance routes can approach the price of an air ticket. For affluent tourists or business travelers who value their time, that might make sense. But the bulk of China's passenger traffic—especially during peak holiday periods—consists of low-income migrants. Even if they could afford HSR ticket prices—which is doubtful—they might prefer to save money by sticking with a slower, cheaper option. If that proves to be the case, faster rail lines will run empty at a loss, while providing little or no relief to the existing transportation network.

That seemed to be precisely the situation that unfolded this Chinese New Year (the country's peak travel season), according to China's own transport officials. A spokesman for the Ministry of Transport told *China Daily* that "this year the situation [rising ticket prices for faster trains] had pushed many passengers, who used to ride home by slow trains because of cheap tickets, onto long-distance buses," adding pressure to the system. Long-distance bus traffic over Chinese New Year, the article noted, was expected to increase nearly 12% from the same period last year, requiring 70,000 more buses on the roads.

Rather than capturing lower-end traffic from slower trains and buses, it appears the new high-speed lines are drawing higher-end traffic away from China's airlines. Wang Changshun, deputy head of the Civil Aviation Administration of China, told a conference in January 2011 that the arrival of HSR had forced some airlines to cancel short-distance flights along the same routes. Since the opening of an HSR line in December 2009, for instance, the number of flights between Guangzhou and Changsha has been cut from 11.5 flights a day to just three, with two out of three airlines withdrawing from the market entirely. The ticket price for the remaining flights has dropped by 15%, but the number of passengers has still gone down by 48%. Wang expects that "The opening of the Beijing-Shanghai high-speed line next year will be another blow to the air transport industry."

It may be that China's airlines could use a bit of competition, but that certainly wasn't the idea behind the high-speed rail build-out. The intent was to relieve the congestion of China's existing rail system, thereby opening up lower-end capacity to handle more freight and relieving stress on roads. It was supposed to bump passengers up-market (from slow trains to fast trains), not down-market (from slow trains to buses and from planes to fast trains).

High-speed rail proponents argue that such problems are only temporary. As Chinese incomes continue to rise, they contend, more people will find HSR affordable, and China will consider itself fortunate that it built such an advanced system when it had the chance.

Critics, however, worry that the new rail system may go bankrupt before it has the chance to realize its potential. The portion of China's railway investment funded by debt has increased from 50% in 2005 to 70%, and now accounts for 10% of all outstanding debt in China. Analysts estimate that MOR will rack up over $600 billion in borrowing by 2020. China's high-speed rail lines will have to perform very well financially—sooner, not just later—to support this debt burden. A default, even if averted through a government bailout, could seriously impact China's financial system.

In the meantime, critics contend that the glamour of high-speed rail diverts money and attention from far more productive investments in China's transportation infrastructure. China's high-profile HSR push is often contrasted in the media with the dismal state of America's passenger rail system. In fact, some critics argue that China could learn a lesson from the United States, whose intermodal freight rail system—although largely

underappreciated—is probably the best in the world, seamlessly moving containerized cargo thousands of miles inland from port to depot to factory and back again.

Rather than building high-speed rail lines to move millions of people around more quickly, China would be better off developing a rail system that moves *goods* more efficiently and makes people more productive where they already are. To be fair, Chinese planners have given the idea some thought. In 2006, MOR announced plans to construct 18 major container depots across China, but that effort has attracted noticeably less attention and energy than its glitzy HSR plans.

It's worth remembering, though, that Chinese officials see HSR as a means as well as an end. It's no coincidence that China's HSR push has accelerated dramatically as part of its stimulus in response to the global financial crisis. Major infrastructure projects have been instrumental in boosting GDP and employment at a time when China's primary driver of growth—exports—were in steep decline. The $33 billion Beijing-Shanghai HSR line, which surpasses the Three Gorges Dam as the most expensive project in China's history, employs 127,000 workers. HSR has proven so useful in hitting economic targets that local officials have asked MOR to expand the network another 80%, above and beyond its already ambitious plan.

More senior officials also see China's HSR construction boom as a way to build up China's dominance in the global market for transportation equipment and systems. Domestic, state-owned manufacturers of locomotives and railcars are using the booming market to achieve new economies of scale. Foreign suppliers—Germany's Siemens, Canada's Bombardier, France's Alstrom and Japan's Kawasaki, among others—are also positioned to make millions in profits, but only in exchange for transferring key technologies to their Chinese "partners." These global industry leaders face an unenviable choice: forego the fastest growing market for their products or risk creating voracious new competitors. Already, the Chinese, who little more than a decade ago were still making steam engines, are exporting integrated railway systems to Africa, Southeast Asia and the Middle East. Last year, Beijing even teamed up with General Electric to pitch bullet trains to the state of California.

China's high-speed rail ambitions have captured the world's attention—and its imagination. What remains to be seen is whether, and in what manner, China can capture a return on its investment.

Japan's New Growth Strategy and Its Contribution to Global Infrastructure Projects

Sadanori Ito, Chief of Staff to DG Economic and Industrial Policy Bureau, Ministry of Economy, Trade and Industry (METI), Government of Japan

INTRODUCTION

Japan has long been globally esteemed for its high technology and advanced products, from the Sony Walkman to the Toyota Prius and Nintendo Game Boy. Japanese economic power has always been linked with those competitive manufacturers and products in the global consumer market. However, in recent years, the gravity of the world growth engine has shifted from consumer goods markets (such as cars and electronics) to infrastructure markets, especially in developing countries. In this context, Japan has recently entered into the market as one of the key players in global infrastructure projects.

The New Growth Strategy, a 10-year economic action program that was announced by Prime Minister Naoto Kan and the Democratic Party of Japan (DPJ) Cabinet on June 18, 2010, has laid the groundwork for this new frontier. This article introduces the recent initiatives by the Japanese government and industries related to global infrastructure projects.

BACKGROUND

After the global financial turmoil that was triggered by the Lehman shock in 2008, the Japanese economy faced severe challenges and has remained sluggish ever since. Japanese growth used to depend excessively on global manufacturing, especially automobiles. Between 2000 and 2007, Japan's gross domestic product (GDP) grew just 2.5 percent and auto-related industries contributed about half of that figure. Export-oriented manufacturers have suffered from a sudden shrinkage of auto markets in the U.S. and other developed countries, as well as increasing price competition from emerging countries. Japan can no longer depend solely on the auto industry for growth and job creation.

In response, Japanese industries have eagerly sought diversified sources of growth and a new "breadwinner" for the next decade. Accordingly, several broad key industry headings have been highlighted, as well as factors that must be improved to support overall growth. Among the opportunities highlighted is the area of global infrastructure, where there are opportunities to sell Japanese skills and technology in the fields of renewable energy, water, railroad, urban development and others. According to Morgan Stanley's research, there is a need for substantial investment in global infrastructure — estimated at $41 trillion and as high as $65 trillion — over the next 20 years. There are ample opportunities for Japanese economic growth by combining its fundamental strengths and resources with increasing demands worldwide, thus contributing to global prosperity as a whole.

ADVANTAGE

Indeed, a number of Japanese firms have cutting-edge technology and comparative advantages in the global infrastructure markets. There are areas in which Japan's superior technology and products are deemed indispensable. For instance, the Japanese company Nitto Denko became world famous for its technology called "reverse osmosis membrane," which is used to create fresh water from seawater or wastewater. The company boasts the world's largest share in the use of the reverse osmosis membrane for seawater desalination and wastewater reuse. As environmental issues and the gap in levels of sanitation become serious around the world, water has come under closer scrutiny. In many countries, including those in the Middle East and Africa, there are many people who must walk for hours every day in order to access clean water. According to a report by the United Nations, by the middle of the 21st century, in the worst-case scenario,

it is expected that 60 countries and more than 7 billion people will face water shortages. Japanese water treatment technology contributes to overcoming this situation.

There are long lists of similar candidates for irreplaceable components and products that Japanese firms offer. They vary from rechargeable batteries, which are crucial for electric vehicles and "smart cities," to combined cycle LNG power generators, which have the least CO_2 emissions.

At the same time, Japan has a comparative advantage in its operational skills and know-how, too. For example, the Tokyo Metropolitan Area, with a population of 13 million, records a water leakage rate of 3.1 percent compared to the world average of around 10 percent. The Tokyo Metropolitan Government Bureau of Waterworks steadily supplies water to households and industries at an average of 4,334,000 m^3 per day without any trouble.

In addition, as Asia and other emerging markets grow, there is an increasing need for capital, of which Japan has huge amounts. Japanese household financial assets amount to 1.4 quadrillion yen ($17 trillion) and its real assets, including home and real estate equity, amount to 1.0 quadrillion yen ($12 trillion). The Japanese government also provides official development assistance (ODA) of around $10 billion per year. Japanese capital can play a substantial role in enhancing infrastructure in developing countries and sustaining demand worldwide.

ABU DHABI SHOCK

However, there is always, as a matter of course, an upside and a downside. Last year, the Japanese industry was shocked when it faced the news that a Korean consortium had won a major bid for a nuclear power project in Abu Dhabi, UAE. A Japanese business group led by Hitachi Corporation lost the bid. There are various factors that brought about this outcome, but two are deemed of particular importance.

First, diplomatic efforts by South Korea's government leader to reinforce its consortium's sales drive was apparently one of the decisive factors behind its success in winning the contract. President Lee Myung-bak visited Abu Dhabi repeatedly in support of the Korean bid and established strong personal relations with General Shaikh Mohammad Bin Zayed Al Nahyan, crown prince of Abu Dhabi. The Korean government and business group shared the same objective and conducted repeated top-level sales in order to achieve it. The Japanese team lagged behind in this

regard, especially since it ran into a change of administration at the same time.

Second, government-owned Korea Electric Power Corporation (KEPCO) reportedly led the consortium and arranged special export finance facilities from the government. The Korean consortium guaranteed to operate the nuclear power plants for 60 years and bore the risk, which its Japanese counterpart could not afford. Learning lessons from these observations, it became evident that stand-alone technology and products do not necessarily ensure a favorable outcome in global infrastructure business any longer. The major customers are not in the developed countries, but rather in the emerging countries, where the ability to operate facilities and offer packaged initiatives is requested. The Japanese industry discovered a key clue to the successful formulation of infrastructure business is a new type of private-public partnership that can offer a packaged proposal in response to customer needs.

NEW GROWTH STRATEGY

On June 18, 2010, the Japanese government announced its economic action program called the New Growth Strategy, which attempts to create jobs and growth through a comprehensive economic package. Reflecting the DPJ's basic policy, it puts emphasis on creating demand through "wise spending" and "better regulation," thus realizing demand-led growth toward 2020. The strategy places the most importance on spurring domestic demand and investment in two major areas of strategic concern: "green growth" and "life/health growth." Various regulatory reforms will take place in this regard.

Infrastructure-related promotion is one of the central pillars in the New Growth Strategy. It is not only a matter of business. The key concept is "problem solving." By promoting infrastructure development both globally and domestically, Japan seeks to provide solutions for issues such as global warming. Many parts of Asia, which is continuing to record rapid economic growth, are confronted with problems concerning urbanization and industrialization as well as the accompanying environmental problems. These countries need to improve and update their social infrastructures. The New Growth Strategy stipulates that Japan will work to spread technologies and systems that lead to problem solving throughout the region. In turn, incorporating the vitality of Asia and other emerging markets will become a source of vigor for Japan.

CONCRETE STEPS FOR ENHANCING INFRASTRUCTURE EXPORT

Japan is now committed to developing its infrastructure and lessening the environmental burden accompanying the economic growth of Asia and other emerging countries. Specifically, the Japanese government and private sector are working together to participate in projects that build infrastructure such as electricity power lines, renewable energy power generators, high-speed railways, water supplies, and the development of "smart cities." Through these efforts, Japan will create a virtuous cycle of synergistic growth via export and investment. The Japanese government will promote the export of "safe and secure" Japanese technologies and products as well as strengthen its infrastructure project contract, management and administration expertise. These efforts will then be spread from Asia to the world.

Within the Japanese government, the Interagency Committee for Packaged-Infrastructure Promotion, chaired by the chief cabinet secretary and consisting of relevant ministers, has been newly established. The committee will make policy adjustments among the ministries and will conduct research and deliberation regarding relevant matters. In addition, it will strengthen the functions and initiatives of relevant agencies to maintain an appropriate financing function and support the development of foundations for operating infrastructure projects. In particular, the Japan Bank for International Cooperation (JBIC) will play a vital role in providing investment loans for infrastructure-related projects through collaboration with private financial institutions. The Japan International Cooperation Agency (JICA) is scheduled to resume overseas investment loans and equity for highly effective development projects that cannot be financed by existing financial institutions. Furthermore, overseas operations of public utility enterprises, such as local waterworks bureaus, electricity power companies and railway companies, are encouraged.

In line with the New Growth Strategy, the Ministry of Economy, Trade and Industry (METI) is taking lead of the overall efforts. It has set up an advisory panel involving both public and private experts. The METI has identified 11 areas of strategic concern: 1) water supply; 2) electricity power transmission; 3) nuclear power plants; 4) high-efficiency coal power plants; 5) renewable energy; 6) railways; 7) space industry; 8) smart grid and smart cities; 9) recycling; 10) information and communication systems; and 11) urban development. Top-level diplomacy, including the prime minister's diplomatic initiatives,

will also be activated. Fully in line with international rules, the METI is orchestrating this operation with relevant government agencies and the industry and will compile packaged assistance, including financial schemes and technical cooperation.

RECENT DEVELOPMENTS

The METI is now intensifying its efforts to cooperate with other governments from the planning phase forward in developing infrastructure projects.

According to the 11 priority areas above, the Japanese government has already begun talks with governments and industries worldwide in regard to various infrastructure projects. At the same time, larger-scale compound projects are also taking place. In India, the Delhi-Mumbai Industrial Corridor Project is an ambitious project aimed at developing an industrial zone across six states. The project will be funded through a private-public partnership (PPP), and Japan is expected to be a major investor. Within the scope of the project, the Japan-India coalition is now engaged in a feasibility study of "smart communities" in the region. In this way, the New Growth Strategy is bearing fruit in regard to participating in global infrastructure projects.

CONCLUSION

As mentioned above, enhancing global infrastructure business has become the Japanese government's policy priority. However, it does not necessarily mean participants should be limited to Japanese companies only. On the contrary, as global infrastructure projects are broader in scale and increasing in complexity, there are growing needs for alliances with global and local partners. More Japanese firms now regard this area as their opportunity, and the Japanese government is prepared to take an active role as necessary. Multinational alliances with Japanese participation in global infrastructure projects are desirable. Lastly, as financial schemes and legal affairs for sustaining infrastructure projects become complex and highly technical, advice by global professional firms will be of particular value for the Japanese government and industry.

Philippines in Infrastructure:
Opportunities and Challenges

Leopoldo M. Clemente, President and Chief Investment Officer of Clemente Capital

ABSTRACT

The promise of economic development has remained an elusive dream to the Filipinos. Philippine economic growth has been slow and highly erratic. The Asian Development Bank's study on "An Agenda for High and Inclusive Growth in the Philippines" (Habito, December 2010) points out that development performance of the Philippines over the past three decades has lagged behind its regional neighbors. The country's gross domestic product (GDP) ranks the lowest with an annual growth rate of only 1.4% while the rest of East Asian economies averaged annual GDP growth rates of 3.6% to 6.0% from 1960 to 2008. However, the Philippines has enjoyed an average annual economic growth of 3.9% between 1990 and 2000, and 4.5% since 2001. Although Philippine GDP slowed to 0.9% in 2009, the nation weathered the 2008 – 2009 global recession better than its regional peers thanks to a lower dependence on exports, a resilient domestic consumption supported by remittances from overseas workers that totaled $17.3 billion or 10.8% of GDP, and the expansion of the business process outsourcing sector by 20% in 2009, to $7.2 billion or 4.5% of GDP.

Despite continued uncertainties in the global recovery in 2010, the Philippine economy is projected to grow by 6.5% in 2010 and 5% in 2011, buoyed by the expansion in exports, manufacturing and strong investments, with a benign inflation outlook. Despite these bright spots, the Philippines finds itself lagging behind neighbors like Thailand, Indonesia, Malaysia and Vietnam in terms of overall economic progress.

The inferior infrastructure of the country, relative to its neighbors, is a key factor in the nation's lack of competitiveness. Infrastructure expenditures by the public sector have declined during the past decade in line with the sharp decline in spending by government owned and controlled corporations (GOCCs). The World Economic Forum's global competitiveness index (GCI) for 2010 ranks the Philippines 99 out of 133 countries. Compounding the lack of infrastructure development is the poor distribution of existing infrastructure facilities, both in terms of efficiency and equity. Building and upgrading the quality of the country's infrastructure in roads, ports, transportation, water, power and electricity from their present deficient and inefficient state is a top priority in the agenda of the new administration of President Benigno S. Aquino III, elected in May 2010 for a six-year term. To implement his infrastructure agenda, President Aquino has launched the Public-Private Partnership (PPP) Program. While traditionally infrastructure is the responsibility of the public sector, PPP as an alternative model for construction, operation and financing has increased in popularity during the past decade. Globally, the application of private-sector resources has proven to be an attractive approach to addressing the global demand for functional, safe and cost-effective infrastructure. In many of the emerging economies of Asia, Africa and South America, private capital is ever more important to growth and development. The recent economic and market turmoil has actually refocused attention on the privately funded infrastructure sector. The world economic crisis has driven an unusually high demand for capital at the national and local government levels for operating costs and stimulus spending, thereby creating attractive investment opportunities for the private sector in the infrastructure space. For the Philippines, the privatization model, or PPPs, is expected to develop greater traction under President Aquino.

Investors and business people alike are asking a number of questions: Does Aquino's government have the skill and will to implement economic reforms and an agenda for development? Can he deliver on his promise to fight corruption in the government

bureaucracy and lead the nation to honest and effective governance? Will he be able to improve the country's competitiveness and create jobs? Can he improve the lot of 35% of Filipinos living below the poverty line? Can the Philippines improve its competitiveness by investing and financing its infrastructure needs? What is the role of PPPs in building the Philippine infrastructure? This article will examine the challenges and opportunities of the Philippine infrastructure. The first part provides a perspective on the infrastructure development in the Philippines followed by an assessment of development and outlook for the infrastructure sectors of energy and power, transportation, water, and roads. These sectors likely will be the major targets for investment opportunities. We will then examine the challenges for infrastructure development. Finally, we will conclude with discussion of the risks and rewards of PPPs in infrastructure investments in the Philippines.

INFRASTRUCTURE DEVELOPMENT IN THE PHILIPPINES

Role of Infrastructure in Economic Development

The Philippines is one of the largest island groups in the world with over 7,100 islands located in Southeast Asia with a land area of approximately 300,000 square kilometers. The country is the world's 12th most populous country with a population of 92 million people with the median age of 22.7 years. Much of the present pattern of the Philippine socioeconomic and political structure can be traced back to the nation's historical origins. Perhaps the most important event in its development was the country's Spanish colonization in 1521, leading to over 350 years of uninterrupted Spanish rule. The Spaniards introduced the Roman Catholic religion to its people. In 1898, the United States replaced Spain as the dominant power until the end of World War II, when the Philippines gained independence on July 4, 1946. The United States bequeathed to the Philippines a system of government similar to the United States, a commitment to the free market economy, the English language, and an affinity for western culture.

Philippine economic growth during the post-World War II period has been uneven. In the 1950s, 1960s and 1970s, the country's gross national product (GNP) grew at a rate between 5 and 6% per annum. However, during the early 1980s, due largely to a worldwide economic recession, the growth of the economy slowed to an average of 3% per annum. The economic situation was aggravated by the political crisis following the assassination of Benigno Aquino in August 1983. In 1984 and

1985, economic growth ceased and the economy began to contract. The primary cause of the negative growth was the massive capital flight and foreign exchange crisis triggered by the political turmoil surrounding the Marcos administration. Following the overthrow of Marcos and formation of the new government by President Cory Aquino in 1984, the Philippine economy began to recover and experience growth of 1.5% to a sustainable rate of 6 to 7% through 1991. Largely driven by increased investment and real exports, Aquino's successor, Fidel Ramos, embarked on an ambitious development plan in 1992, reaching a growth rate of 7.2% and gaining favorable comparisons with other Asian neighbors such as Thailand, Taiwan and Malaysia.

The Philippine economy experienced a sharp downturn during the Asian financial crisis when the GNP declined from 5.3% in 1997 to 0.1% in 1998. Despite these setbacks, the Philippines faired relatively better than its neighbors such as South Korea, Thailand and Indonesia. Reviewing the past decade (2000 – 2010), the Philippine macroeconomic performance displayed resilience and provided the macroeconomic framework to accelerate investment in its infrastructure development.

Infrastructure is a well-known constraint to the productivity of the Philippines as far as the quality of roads, ports, airports and electricity costs are concerned. The historical neglect of infrastructure has cost the Philippines dearly in terms of lost investments, steep prices of goods and services, and wasted industrial capacity. The Global Competitiveness Index (GCI) 2010/2011 ranks the country 99 out of 133 countries, a decline in competitiveness from its rank of 54 in 2001/2002. The only East Asian country to rank below the Philippines is Vietnam, whose rank is affected by the poor quality of electricity supply.

The government's economic team has cited the urgency of addressing the consistently poor infrastructure marks in global competitiveness surveys. The focus of the government is to target a sustainable economic average growth rate of 7% in the next six years to achieve higher income, create employment and reduce poverty. In order to achieve this target, the government must set up an environment to attract private investment to augment the government's meager resources for infrastructure spending. Better infrastructure is the starting point for competitiveness. PPPs in infrastructure

Philippine Competitiveness and Infrastructure Quality Within Asian Economies

	2001–2002			2010–2011			
Economy	**GCI**	**Infrastructure**		**GCI**		**Infrastructure**	
	Rank	Rank	Score	Rank	Score	Rank	Score
Australia	9	14	6.1	12	5.74	34	5.2
Hong Kong	18	8	6.6	1	6.12	2	6.7
Japan	15	15	6.0	25	5.35	15	6.0
South Korea	28	27	4.8	23	5.42	12	6.0
Singapore	10	2	6.8	3	6.05	3	6.6
Taiwan	21	25	4.9	19	5.58	19	5.9
China, PRC	47	61	2.9	30	5.27	72	4.1
India	36	66	2.6	81	4.30	91	3.6
Indonesia	55	59	3.0	60	4.52	90	3.7
Malaysia	37	20	5.4	33	5.39	27	5.5
Philippines	54	68	2.4	99	4.02	113	3.2
Thailand	38	30	4.6	48	4.82	46	4.9
Vietnam	62	71	2.2	74	4.34	123	3.0

GCI = Global Competitiveness Index
Source: *World Economic Forum (2001 – 2011)*

development are the hope for a complementary policy to meet the country's urgent infrastructure needs.

The lack of infrastructure in the Philippines is in turn the result of constraints as cited in the 2007 ADB Critical Constraints Study: (i) tight financial situation, (ii) weak investor confidence due to governance concerns, (iii) inadequate infrastructure, particularly electricity and transport, thus affecting the competitiveness of domestic producers, and (iv) market failures leading to a small and narrow base.

Since 2007, these constraints have only grown, and recent analysis by the World Bank (2009) confirms these constraints to economic growth.

Overall public spending by the Philippines on infrastructure outlays remains low by ASEAN standards, at only 2.5% of the country's GDP, much lower than Indonesia's 8.5%, Malaysia's 6.3% and Vietnam's 8.2%. Thus the Philippines ranks low in terms of quality and access to primary services such as electricity, water and transport.

Philippines Compared With Asian Countries' Infrastructure Quality Ranking 2010

Country	Overall Infrastructure	Road	Railroad	Port	Air Transport	Electrical Supply
United States	23	19	18	22	32	23
Japan	15	22	3	37	54	5
Singapore	3	1	6	2	2	9
Hong Kong, SAR	2	4	2	1	1	1
Taiwan, ROC	19	16	8	30	53	24
China, PRC	72	53	27	67	79	53
South Korea	12	14	10	25	22	19
Brunei Darusalam	36	33	0	58	60	55
Indonesia	90	84	56	96	69	97
Malaysia	27	21	20	19	29	40
Philippines	113	114	97	131	112	101
Thailand	46	36	57	43	28	42
India	91	90	23	83	71	110
Sri Lanka	61	55	40	44	62	76
Cambodia	83	73	99	82	83	112
Vietnam	123	119	59	97	88	98

Note: *Ranked out of 139 countries*
Source: *World Economic Forum (2010)*

In ranking infrastructure, the important factors are not about the quantity or number of facilities, but the quality of services and their location.

Assessment of Philippine Economic Infrastructure Sectors

The power industry in the Philippines was dominated by the National Power Corporation (NPC) until 1991, when executive order 215 rescinded the NPC's monopoly and opened the generation sector to independent power producers (IPPs), which were created in response to the 1991–1993 crisis.

Today, the Philippines is still experiencing power shortages, particularly acute in Luzon, the island in which metro Manila is located, and Visayas in the central Philippines. The crisis had its roots in the Marcos era when corruption and mismanagement meant that proper power planning was abandoned. Political unrest and the activities of the military wing of the Communist Party of the Philippines, the New People's Army, also prevented proper maintenance and renewal of power generation and transmission facilities.

In 1986, the incoming Aquino administration canceled the controversial 600 MW Bataan Nuclear Power Plant but failed to replace it with any new capacity. The power shortages brought about by the failure to properly maintain existing capacity and to provide new capacity were exacerbated by the economic growth experienced in the late 1980s and, together, these factors gave rise to the crisis situation in the 1990s.

The existing installed bases would be sufficient if the facilities were properly maintained, but poor management together with the uncertain availability of hydroelectric sources have resulted in plant availability dropping to about 55% of installed capacity.

The power supply problems are compounded by the fact that no new base load power-generating capacity was brought on stream in the first six years during the Aquino administration. This fact, together with the resumption of economic growth, has led to an ever-widening imbalance between the demand for power and the ability of existing power-generating facilities to reliably satisfy demand.

By the end of 1992, the NPC had an installed generating capacity of 6,693 MW, of which 4,591 MW, or 69%, was dedicated to Luzon. However, these plants are old, break down too often and are too reliant on sources of energy whose supply is volatile; for example, more than half of capacity in Luzon is either hydroelectric or geothermal. Hydroelectric sources have proven to be highly susceptible to the effects of drought. The power supply situation in the Philippines reached crisis point from 1980 through the 1990s due to these factors:

1. Luzon plants were generally old — the oldest plant was commissioned in the 1930s. They were subject to frequent breakdowns and were often out of service for repairs. The use of poor quality materials for repairs led to repeated breakdowns.
2. Hydroelectric plant use could not always be maximized because water use was strictly regulated by the National Irrigation Administration (NIA) and the Metropolitan Waterworks System and Sewerage (MWSS) with priority given to drinking and irrigation uses.
3. Finally, actual capacity installed between 1985 and 1991 was well below the targets of the Ministry of Energy, in large part because of the problems surrounding the Bataan Nuclear Power Plant. There were also delays in several projects programmed for construction and commissioning between 1990 and

1992. According to the National Power Corporation (NPC), of the 1,310 MW in planned capacity during the period, only 540 MW was on stream as of December 1992, including the 200 MW Hopewell plant, three 30 MW power barges and the 300 MW Sucat 4 unit, which was operational at 250 MW at the end of 1992. Five other projects, scheduled for commissioning in 1991 and 1992, were delayed.

Until recently, crude oil has been the principal fuel for power generation, accounting for an average of 65% of the total energy mix from the 1980s through 1995. Since 1995, supply from oil-based plants has been continually decreasing. By year-end 2003, the power supply from coal plants exceeded the oil-based plants by 26%. The Independent Power Productions (IPPs) are more dependent on oil, accounting for 90% of their energy mix. Today, coal provides the biggest share of installed generating capacity at 27.4%, followed by hydro at 21%, oil at 20.5%, natural gas at 18% and geothermal at 12.5%.

A prolonged drought could affect the hydro power—21% of the mix in the summer of 2009. The renewable energy mix has a negligible share at 0.4%. Environmental concerns have been raised about coal. Although the country officially claims an installed capacity of 15,610 MW, only 85% or 13,349 MW, is considered dependable because not every power plant operates at full capacity and power plants do not operate at peak power simultaneously.

Electrical power consumption by all sectors (residential, commercial, industrial and others) has been growing at a rate of 4.3% per year. Despite having the highest cost of power in Asia, the Philippines still suffers from electricity shortages due to the imbalance in capacity on the key geographic islands. There are more plants in Luzon with a 74% share of 6,928 MW, while Visayas accounts for only 13.93% of total dependable capacity and Mindanao accounts for 13.03%. Breaking down the energy demand, Visayas has the fastest growth rate at 6.3% followed by Luzon at 3.4% and Mindanao by 1.1%. A shortage and blowout can occur in Visayas or central Philippines as well as Mindanao since the government still controls 60% of the generating capacity. The government is blamed for the frequent brownouts. Assuming a 4.3% growth in energy demand over the next seven years and achievement of 100% household coverage, electricity needs would require the addition of 12,500 MW or 1,785 MW per year. At a cost of US$1 million per megawatt, to build

12,500 MW means an investment of US$12.5 billion. The government does not have enough funds and needs the private sector.

Electricity Sales and Consumption by Sector in MWh

Luzon	2003	2004	2005	2006	2007	2008	2009
Residential	11,795,920	12,114,757	12,037,503	11,801,709	12,129,245	12,235,803	12,801,337
Commercial	9,649,022	10,138,137	10,495,060	10,865,084	11,503,251	12,065,744	12,519,046
Industrial	10,476,442	10,148,988	10,669,917	10,562,722	11,033,946	11,522,202	11,745,017
Others	547,072	622,797	588,557	711,883	768,443	791,669	794,033
Total Sales	32,468,456	33,024,680	33,791,038	33,941,398	35,434,885	36,615,419	37,859,434
Own-Use	2,825,775	3,856,057	3,738,405	3,443,789	3,140,721	3,069,218	2,666,262
System Loss	5,190,782	5,508,907	5,033,287	5,039,235	5,764,135	5,632,154	5,109,530
Total Consumption	40,485,013	42,389,644	42,562,730	42,424,421	44,339,741	45,316,792	45,635,225

Visayas	2003	2004	2005	2006	2007	2008	2009
Residential	1,784,959	1,872,854	1,999,023	2,036,357	2,157,467	2,208,277	2,340,752
Commercial	665,614	783,096	861,240	910,005	1,002,669	1,043,842	1,094,152
Industrial	2,022,241	1,999,039	2,104,110	2,340,239	2,402,248	2,416,489	2,561,555
Others	245,000	376,787	319,986	264,807	454,767	292,585	312,654
Total Sales	4,717,814	5,031,776	5,284,359	5,551,408	6,017,151	5,961,193	6,309,113
Own-Use	484,481	661,113	679,446	606,006	574,113	588,755	564,887
System Loss	742,299	787,806	798,547	788,345	790,499	982,489	1,189,930
Total Consumption	5,944,594	6,480,696	6,762,352	6,945,759	7,381,763	7,532,437	8,063,929

Mindanao	2003	2004	2005	2006	2007	2008	2009
Residential	1,775,703	1,932,626	1,994,831	1,992,135	2,088,878	2,200,150	2,361,655
Commercial	791,411	863,948	889,147	903,959	964,494	1,026,418	1,143,006
Industrial	2,689,610	2,863,964	2,931,133	2,985,180	3,085,523	3,092,211	2,777,855
Others	277,000	358,964	268,893	298,094	418,107	310,723	416,779
Total Sales	5,533,723	6,019,502	6,084,005	6,179,367	6,557,002	6,629,502	6,699,295
Own-Use	100,208	136,743	173,315	177,649	279,436	276,772	293,218
System Loss	876,998	930,846	985,339	1,056,934	1,053,846	1,065,482	1,242,765
Total Consumption	6,510,930	7,087,090	7,242,659	7,413,949	7,890,283	7,971,756	8,235,278

Philippines	2003	2004	2005	2006	2007	2008	2009
Residential	15,356,582	15,920,237	16,031,358	15,830,201	16,375,589	16,644,230	17,503,744
Commercial	11,106,046	11,785,181	12,245,447	12,679,048	13,470,414	14,136,004	14,756,204
Industrial	15,188,293	15,011,992	15,705,160	15,888,141	16,521,717	17,030,903	17,084,427
Others	1,069,072	1,358,549	1,177,437	1,274,783	1,641,317	1,394,977	1,523,466
Total Sales	42,719,994	44,075,959	45,159,402	45,672,173	48,009,038	49,206,114	50,867,841
Own-Use	3,410,464	4,653,913	4,591,167	4,227,443	3,994,270	3,934,746	3,524,366
System Loss	6,810,079	7,227,558	6,817,172	6,884,514	7,608,480	7,680,125	7,542,224
Total Consumption	52,940,537	55,957,430	56,567,741	56,784,130	59,611,788	60,820,985	61,934,432

Source: *Department of Energy, Philippines*

Notes: *Own-Use includes Distribution Utilities Company Used and Power Plants Station Used. System Loss includes Distribution Utilities losses and Transmission losses (substation used, transformation and other unaccounted losses). Others includes public buildings, street lights, irrigation, energy recovered and other items not elsewhere classified.*

One important consideration is the archipelago character of the country. Unless properly distributed, a power surplus will still cause power shortages in some areas of the country, which underscores the importance of the national transmission grid (Paderanga, 2007).

Philippine power is very expensive because of a series of 25 contracts negotiated by the government between June 1992 and June 1998 under the Ramos administration — contracts were negotiated for periods of 20 to 25 years. In 1993, the Electrical Power Crisis Act gave extra power to waive bidding procedures, hence the contracts ranged from 8 to 12 pesos per kilowatt per hour (kwh) when the state-owned NPC was selling power at a cost of only 2 pesos per kwh. Out of the 39 power contracts for 8,937 MW entered into by the government, 25 contracts had a combined capacity of 5,559 MW or 62% of the total mix. Unfortunately, these contracts included government performance guarantees and implied a minimum level of revenue for the IPPs.

The Energy Plan (2010 – 2030)

The Department of Energy released in 2010 its Energy Plan for 2010 – 2030 with three broad policy initiatives: (1) ensure energy security, (2) achieve optimal energy prioritization and (3) develop a sustainable energy system which provides access to local countryside development.

The country's conventional energy fuels of oil, gas and coal will remain the basic sources to meet the country's energy demand. The harnessing of renewable energy is a critical component to provide energy for the country. It is the government's policy to shift from

Total Primary Energy Supply in MWh

Luzon	2002	2003	2004	2005	2006	2007	2008	2009
Coal	16,127,886	14,938,748	16,194,412	15,257,178	15,294,066	16,837,096	15,748,794	16,476,136
Oil-Based	6,293,233	7,170,115	8,504,321	6,141,444	4,664,799	5,148,006	4,868,333	5,380,666
Combined Cycle	748,450	438,755	738,437	90,608	238,870	652,834	513,442	638,520
Diesel	4,560,984	5,509,409	6,253,077	5,716,977	4,152,144	4,161,675	3,660,388	3,771,289
Gas Turbine	36,838	41,972	82,277	25,295	193	9,045	36,485	61,972
Oil	946,961	1,179,979	1,430,529	308,564	273,593	324,452	658,018	908,885
Natural Gas	8,770,851	13,139,410	12,384,467	16,860,917	16,365,960	18,789,414	19,575,855	19,886,827
Geothermal	10,242,493	9,822,444	10,281,550	9,902,443	10,465,279	10,214,688	10,722,780	10,323,847
Hydro	7,032,973	7,869,820	8,592,681	8,386,773	9,939,413	8,563,433	9,842,534	9,787,567
Wind	0	0	0	17,469	53,235	57,842	61,386	64,428
Solar	0	0	0	1,517	1,376	1,309	1,304	1,252
Biomass								13,710
Total Generation	48,467,436	52,940,537	55,957,430	56,567,740	56,784,130	59,611,788	60,820,985	61,934,432

Source: *Department of Energy, Philippines*
Note: *Generation data includes grid connected, embedded and off-grid generator.*

fossil fuel sources to renewable energy which is targeted to provide up to 40% of the country's primary requirement over a 10-year period with a growth rate of 2.4%. This strategy is reflected in the investment requirement for the plan where renewable energy resources account for $40 billion or 50% out of the total investment requirement of $82.2 billion.

Focus on Energy Infrastructure

Philippine energy needs were dependent on imported oil (80%) in the 1970s, which rose from 12% of imports to 25% in 1980. Starting in 1978, the government indexed the potential resources and incorporated them into a long-term energy program. The most interesting area of the program was the decision to promote geothermal and hydroelectric power. This strategy has paid off.

Today, coal provides the biggest share of installed generating capacity at 27.4%, followed by hydro at 21%, oil at 20.5%, natural gas at 18% and geothermal at 12.5%.

Transport Infrastructure

A profile of the transport infrastructure in the Philippines consists of these modes: land transport using the road system and road carriers, the railroads, air, and water and its ports. Assessments of the overall Philippine transport infrastructure by the World Bank and World Economic Forum indicate that the quality is low and cost is high relative to other Asian countries.

Philippines Energy Structure, 2010

Plant Type	Capacity (MW)		Percent Share (%)	
	Installed	Dependable	Installed	Dependable
Coal	4,277	3,813	27.40	28.63
Oil-Based	3,193	2,528	20.46	18.98
Diesel	1,768	1,204	11.33	9.04
Oil Thermal	650	646	4.16	4.85
Gas Turbine	775	678	4.96	5.09
Natural Gas	2,831	2,700	18.14	20.27
Geothermal	1,953	1,321	12.51	9.92
Hydro	3,291	2,914	21.09	21.88
Wind	33	33	0.21	0.25
Solar	1	1	0.01	0.01
Biomass	30	10	0.19	0.07
Total	15,610	13,319		

Source: *Department of Energy, Philippines*

Total Road Lengths and Paved Road Ratios, by Classification (in km), as of 2009

Classification	Length	Paved Road	Paved Road Ratio in %
National Road	29,898	22,469	75
National Arterial	15,731	13,525	86
National Secondary	14,167	8,943	63
Provincial Roads	30,925	9,345	30
City Roads	14,810	8,369	57
Municipal Roads	15,816	5,394	34
Barangay Roads	121,702	8,020	7
Total	**213,151**	**53,596**	**25**

Roads in the Philippines (rev. Aug. 13, 2010)

National Roads by Surface Type (in km)

	All Types	Earth	Gravel	Asphalt	Concrete
1995	26,720.3	128.5	12,622.9	6,394.7	7,574.2
1999	28,522.7	386.9	11,512.4	6,882.3	9,741.0
2000	29,055.8	611.9	11,424.0	6,683.8	10,336.1
2001	29,878.0	684.0	11,050.0	6,815.0	11,329.0
2009	29,898.0	87.0	7,343.0	8,282.0	14,187.0

Source: *Department of Public Works Highway (DPWH) Philippines*

Land Transport

Road transport is the dominant mode of transportation in the Philippines. The country's road network handles about 90% of total passenger movement and about 60% of flight movement. Over time, the quality of the road infrastructure has declined as indicated by the increase in paved roads (as a share of total roads between 1982 and 2006, the percentage of paved national roads in good and fair condition declined from 52.4% to 47% reflecting the underfunding of road maintenance and vehicle overloading). The conditions of roads improved slightly in 2009.

As of 2009, the current road network is classified broadly into national and local roads stretching into 213,000 km with 25% accounting for paved roads.

The Philippines ranked 114 out of 139 countries in the quality of its roads since it has a low proportion of paved roads and a low proportion of roads in good condition and good or fair condition.

Road Project Plan

The construction and maintenance of roads and bridges fall under the Department of Public Works and Highways (DPWH). Under the new Aquino administration, the DPWH has launched its agenda to upgrade the national road network in terms of quality and safety standards and is seeking to develop more PPP projects and address private sector concerns on transparency, regulatory risks and government support.

Rail Systems

The history of the railroads in the Philippines dates back to 1892 when the American administration organized the Philippine National Railways (PNR), a GOCC which operates a 400 km rail system between metro Manila and Albany in Southern Luzon and a commuter train in metro Manila. There are no other rail systems in other islands of the country. The Philippines, like other developing and developed countries, has been providing subsidies to PNR. PNR has been declining over the years due to various reasons, including substantial financial losses, with a debt overhaul leading to poor operating service, deteriorating infrastructure and poor maintenance.

Since 1984, a 15 km light rail transit (LRT) system powered by electricity has been operating in Manila. In the absence of other efficient mass transport systems in Manila, the LRT enjoys good passenger volume and is operated by a government-owned corporation, the Light Rail Transit Authority (LRTA). In 2001, the Metro Rail Transit (MRT) started its Commuter Rail Service along EDSA, Makati, a main thoroughfare for commuters and motorists.

With the poor financial situation of PNR, it has become an issue whether its assets could be put to better use. There is also a need to restructure the finances and governance of the LRTA. The World Bank study in transport infrastructure estimates that a debt restructuring program of 30 billion pesos will be required to meet its debt servicing. The debt burden of the Manila Light Transit Authority has also grown beyond its financial capacity caused by low revenues from low fares; there must be improvements in operations or revenues. A policy should be made to determine the future role of the railways system in the Philippines. The financing operation and quality of services of PNR are not sustainable.

Air Transport

Air transport consists of 163 registered airports in the Philippines of which 85 are national airports and the rest are private airports. There are three

international airports located in Manila, Cebu and Davao. There are 12 trunkline airports or major commercial domestic airports with an instrument landing system. A recent Japan International Cooperation Agency (JICA) study forecasts that air traffic will increase with an average annual growth of 5.5% in the next 20 years. The Ninoy Aquino International Airport (NAIA) in Manila is expected to reach capacity by 2020, from its current passenger capacity of 20 million passengers to 26 million passengers per year by 2015 and stretch to 30 million passengers between 2015 and 2020. The main factor for increasing the capacity of NAIA is the capacity of the existing runway, which is impossible to duplicate due to surrounding built-up areas and limited aerodome space. The government is proceeding with the development of other airports to serve Manila like the Clark airport (a former U.S. airbase).

Outside of NAIA, many principal airports under the civil aviation system do have sufficient runway lengths and widths to cope with the current and projected traffic. An ADB study on the Philippine Airport Development Project estimated that between 2004 and 2022, domestic passenger demand is expected to increase annually by an average of 6.5%, international demand by 19.5% and cargo by 8%.

Proactive PPP measures are proposed in the near term to expand airport capacity facilities to avoid significant difficulties in the future.

The airline sector in the Philippines is highly concentrated and oligopolistic. Today, air transport carries about 60% of exports by value and 98% of visitor arrivals. The country has a network of airports but development is limited by a domestic conglomerate. Philippine Airlines, the national flag carrier, enjoys

Traffic Forecast Comparison

	RRP's Forecast			PCR's Forecast		
Year	Domestic Passengers	International Passengers	Cargo (t)	Domestic Passengers	International Passengers	Cargo (t)
1996	523,989	8,569	30,903	848,858	13,986	22,169
2000	663,971	40,982	32,643	886,772	14,635	41,679
2004	820,365	49,614	47,792	1,128,415	22,573	43,769
2005	858,480	52,016	52,571	1,201,762	27,088	47,270
2010	1,042,020	72,376	55,802	1,646,518	61,903	69,455
2015	1,282,908	106,689	59,231	2,255,872	154,034	102,053
2020	n.a.	n.a.	n.a.	3,090,741	383,286	149,950
2024	n.a.	n.a.	n.a.	3,976,134	794,781	204,005

Source: *Project Completion Report Mission*

the government's protection and preferential treatment of state aid and airport slots. Moves to liberalize with the entry of foreign carriers Air Asia and Tiger Airways and entry of other local air carriers, i.e., Cebu Pacific, Asian Spirit and Air Philippines, have been successful, with increased choice and reduced fares for passengers.

Water Resources

A World Water Forum in Stockholm in 2007 conveyed the message that some 2 billion Asians — 66% of the Asian population — lack access to adequate sanitation and that water and sanitation must get top priority. In the case of the Philippines, the country has abundant surface and groundwater. With the neglect of a suitable environmental policy, water quality is poorest in urban areas with untreated discharge of industrial waste water. Thus, only about 33% of river systems are classified as suitable public water supply sources and up to 58% of groundwater is contaminated. It is estimated that in 2025 water availability will be marginal in most major cities and in 8 of 19 major river bases (Bridges, 2007). Water resource management is now a top priority with implementation of environmental issues and legislation of water issues.

Founded in 1878, the Manila Waterworks Authority was transformed into the Metropolitan Waterworks and Sewerage System (MWSS) in 1971 under the Marcos government. MWSS was responsible for water services in Manila while the Local Government Units (LGU) were responsible for 1,500 towns and cities. Until 1995, the supply and distribution of water in metro Manila and neighboring areas was a monopoly by MWSS. In 1995, the Water Crisis Act was enacted which provided the legal framework for the privatization of MWSS. Private participation was implemented through a concession contract where the concessionaires were assigned the task of operating and managing the facilities whereas MWSS preserved its ownership. Two water and sanitation concessions were created to facilitate servicing and distribution of water — Manila Water Company (MWC) in the East Zone and Maynilad Services in the West Zone. Maynilad went bankrupt in 2003 and in December 2006, an 84% stake in Maynilad was competitively awarded to an all-Filipino partnership, DMCI and MPIC. Outside metro Manila, urban water supply is provided by about 500 water districts and more than 1,000 local government-operated utilities. As a result of the privatization, the provision of water has become more reliable in most areas of the franchise.

The water supply and sanitation sector is fragmented. MWSS's main water supply comes from the Angat Dam

which supplies 97% of the needs of MWSS users while the balance of 3% comes from groundwater. Only 4% are connected to a sewage system. The urban poor often have to face high connection fees. The Index of Drinking Water Adequacy (IDWA) value for the Philippines as shown in the table below is 80, ranked third among the 23 countries evaluated. Use (top rating of 100), quality (84), access (81), and resource (73) are all good with rankings in the second quartile. The capacity rank at 59 reflects the country's ability to purchase water based on per capita GDP purchasing power.

JICA estimates that by the year 2025, the demand for water sources in urban areas will rise to three times the demand in 1995. Over the past two decades, annual capital expenditure in the water and sanitation sector has ranged between 3 and 4 billion pesos with most of it allocated to water. In order to meet the Millennium Development Goals of 2025 and its legislative commitments, the Philippines needs to increase annual sector investments by about tenfold to 40 billion pesos, or at least 1% of GDP, and must focus on these challenging issues: effective implementation of the Clean Water Act; tariff reform for affordability; increased wastewater treatment capacity and water sector services; and strengthened commercial management. The MWSS priorities for the next six years are centered on the development of new water sources other than Angat Dam and development of replacement sources for irrigation. The supply-demand projection below is the road map for tapping new water sources.

Index on Drinking Water Adequacy (IDWA)

Resource	Access	Capacity	Use	Quality	IDWA
73	81	59	100	84	80

Source: *Asia Water Development Outlook, ADB (2007)*

Supply-Demand Projection

Year	Supply (mld)	Demand (mld)	Deficit (mld)	Supply Source
2009	4,000			Angat Dam = 4,000 mld
2010	4,100	4,395	295	Laguna Lake = 100 mld
2011	4,250	4,532	282	Laguna Lake = 150 mld
2012	4,600	4,605	5	Laguna Lake = 150 mld
				Sumag River = 200 mld
2015	4,600	5,054	454	
2020	4,600	5,680	1,080	

Note: *Laguna Lake and Sumag River will be implemented by the MWSS concessionaires.*

CHALLENGES FOR PHILIPPINE INFRASTRUCTURE DEVELOPMENT, 2011–2021

The task of ensuring the adequacy and efficiency of infrastructure development presents major challenges for the government of the Philippines. There is a need to facilitate a prudent expansion of infrastructure based on a careful review of priorities within the stability of a macroeconomic framework and the availability of resources as well as to ensure that the infrastructure is maintained and used efficiently notwithstanding substantial progress during the past decade (2000–2010). Challenges remain and further reforms are needed to sustain economic gains and strengthen the economy's resilience. Taking each of the challenges into account:

Challenge of Sustainable Economic Growth

The Philippines achieved economic gains over the past decade. Average gross domestic product improved to 5.5% during 2004–2008 compared with the 3% rate during 1990–2000. Strong growth was accompanied by benign inflation and declining national government debt.

In spite of these favorable developments and investments, job generation remained inadequate while poverty remained high at 32.9% of the population. In 2008 and 2009, exogenous pressures from the global economic slowdown, rising oil and commodity prices, and the financial crisis in developed countries slowed growth. GDP growth slowed to 0.9%

Philippines Key Economic Indicators

	1990	2000	2005	2006	2007	2008	2009	2010F	2011F
Real GDP %YOY	3.00	3.40	5.00	5.30	7.10	3.80	0.90	6.20	5.00
Consumer Inflation %YOY	12.40	4.00	7.60	6.20	2.80	9.30	3.30	4.20	4.50
Exports (BOP, %YOY)	4.70	8.70	3.80	15.60	8.40	-2.50	-22.30	22.00	7.00
Imports (BOP, %YOY)	16.70	3.80	8.00	10.90	8.70	5.60	-24.10	19.00	8.30
Current Account Balance (% of GDP)	-5.80	-2.90	-2.00	4.50	4.90	2.50	5.30	3.90	3.10
Fiscal Balance (% of GDP)	-3.50	-4.00	-2.70	-1.10	-0.20	-0.90	-3.90	-4.00	-3.30
External Debt (% of GNI)	69.40	72.30	50.70	41.90	35.10	38.90	39.00	38.70	37.80
International Rescue (US$ billion)	2.04	15.06	18.50	22.90	33.80	37.60	44.20	51.50	53.20
Exchange Rate in US$	24.31	44.19	55.09	51.31	46.15	44.47	47.60	45.50	43.00
Unemployment Rate	8.40	11.20	9.80	8.00	4.30	7.40	7.50	8.00	7.00
T-Bills 91 days	9.86	9.86	6.36	5.35	3.41	5.39	4.19	4–6	4–6

Source: *NSCB, ADB 2010 Development Outlook, World Bank 2010 World Indicators*

in 2009 due to a meltdown in exports and imports while the fiscal deficit rose to 3.9% of GDP as the Philippines expanded public spending to support the economy in the midst of the global recession. Continued strength in the external payment position and stability in the finance sector helped the economy to remain steady in 2009. The Philippine economy recovered by 6.2% in 2010 driven by domestic consumption and a rebound in world trade as well as election spending and fiscal easing. Its more recent growth has been characterized as narrow, shallow and hollow (Habito, 2010).

Based on various forecasts for the Philippine economic outlook in 2011 (NEDA, ADB, World Bank), a GNP growth rate of 6 – 7% is expected, supported by these factors: subdued global recovery,

Fiscal, Infrastructure and Governance Indicators, 2006 – 2009

	Year			
Indicator	2006	2007	2008	2009
Fiscal (PhP billion)				
Revenues	978.7	1,134.63	1,202.90	1,123.21
Expenditures	1040.9	1,144.06	1,271.02	1,421.74
Surplus (Deficit)	(62.2)	(9.4)	(68.1)	(298.5)
Infrastructure				
Electric power capacity (MW)	15,803	15,937	15,681	NA
Road length (km)	28,978	29,370	29,709	NA
Gross Fixed Capital Formation (% growth)	2.1	11.2	1.7	(9.9)
Private construction	(2.9)	15.9	11.4	(4.2)
Durable equipment	(1.4)	4.5	1.7	(11.4)
Breeding stock and orchard development	0.0	4.5	(1.6)	(1.4)
Industry Performance (% growth)				
Gross value added (%)	4.5	7.1	5.0	(2.0)
Employment (%)	0.03	3.63	(0.16)	1.32
Governance Indicators (% growth)				
Voice and accountability	(0.08)	(0.16)	(0.20)	NA
Political stability and absence of violence/terrorism	(1.30)	(1.31)	(1.41)	NA
Government effectiveness	(0.09)	(0.04)	0.00	NA
Regulatory quality	(0.12)	(0.13)	(0.05)	NA
Rule of law	(0.44)	(0.54)	(0.49)	NA
Overall governance (average)	(0.41)	(0.44)	(0.43)	NA

( ) = deficit or negative growth rate, GVA = gross value added, km = kilometer, MW = megawatt, NA = not available, P = peso
Source: *National Economic Development Authority; NSCB; Kaufman, Kraay, and Mastruzzi (2009)*

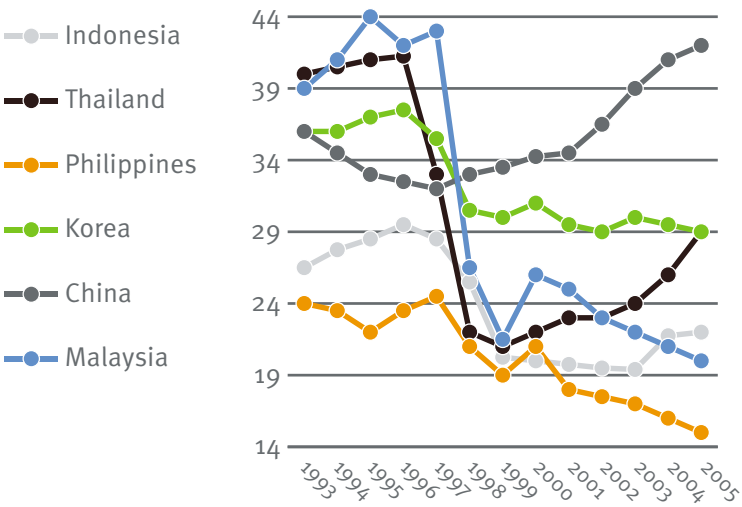
inflationary expectations under control, implementation of a disciplined fiscal policy aimed at revenue mobilization, steady remittance inflows from overseas Filipinos, strong private consumption and a better investment climate as the Aquino government tackles its reform programs under the 2010–2016 Medium-Term Philippine Development Program (MTPDP). Beyond this short-term outlook, the challenge is to make the economic growth sustainable, balanced and inclusive by addressing these major structural impediments to growth cited by ABD in 2007 as critical constraints: inadequate infrastructure and weak investor confidence due to governance concerns. To these constraints, we add poverty alleviation and environmental concerns.

Challenge of Private Investment as Engine of Growth

The Philippines is an open and growing economy yet it is suffering from a weak and declining investment rate. Why? This is a question that puzzles investors and Philippine watchers alike. The supply side constraint cannot fully explain the lethargic investment rate in the Philippines since there are countries with similar states of infrastructure and corruption that have made higher investment rates.

As of the late 1990s, gross fixed investment has been stagnant in real terms and has declined to 14% as a percent of GDP and remains low by the regional average of 25.7%.

Gross Fixed Investment as % of GDP (Nominal)



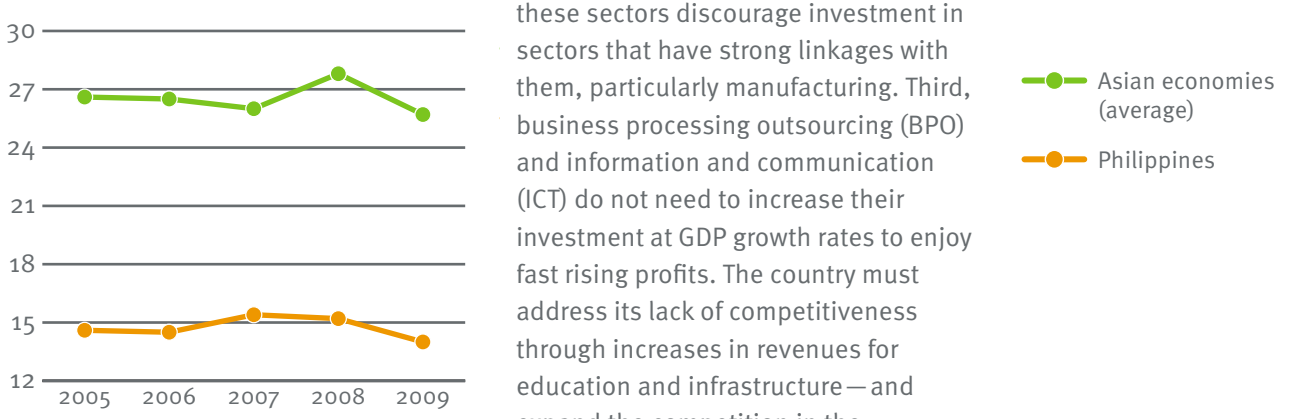
Source: *World Bank East Asia Update (November 2006)*

The Economy is Growing... but Investment is Declining.

	2004	2005	2006	2002–06
Emerging East Asia	8.0	7.5	7.8	7.4
Develop. E. Asia	9.1	9.0	9.2	8.8
S.E. Asia	6.0	5.1	5.2	5.3
Indonesia	5.1	5.6	5.5	5.2
Malaysia	7.2	5.2	5.5	5.5
Philippines	6.2	5.0	5.4	5.3
Thailand	6.2	4.5	4.5	5.3
Transition Econ.				
China	10.1	10.2	10.4	9.9
Vietnam	7.8	8.4	8.0	7.7
Small Economies	6.6	7.6	6.0	5.7
Newly Ind. Econ.	6.0	4.7	5.1	4.8
Chinese Taipei	6.1	4.0	4.0	4.3
Hong Kong, China	8.6	7.3	5.9	4.7
Korea	4.7	4.0	5.1	4.7
Singapore	8.7	6.4	7.4	5.7

Source: *World Bank East Asia Update (November 2006)*

Gross Domestic Investment as a Share of GDP Remains Low by Regional Standards...



Source: *Asian Development Outlook (2010)*
Note: *Selected Asian economies/countries include Taiwan, Thailand, Hong Kong, China, Korea, Malaysia, Singapore and Indonesia.*

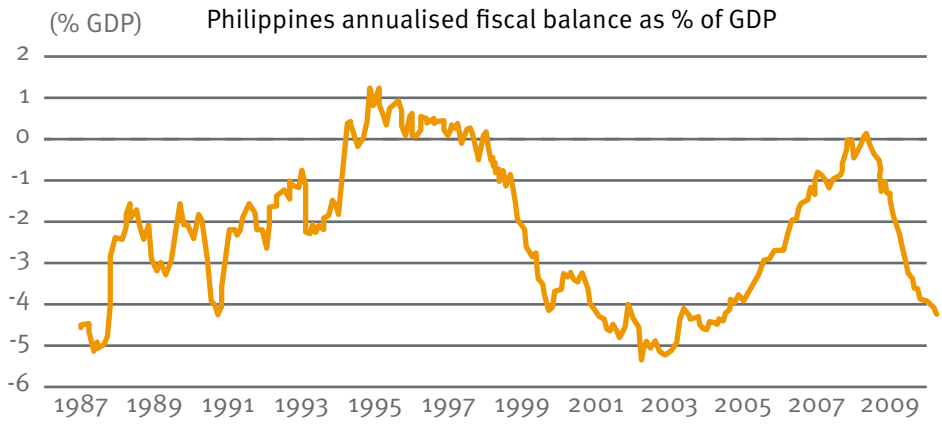
A World Bank study (Bocchi, 2008) cites three reasons to explain this puzzling situation. First, the public sector cannot afford to keep public investment growth at GDP rates due to decades of weak revenues and high debt service. Second, the capital intensive sector does not want to expand investment at the economy's fast pace, as it expects little return from a low marginal productivity of capital (MPK) with lack of incentives for private investment from the government. The study also cited the dominance of politically connected conglomerates in the strategic sectors of agriculture, maritime and air transport, cement, and banking, which enjoy barriers to entry and oligopolitical market power. In turn the resulting higher costs in these sectors discourage investment in sectors that have strong linkages with them, particularly manufacturing. Third, business processing outsourcing (BPO) and information and communication (ICT) do not need to increase their investment at GDP growth rates to enjoy fast rising profits. The country must address its lack of competitiveness through increases in revenues for education and infrastructure—and expand the competition in the oligopolitical market.

Challenge of Fiscal Consolidation

Infrastructure has traditionally been within the purview of government ownership and of public finance. While the need for infrastructure remains high and continues to grow, public funding for infrastructure has declined considerably over the past decade. Resources for developing countries for basic infrastructure are marginal due to fiscal difficulties such as shortfalls in government revenues and difficulties in tax collection. The key to improving prospects and attaining long-term development goals is the strengthening of tax revenues to ensure adequate fiscal space for infrastructure and social services while signaling continued commitment to medium-term fiscal consolidation. The challenge of President Aquino is to tackle the fiscal

deficit of 3.6% in 2010 in the context of a public debt to GDP ratio of 67%. The high debt/GDP ratio has resulted in interest payments taking a growing share of government expenditures. The consequence is less room to increase capital expenditures that will lift potential growth. The administration's goal is to reduce the deficit/GDP ratio to 2% by 2013, not by raising new taxes, but by increasing revenue through the increased efficiency of existing tax collection. While the above figures may not seem alarming from a European perspective, capital flows into the Philippines will be sensitive to signs of deterioration or improvement in the nation's fiscal situation.

Recent Fiscal Deterioration

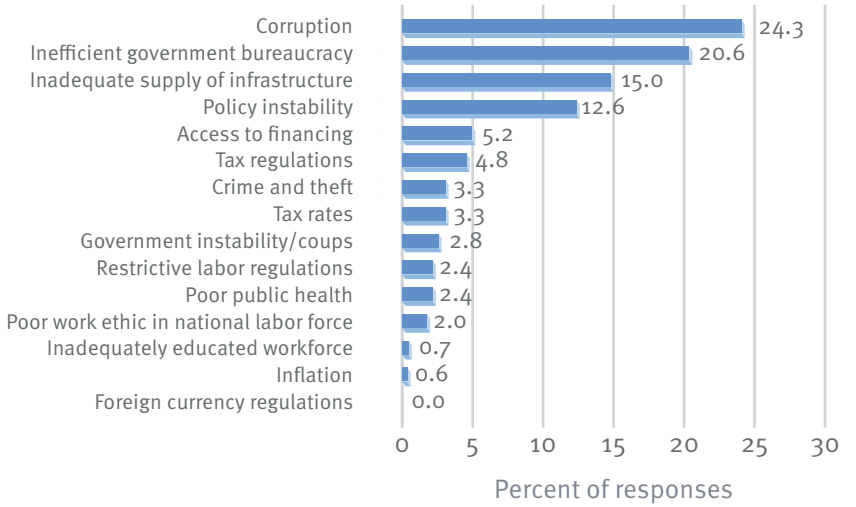


Source: *CEIC Data*

Aquino's Challenge

Source: *CEIC Data*

The most problematic factors for doing business



Note: *From a list of 15 factors, respondents were asked to select the five most problematic for doing business in their country/economy and to rank them between 1 (most problematic) and 5. The bars in the figure show the responses weighted according to their rankings.*

To address this fiscal constraint facing the country's infrastructure agenda, closer scrutiny by investors of the Philippine fiscal situation can be expected. Achieving fiscal consolidation must be a priority for President Aquino, especially in the face of a global debt crisis that has gripped both the Eurozone and the United States.

The Global Competitiveness Index (GCI) 2010 suggests that the Philippines is particularly weak in the area of governance-related issues. There is a negative perception in the Philippines, with corruption as the key problem of doing business there, as shown in the GCI survey of doing business in the Philippines.

The 2010 – 2011 Global Competitiveness Report ranked the Philippines 99 out of 139 countries, having fallen 28 places from a ranking of 71 two years ago.

The Philippines has consistently ranked in the bottom fourth of the Corruption Perception Index (CPI) conducted by Transparency International. Corruption is costing the country more than 10% of GNP based in the United States. With his campaign slogan, "kung walang corrupt walang mahirap," or "without corruption, there is no poor," Aquino is unlikely to be tainted with accusations of corruption. There is widespread expectation and renewed hope that the new Aquino government will address the governance and institutional

Ranking of Selected Asian Countries on Corruption Perception Index 2008 – 2009

	CPI 2009		CPI 2008	
Country	Rank	Score	Rank	Score
Singapore	3	9.2	4	9.2
Hong Kong SAR	12	8.2	12	8.1
Taiwan, China	37	5.6	39	5.7
Korea, Rep.	39	5.5	40	5.6
Malaysia	56	4.5	47	5.1
China	79	3.6	72	3.6
Thailand	84	3.4	80	3.5
Indonesia	111	2.8	126	2.6
Vietnam	120	2.7	121	2.7
Philippines	139	2.4	141	2.3
Cambodia	158	2.0	166	1.8

Note: *CPI score relates to perceptions of the degree of corruption as seen by business people and country analysts, and ranges between 10 (highly clean) and 0 (highly corrupt).*
Source: *Transparency International, http://www.transparency.org/policy_research/surveys_indices/cpi/2009*

impediments in policymaking and take strides in project implementation and economic management to help improve its ranking in 2011. The government is trying to coordinate efforts in investment promotion to provide better service to investors with less bureaucracy and more transparency and pursue reforms in public expenditure management such as effective implementation of procurement reforms.

Challenge of Poverty Alleviation and Employment Generation

In spite of the country's recent gains, the poverty incidence measure remains high at a rate of 30% during 2000 – 2009. Poverty reduction as leveraged by the United Nations using the Human Poverty Index (HPI) shows a reduction in poverty with accompanying growth in Singapore, Malaysia, Thailand and Vietnam while HPI was relatively weak in the Philippines, Sri Lanka, Bangladesh, India and Indonesia. The causes of poverty in the Philippines that need to be addressed are the lack of job opportunities in the country and a relatively high annual population growth rate of 2%. Social structure programs in education and health lack funding and are behind 2015 Millennium Development goals. Massive unemployment of 6% and underemployment are part of a systemic failure to create enough jobs. Increasing employment requires increased investment but this is unlikely without a favorable investment climate and a serious job creation program.

Challenge of Environmental Concerns

Infrastructure development in the Philippines as elsewhere in the world has a potentially enormous impact on the environment. It can exacerbate or ameliorate sustainable development prospects, depending on the type of infrastructure and the extent to which environmental considerations are factored into the planning, investment and pricing of services. In the past, environmental considerations did not receive adequate attention in the choice and implementation of infrastructure projects, contributing to environmental degradation. Infrastructure planning must include the environment as a key variable in all major projects from the design stage to implementation and monitoring. Complex issues confronting the value chain such as environmental sustainability and spatial redistribution of production service coordination between the stakeholders, private sector and the government must be addressed.

Road construction, for example, can produce environmental effects which can lead to flooding and decline in the natural recharge of groundwater aquifers. Road construction near protected areas may disrupt natural habitats, port and shipping development can lead to loss of environmentally viable marine sources, and dredging may have severe effects in marine macro systems. Reliance on coal as a power source is likely to add to solid waste and pollution, which take their toll on human health. The World Bank's Country Environmental Analysis for the Philippines states the fact that the country has sound and comprehensive environmental laws and policies. However, it suffers from weak implementation due to inadequate capacity and fiscal constraints at both national and local levels. Some of the funding worth noting is in the area of coastal and marine resources (CMR) where the annual cost from degradation is estimated at more than $120 million in 2006 prices; in the areas of water pollution, sanitation and hygiene, where 34 million cases of related illnesses occurred nationally in 2003; and in the area of outdoor air pollution, where it is estimated that more than 1 million people get sick due to air pollution in urban areas. Investments in the mass transit system and the cost benefit analysis of low sulfur diesel and vehicle emission control show promising results. Giving the environment its true value and putting a price on degradation and its human impact through adoption of policies that are environmentally sensitive and appropriate will lead to sustainable growth over the long term.

OPPORTUNITIES IN PRIVATE-PUBLIC PARTNERSHIPS IN THE PHILIPPINES

Regulatory and Policy Framework

The Philippines has a long and varied history of private sector involvement in financing, operating and maintaining its overall infrastructure. The shift in government policy to depend on private investment for infrastructure development commenced with the power crisis in the late 1980s. Through the 1980s, the passage of landmark legislation, Republic Act 7718, otherwise known as the Amended Build-Operate and Transfer (BOT) Law, included implementing rules and regulations. Under this law, private project proponents are allowed to enter into contractual arrangements either with National Infrastructure Implementing Agencies (NIAs) or Local Government Units (LGUs) to undertake the construction, financing, operations and maintenance of infrastructure facilities.

In the BOT contractual arrangement, the project proponent has the following rights:

- Operate the facility over a fixed period, not to exceed 50 years.
- Charge the facility users fees for tools and rentals.
- Recover construction, operation and maintenance expenses and make a reasonable return on investment.

Other related laws governing PPP projects in the Philippines are as follows:

1. The Philippine Constitution: the BOT Law provides that if an infrastructure requires a public franchise then the concerned government regulatory agency shall issue a franchise in favor of the winning proponent. However, under the Constitution, franchises or any other authority for the operation of a public utility should only be given to Philippine citizens or to corporations organized in the Philippines with 60% of the capital owned by Philippine citizens while the participation of foreign investors on the board of the public utility is limited to the proportionate share in its capital. All the executives and managing officers of the corporation must be Philippine citizens.

   For PPP projects in natural resources such as water or energy projects, the Philippine Constitution (Article XII Section 2) states that all areas of public domain, i.e., water, minerals, coal, petroleum, potential energy and other natural resources are owned by the state except agriculture lands.

2. The Public Services Act authorizes the establishment and regulation of public utilities in the Philippines.

Under this law, no public utility may operate without being granted the necessary franchise or certificate of public convenience. Public utility franchises are issued either by Congress or the appropriate government agency with jurisdiction, supervision and control over the franchise.

3. The Foreign Investment Act (FIA) regulates foreign investment in the Philippines, which has been amended to allow foreigners to own up to 100% of a Philippine company provided that foreign ownership in the enterprise or company is not limited by other existing laws. For example, foreign ownership is restricted to 4% in natural resources, oil and water under the Philippine Constitution and operation of public utilities such as mass transport systems, toll roads, and water and power distributors is restricted to up to 40% by the Constitution and public service law. In the PPP projects where such ownership restrictions apply, foreign proponents have to search for Philippine citizens as partners in the project company. The FIA further provides that firms seeking to take advantage of incentives under the limited investment code must apply with the Board of Investment.

   Summing up, the special features of FIA allow non-Philippine nationals to invest in domestic or export-oriented activities up to 100% of their capital, except for those on the Foreign Investment Negative List (FINL), which consists of:

   - List A — areas of activities reserved to Philippine nationals where foreign equity participation in any activity listed therein shall be limited to a maximum of 40% as prescribed by the Constitution.
   - List B — areas of activities where foreign ownership is limited pursuant to law for reasons of security, defense, risk to health and morals, and protection of SMEs.

4. The Omnibus Investment Code (OIC) follows the basic guidelines and qualification requirement for enterprises to enjoy fiscal and nonfiscal incentives. OIC incentives to PPP projects include: income tax withholding (five to eight years), duty-free importation of capital equipment, employment of foreign nationals and, under the BOT law, projects that cost 1 billion pesos may be granted pioneer status.

5. The Foreign Borrowings Act (FBA) authorizes the president of the Philippines to borrow from

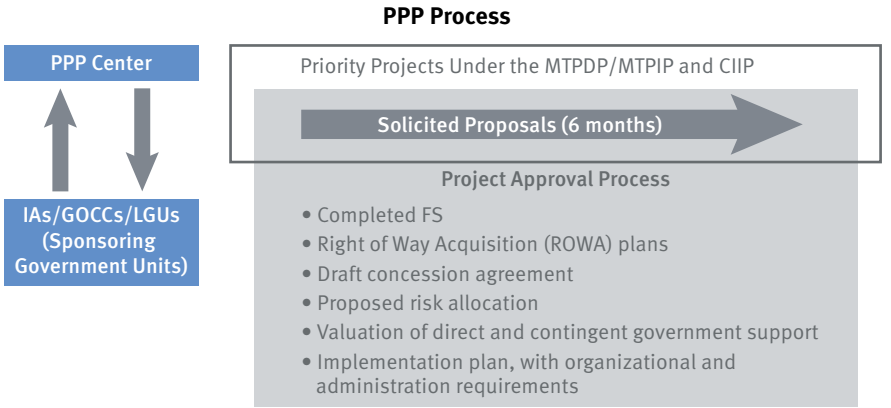
governments of foreign countries, international organizations and lending organizations if the government intends to use internationally borrowed loans to finance PPP projects. The loan will have to follow the Foreign Borrowings Act which requires channeling funds that could be lent to PPP projects through government financial institutions (GFI) such as the Development Bank of the Philippines. Any government guarantees may be issued only to GOCCs for their projects and GFIs for relending to the private sector. This implies that the government may not directly guarantee loans obtained by the private sector PPP proponent.

Other government support to PPP BOT projects consists of:

1. Fiscal incentives that are provided with the following projects:
   - Projects costing more than 1 billion pesos are entitled to incentives under the OIC upon registration with the Board of Investments.
   - Projects costing 1 billion pesos and below can avail themselves of incentives under OIC subject to inclusion in the current Investment Priorities Plan.
   - LGUs may provide additional tax incentives, exemptions or reliefs, subject to the provisions of the Local Government Code and other pertinent laws.
2. Cost-sharing in projects with difficulty sourcing funds may be partially financed from direct government appropriations (GAA) and/or Official Development Assistance (ODA); also, financing access from GAA or ODA is not to exceed 50% of the project cost.
3. Other government undertakings include credit enhancements such as currency convertibility and direct government subsidy or equity.

Process

In 2010, President Aquino issued executive order No. 8 to reorganize and rename the BOT Center to the Public-Private Partnership Center and transferred its jurisdiction from the Department of Trade and Industry (DTI) to the National Economic Development Authority (NEDA). The main activities of the PPP Center are to (1) establish a one-stop full service facility for investors, sponsors, contractors and financiers which will help keep parties informed of the status of each project that will be bid out and also walk each sponsor through the entire government permitting process once the project is awarded, assist line



agencies in preparing their projects for public solicitation, and promote the Philippine infrastructure privatization program in the Philippines and abroad.

The policy and regulatory framework for PPP projects was recently reviewed in a study under the Philippine Australia Partnership for Economic Governance Reform (PEGR). The findings of the PEGR report note:

- Significant delays in PPP toll road projects due to the combined factors of inadequate preparations and institutional complexity. Feasibility studies were inadequate and incomplete.
- Confusion in the toll road market with three entry points: the BOT Law, Toll Regulatory Board and GOCCs.
- The institutional complexity and legal status of Philippine national construction companies and many unsolicited bids and proposals by GOCCs.
- The role of the National Economic Development Authority could be strengthened as an oversight agency.

The table on the next page provides examples of various PPP arrangements in the Philippines.

Investment Opportunities for PPP in the Philippines Infrastructure

The Updated Comprehensive and Integrated Infrastructure Program (CIIP) by the National Economic Development Authority notes that the total number of infrastructure projects that will be implemented between 2009 – 2013 will cost 3.12 trillion pesos. This amount excludes projects with incomplete information and those that have yet to be verified and confirmed by the agencies.

There has been a greater emphasis on power and electricity projects accounting for 22.12%.

The following table provides examples of various PPP arrangements in the Philippines.

Project	Sector	Modality	Investment Commitment	Payments to Government	Payments From Government	Contingent Liabilities
Southern Tagalog Arterial Road	Road transport	Build operate transfer after bidding, awarded to Star Infrastructure Dev Corp by DPWH	P1.5 billion for 20 km, 4-lane expressway; Up to P500 million for right of way	Taxes	Right of way: P550 million (exceeding P500 million under SIDC)	Not applicable
North Luzon Tollway	Road transport	Philippines National Construction Corporation (PNCC)-private sector (PS) joint venture (JV) under PNCC franchise	USD370 million for rehab, widening, improvement of North Expressway, C-5 Expressway, Subic Expressway	Revenue share of PNCC Taxes	Right of way: P750 million	Not applicable
Manila-Cavite Tollway Expressway	Road transport	Philippine Reclamation Authority (PRA)-PS JV under PRA charter	USD131 million for R-1 Expressway, C-5 Expressway, R-1 extension	Revenue share of PRA Taxes	Right of way: P613 million	Not applicable
Metro Manila Skyway Stage I	Road transport	PNCC-PS JV under PNCC franchise	USD536 million for elevated expressway, Buendia-Bicutan, rehab of at-grade expressway to Alabang	Revenue share of PNCC Taxes	Right of way: P300 million; 20% equity contribution to joint venture	Default on contract obligation
South Luzon Expressway	Road transport	PNCC-PS JV under PNCC franchise	Rehab of Alabang viaduct; Widening and rehab of Alabang-Calamba; Construction of Calamba-Sto. Tomas	Revenue share of PNCC Taxes	Right of way: P369.9 million	Default on contract obligation
MRT 3	Rail transport	Build-lease-transfer (BLT) by the Department of Transportation and Communications with Metro Rail Transit Corp (MRTC)	USD679 million	Ownership of rail transit after 25 year lease to private partner; Development rights	Equity rental, Debt service rental, Maintenance rental; Private partner's staff and administrative costs	Liquidated damages; Other private partner expenses

Source: *Department of Public Works and Highways and Build Operate Transfer Center (May 2007)*

Infrastructure Investment Projects (CIIP) in PhP Billion

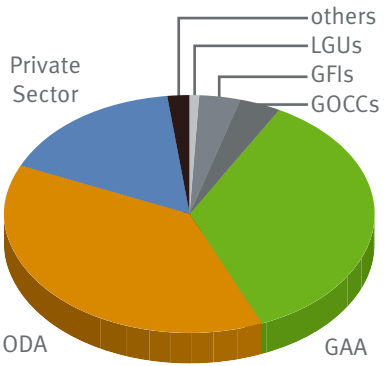
	2007–2010		2009–2013	
Transportation	753.24	37.17	842.31	26.94
Power and electricity	527.05	26.01	1004.40	32.12
Water resource	425.66	21.01	514.50	16.46
Social infrastructure	203.97	10.07	245.70	7.86
Communication	63.07	3.11	56.03	1.79
Relending programs	27.73	1.37	53.30	1.70
Agricultural reform communities (ARCs)	25.47	1.25	410.20	13.12
Total Investment	**2,030,000**	**100%**	**3,110,000**	**100%**

Source: *NEDA (2010)*

The projects will be mainly financed by the national government (53%) followed by official development assistance. The rest, 400 billion pesos or 13%, will be financed by the private sector. The rest of the financing will come from the GOCCs, government financial institutions (GFIs), LGUs and other sources.

Transportation	214,389
Water	112,285
Communications	3,500
Social Infrastructure	70,721
Total	400,895

Comprehensive and Integrated Infrastructure Program, 2009–2013
Total Investment = PhP 3.1126 Trillion



Source: *PPP Center, NEDA Philippines (November 2010)*

By sector, power and electricity accounts for the largest thrust of the government's PPP program in line with the energy plan. The Department of Energy released in 2010 its Energy Plan for 2010–2030 with three broad policy goals: (1) ensure energy security, (2) achieve optimal energy prioritization, and (3) develop a sustainable energy system which provides access to local countryside development.

The country's conventional energy fuels of oil, gas and coal will remain the basic sources to meet the country's energy demand. The harnessing of renewable energy is a critical component to provide energy supply for the country. It is the government's policy to shift from fossil fuel sources to renewable energy which is targeted to provide up to 40% of the country's primary requirement for the plan where renewable energy resources account for $40 billion or 50% out of the total investment requirement of $82.2 billion as shown below.

Energy Investment Requirements, 2010 – 2030

Sector	In PhP Billion	In US$ Billion
Fossil Fuel Resources	543.93	24,476.85
Renewable Energy Resources	902.48	40,611.60
Alternative Transport Fuels	41.37	1,861.65
Power and Transmission Development	342.54	15,414.30
Downstream	59.61	2,682.45
Sub-Total	1,889.93	85,046.85
Cost of Power Plant Construction Included in the Investment Cost of Renewable Energy Projects	62.74	2,823.30
Total	1,827.19	82,223.55

Source: *Department of Energy, Philippines*

The potential projects for energy investors are summarized in the table below.

Energy Projects for PPPs

Power Sector
• Infrastructure in power generation
• Greenfield generation projects
• Possible joint ventures with proponents of indicative projects
• NPC plants and NPC-IPP contracts for privatization
• Competition
• Electricity trading in the Wholesale Electricity Spot Market
• Transition from a government-supervised Market Operator to an Independent Market Operator
• Supply/aggregation business
• Metering service provider
• Missionary electrification
• New Power Providers
Oil and Gas
• Twelve (12) petroleum contract areas in shallow to deep waters with total hectarage of 7,920,000
• Possible joint ventures with the existing service contractors
Coal
• Three (3) available contract areas for exploration and development
• Possible joint ventures with the existing service contractors
Renewable energy
• Possible joint ventures with existing Geothermal Service Contractors for exploration
• Hydro frontier areas available for pre-development phase
• Possible joint ventures with the existing service contractors for hydro

Source: *Department of Energy, Philippines (November 2010)*

Opportunities in the Transport Sector

As discussed in the assessment of transport infrastructure in the Philippines, the quality of transport infrastructure in the Philippine network and facility density compare well with other countries in the region but the country ranks low in capacity and quality. Massive public and private expenditures are required to bring the quality of transport infrastructure to acceptable standards. This need applies to the roads, railways, ports and airports. Transportation accounts for 26.94% in the CIIP budget. The Department of Transportation (November 2010) announced these possible project pipelines of $3.6 billion:

Transport Project Pipelines

Project Pipeline for Implementation in 2011		
	Length (km)	Cost
1. Cavite-Laguna Expressway	27.5	PhP 11.79 B (US$262 M)
2. Cavite Expressway Phase II	5.19	PhP 1.26 B (US$235 M)
3. NLE X-SLEX Link Expressway		PhP 21 B (US$407 M)
For Bidding Beyond 2011		
1. Cavite-Laguna Expressway—Laguna Side Section	14.3	PhP 7 B (US$155.56 M)
2. C-5/FTI/Skyway Connector	6.8	PhP 5.64 B (US$125.33 M)
3. C-6 Expressway (Global City Link)—South Section	50.0	PhP 40.4 B (US$897.78 M)
4. C-6 Expressway (Laguna de Bay Flood Control Dike Expressway)	43.6	PhP 18.59 B (US$413.11 M)
5. Central Luzon Expressway (CLEX), Phase 2 (Cabanatuan-San Jose)	35.7	PhP 11.81 B (US$262.44 M)
6. SLEX Extension (to Lucena City), 2-lane	47.8	PhP 5.9 B (US$131.11 M)
7. Calamba-Los Banos Expressway	15.5	PhP 5.9 B (US$131.11 M)
8. R-7 Expressway	16.1	PhP 23.98 B (US$532.89 M)
9. NLEX East/La Mesa Parkway	103.0	PhP 38.8 B (US$862.22 M)
Total	**332.80**	**PhP 161.62 B (US$3,591.55 M)**

Source: *Department of Energy, Philippines*

MWSS Water PPP Projects

Project Description	Potential Supply Value	Project Cost
Kaliwa Low Dam	500 mld	US$510 M (PhP 23 B)
Laiban Dam	1900 mld	US$1.45 B (PhP 65 B)
Kanan Dam	3270 mld	US$1.30 B (PhP 60 B)
Wawa River	500 mld	US$100 M (PhP 4.5 B)
Apalit Pamapanga River	20 cms	US$110 M (PhP 5 B)
Pampanga River	20 cms	US$110 M (PhP 5 B)
Candaba Water Resource	15 cms	US$220 M (PhP 10 B)
Balintogon Multipurpose Dam	17 cms	US$440 M (PhP 20 B)

Source: *Alikpala, MWSS*

Water Resources

Water resources account for 16% of the CIIP, ranking third after power/electricity and transportation. In line with MWSS priorities to develop new water sources and replacement sources for irrigation, potential new water sources are available for PPP investors.

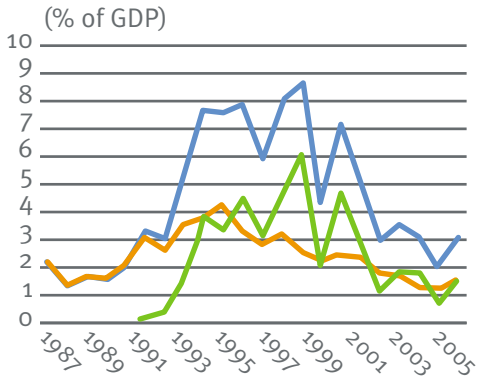
The Philippines has spent 2 – 3% of its GDP in public expenditures in general but it has been falling since the Asian Financial Crisis of 1997. Private sector investment peaked in 1998 at 255 billion pesos and about 6% of GDP and has been stagnant. By comparison, public infrastructure spending during the past 10 years has been rising in faster growing countries in the region such as Thailand (15 – 16% of GDP), Vietnam (10%) and China (7 – 8%).

Aside from its "puzzling" weak gross domestic investment, the Philippines is faced with a very slow pace of foreign direct investments.

Foreign Direct Investment (FDI) has played a leading role in many of the world's economies. FDI has been a key factor during export-led growth in Asia. With the exception of the Philippines which until the 1990s had not generally welcomed foreign investors the newly industrializing

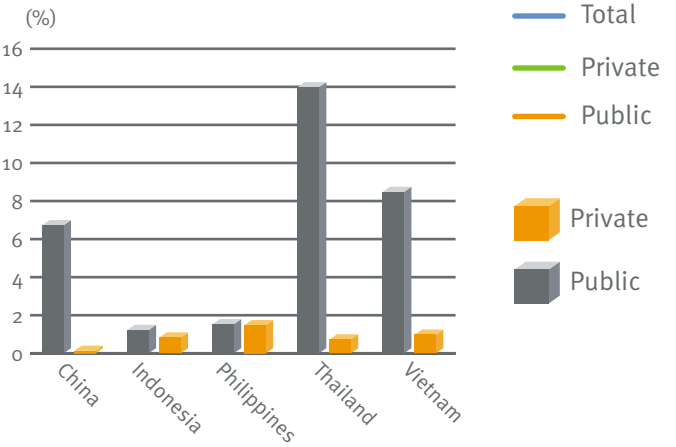
economies (NIEs) and Southeast Asian nations (ASEAN) have all been major recipients of foreign direct investment. Overall, the most important finding of FDI flows into the Philippines between 1985 and 1997 is that its behavior remained the same as in the past 25 years (F. Aburo, 2007). The strongest drive for foreign investment into the country has been its domestic market insulated from the rest of the world by an effective protection system. With adoption of the reform agenda under the new administration, there is hope that FDI inflows will increase in the years ahead.

Public Infrastructure Investments as a Share of GDP, Capital Outlays, 1985 – 2006



Source: *Department of Budget and Mangement; Department of Finance; Commission on Audit; Maynilad Water Services, Inc.; Manila Water Corporation, Inc.; Optel Ltd.; and World Bank*

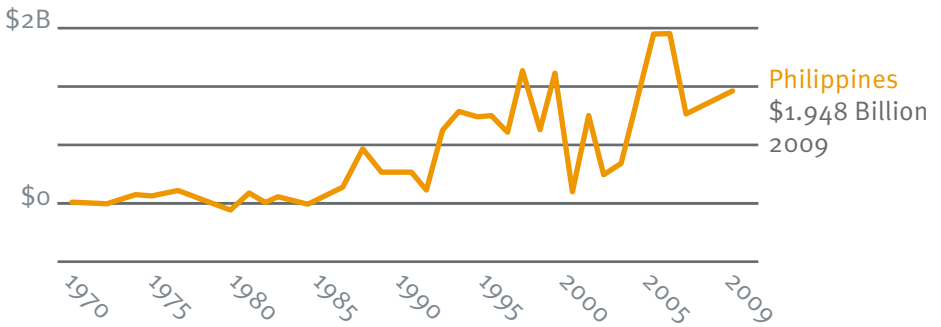
Public Expediture on Infrastructure, Share of GDP, various years



Source: *World Bank, Connecting East Asia (2005); Philippines data updated*

Foreign Direct Investment, Net Inflows

Net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor.



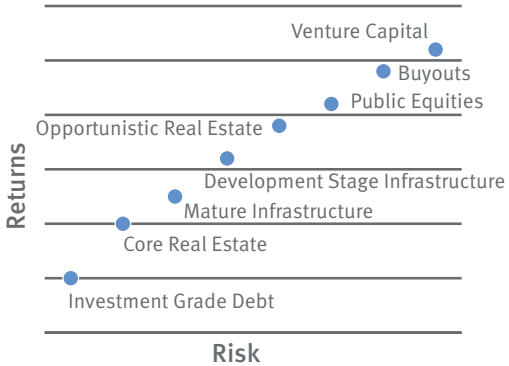
Source: *World Bank, World Development Indicators (last updated Dec. 21, 2010)*

CONCLUSION

The world is facing an infrastructure crisis in the 21st century. Infrastructure needs in power, water, transportation and public services for the growing population are deteriorating and need to be built, replaced or enhanced. Globally, this investment need will reach $71 trillion by 2030 according to estimates by the Organization for Economic Cooperation and Development (OECD). One offshoot of the rapid growth of PPP is that countries remain at vastly different stages of understanding and sophistication in developing infrastructure PPPs.

The Philippines is still at the first stage of PPP development, developing the policy and legislative framework that will enable successful partnerships, getting the deals right and building the marketplace. Looking at the infrastructure challenge facing the Philippines today may seem overwhelming. PPPs are not a panacea; rather they are one tool governments have at their disposal for infrastructure delivery within time and budget constraints, reduced life cycle costs, better value for money, and a vastly improved investment climate for infrastructure and economic stimulus. Infrastructure investments have different risk and return portfolios than traditional investments. They provide exposure through both illiquid long-term private vehicles as well as liquid publicly traded funds. This versatility makes them attractive for different investor segments.

Risk/Return Profile by Asset Class



Source: *CAI Research; Stylized Risk/Return Graph*

Infrastructure's capital gain potential can be viewed as an equity option attached to its bond-like steady predictable return.

The Philippines has confronted many difficult challenges as it struggles to achieve a sustainable inclusive economic growth. The Philippines faces a growing population and the challenge of poverty reduction and needs to develop its infrastructure. The government's promotion of the Public-Private Partnership Program is a step in the right direction to meet this large infrastructure investment deficit. Investors should be mindful of the risks associated with the Philippines, including regulatory changes and corporate governance.

REFERENCES

Abad, Florencio B., Secretary, Department of Budget and Management, *Creating Fiscal Space for PPP Projects*, Manila (November 2010)

Alberto, Flourian, *Foreign Direct Investment in the Philippines Amidst Crisis in a New Global Environment*, Discussion Paper

Aldaba, Rafaelita, *FDI in the Philippines, A Reassessment*, Special Paper No. 2, Institute of Development Studies, Manila (1995)

Almendras, Jose Rene D., Secretary of Energy, *Energy Sector Investment Opportunities*, Presentation, Manila (November 2010)

Baechi, Alejandro Magnolia, *Rising Growth, Declining Investment, The Puzzle of the Philippines*, World Bank (January 2010)

Bridges, Geoff, *Philippine Chapter Asian Water Development 2007*, Asian Development Bank, Manila (2007)

Domingo, Gregorio L., Secretary, Department of Trade and Industry, *Briefing Paper in the Philippines: Creating Opportunities Through Effective Governance*, Manila (August 18, 2010)

Habito, Celito F., *An Agenda for High and Inclusive Growth in the Philippines*, Asian Development Bank (December 2010)

Jesus, Jose Pile, Secretary of Transportation and Communication, *Transport Sector: PPP in Challenge for Successful Partnership*, Presentation (November 2010)

OECD Infrastructure to 2030, Volume 2 (2007)

Paderanga, Jr., Cayetano W., *Infrastructure in the Philippines*, Discussion Paper No. 0710, School of Economics (September 2007)

Purisima, Cesar V., Secretary, Department of Finance, *Paper on Fiscal Sector*, Philippine Economic Briefing, Manila (August 18, 2010)

Report Continues Despite Global Turbulence, Philippine Quarterly Report, World Bank (June 2010)

Stepping Up Reforms to Sustain Growth, Philippine Quarterly Update, World Bank (September 2010)

The Global Competitiveness Report 2010 – 2011, World Economic Forum (2010)

World Bank, *Transport for Growth: An Institutional Assessment of Transport Industry*, Philippines (February 2009)

World Development Report, Washington, D.C. (various years)

Indonesia:
Moving Forward With Infrastructure Developments

Lilia C. Clemente, Founder and Chairman of Clemente Capital

ABSTRACT

Indonesia has the largest economy in Southeast Asia, as well as the largest land area, with more than 17,500 islands occupying an area of 2 million sq. km, about three times the size of the state of Texas. Indonesia has the world's fourth-largest population with 245 million people and the world's largest Muslim population. It has been the world's third-largest democracy since it became an independent republic on Aug. 17, 1945. Blessed with a rich resource base, Indonesia is the world's largest producer of tin, palm oil and other natural resources such as oil and natural gas, bauxite, silver, gold, copper, coal, and agricultural products, including timber, rubber, coffee and rice. It ranks as the world's second-largest tropical forest and third-largest emitter of carbon dioxide. The country is also susceptible to natural disasters such as earthquakes, volcano eruptions, tsunamis and forest fires. Another Indonesian asset is its favorable demographic trend, with a young, highly literate population, falling birth rate and ascending ratio of working population to dependents. This year, more than half of the

population will be living in urban areas, which could further boost consumption, the country's growth engine.

Today, Indonesia is a market-based economy and a classic case study of achieving economic recovery and political stability after its long history of more than 60 years of dictatorship under Presidents Sukarno (1945–1965) and Suharto (1965–1995). It was the country hit worst in the region during the Asian crisis of 1997–1998. The country suffered an economic meltdown with a negative GDP rate of 13% in 1998, the collapse of the banking system with 68 banks closed down and a heavy cost of recapitalizing them at US$88 billion (or almost 70% of GDP), a massive Rupiah devaluation, and a slowdown in investments. Recovery was unexpectedly fast with a 5.4% GDP rate between 2003 and 2007 and, by 2005, GDP per capita had recovered to its 1997 level. It is now more than $3,280 (PPP $4,510). Despite reduced global demand, Indonesia grew at 4.9% in 2009, the third-fastest growth among G20 countries, trailing only China and India. Indonesia's recovery and resilience during the global recession of 2008–2009 was due to its strong domestic household consumption, which accounted for 60.9% of its GDP, and less dependence on trade, with exports equivalent to 29% of GDP compared with Malaysia's 100% dependence in that area. The outlook for 2011 calls for a 6–7% rise in GDP after a 5.9% growth rate in 2010, with strengthened commodity prices and rising capital outflows.

Today, Indonesia's standing in the global community has risen as a member of the G20 countries. Indonesian observers consider the country a candidate-in-waiting to join the growth locomotives of the BRICs (Brazil, Russia, India and China). Its solid track record resulted in credit upgrades from major credit rating agencies in 2010. These achievements occurred under the leadership of Susilo Bambang Yudhoyono, who became president in 2004 with a pro-growth, pro-poor, pro-employment program, which he has continued in his second term since 2009. He has also made headway in fighting corruption and adopting reforms such as improved legislation, bureaucratic reform and changing the pattern of government spending by cutting subsidies. The World Bank points out that Indonesia's most remarkable achievement has been reducing public debt from 80% of GDP in 1999 to just over 30% by year-end 2008 with disciplined fiscal management.

Despite this impressive performance, local entrepreneurs and foreign investors rank infrastructure as among

the critical constraints in Indonesia. Indonesia's roads, air transport and seaports are inadequate. Electricity lags demand. Only 18% of the population has piped water, and only 2.5% are connected to a sewerage system. Traffic gridlock looms in big cities, especially Jakarta, where the number of motor vehicles has tripled to 9.5 million in the past eight years, but road space is growing at less than 1% per year. A crash program of power generation is not keeping up with demand, which has been growing at 6% per year for the past decade. Therefore, boosting infrastructure will be critical to the sustainability of Indonesia's long-term prospects.

Following the 1997–1998 crisis, public and private investments in infrastructure declined from 5–6% of GDP to about 1% of GDP (World Bank, 2007). Although they have increased to around 3.5% of GDP, the current investment rate is insufficient to raise GDP growth rate to its 7% target in 2014 and also falls short of the 10% spending rate in infrastructure in China and Vietnam. If infrastructure plays a critical role in the sustainability of Indonesian growth, what should be the immediate action to help the economy by means of infrastructure development? What should the role of infrastructure be in Indonesia's economy? How can these action plans and the vision be implemented? What strategic policies, such as legal and regulatory frameworks, institutional settings, pricing policy, and financial programs, need to be established to boost investment and speed up infrastructure development? What should the balancing act of relationships be between infrastructure and macroeconomic policy?

This article will highlight the past experience and recent progress in Indonesia's infrastructure development. It will then deal with the current state and issues in selected sectors, namely road transport, electricity, power and water. The final section will describe the Indonesian roadmap for public-private partnerships and implications for investors.

PAST EXPERIENCE AND RECENT PROGRESS IN INDONESIA'S INFRASTRUCTURE DEVELOPMENT

Can Indonesia's growth qualify it as the next BRIC? Following a period of successful adjustment during the 1990s, Indonesia now faces the challenge of sustaining growth with socioeconomic and political stability. These days, investors are keen observers of Indonesia and its performance. In today's difficult economic times, Indonesia has maintained a growth rate of 6%, ranking third behind China and India

among the G20 countries in 2010. Indonesia was a beneficiary of strong growth inflows to emerging markets in 2010 (relative to the highly indebted developed economies) and was among the top performing equity markets in the world, with a record high return of 43%, an increase of 190% from the lows of March 2009. Moody's rating agency announced on Dec. 1, 2010, that it's reviewing Indonesia's sovereign rating for an upgrade that would move it from a Ba2 rating to investment grade. Previously, in June 2010, Moody's changed its outlook for Indonesia's sovereign rating from stable to positive.

As with its Asian peers, Indonesia has been relatively unaffected by the debt crisis in the Eurozone. In fact, Indonesia's declining public debt levels and solid fiscal balance stand out in comparison to the OECD countries. From more than 117.1% in 1999, Indonesia's public debt has steadily declined to 28% of GDP in 2009, while its foreign reserves have moved upward from $26.2 billion in 1999 to $66 billion in 2009. Indonesia achieved an annual average GDP growth rate of 5.2% from 2001 to 2008, which was among the highest in the Asian region. The economy has also weathered the global crisis well,

Indonesia Key Economic Indicators 2000 – 2011

	2000	2005	2006	2007	2008	2009	2010F	2011F
GDP Growth *(percent change/year)*	4.9	5.7	5.5	6.3	4.1	4.5	5.9	6.2
Consumer Price Index *(percent change/year)*	9.3	10.5	13.1	6.4	9.8	2.8	6.2	6.0
Fiscal Balance *(percent of GDP)*	-1.1	-0.5	-0.9	-1.3	-1.6	-1.6	-2.1	-1.5
Export Growth *(percent change/year)*	27.7	22.9	19.6	13.3	20.1	-9.7	12.5	10.3
Import Growth *(percent change/year)*	39.6	24.9	5.9	21.9	13.5	-15.1	13.4	10.3
Current Account Balance *(percent of GDP)*	4.8	0.1	2.9	2.4	0.1	2.0	1.8	1.2
External Debt *(percent of GNI)*	93.6	49.5	38.0	34.1	31.3	28.3	28.0	26
Exchange Rate *(end of period)*	9575	9712	9020	9136	9678	10408	9200	9250
Foreign Reserves *(US$)*	2820	34.7	n/a	56.9	51.6	66	92.8	100

Source: *Ministry of Finance, CEIC, BPS, World Bank/Bank Duane (December 2010)*

posting a GDP growth rate of 4.5% and 5.9% in 2009 and 2010, respectively, again ranking among the region's highest. The major driver of Indonesia's growth, beside external balance, is its strengthened commodity prices. The World Bank, Asian Development Bank and Indonesia's government call for a continued strong domestic growth target of 6% in 2011, with a manageable inflation rate of 6%. However, there are pressures to patterns of growth with the government's RPJM-N (National Medium-Term Development Plan) targets of 7% for 2013 and 2014, which require action in order to reduce income disparities and poverty, increase access to infrastructure services, and improve environmental sustainability.

The longer investment themes of global capital markets arise from underlying economic and sociopolitical trends: demographics, ideological and nationalistic conflicts and pursuits of power, the search for a balance between government and market systems of control, attempts to control and expand the supply of resources, improved technology, changing expectations about the quality of life, and the search for economic justice. If investors look ahead to the rest of the 21st century, they must identify not only global themes, but also those issues that are unique to particular areas of the world — in this case, the following Indonesian themes for 2011 – 2016.

Continuity in Indonesian economic growth with domestic-oriented market strategy. Indonesia's economy continues to perform well with quarterly growth trends in line with the averages of the past decade. Continued strong private domestic demand and investments are expected to drive growth and affect any drag from imports to outpace exports.

Maximizing the country's rich endowment base. Indonesia's oil industry is one of the oldest in the world, dating back to the 1890s with Royal Dutch Shell dominating the concessions. Indonesia enjoyed one of the highest success rates in exploration drilling in the 1960s and 1970s. Oil production has decreased in the past decade due to disappointing exploration efforts and declining production of Indonesia's large, mature oil fields. In 2008, Indonesia became a net importer of oil for the year, with oil consumption in excess of 1.2 million barrels/day, and had to resign as a member of the Overseas Petroleum Exporting Countries (OPEC). Sizable, yet unproven, oil reserves may lie in various geographically complex basins in Eastern Indonesia. *The Oil and Gas Journal (OGJ)* estimates 4.3 barrels of proven oil and natural gas reserves at 97.8 TCF as of 2007.

Indonesia is also rich in other mining resources. It's the world's largest

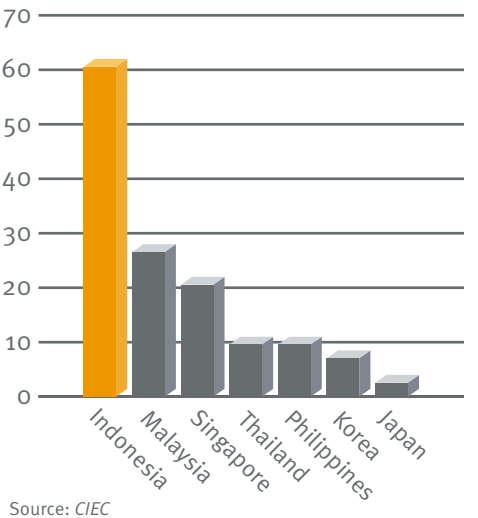
Importance of Commodities for Indonesia's Economy

Ten Reasons Why Commodities Matter for Indonesia's Economy

		Annual
1.	Share of aggregate value added	26%
2.	Share of total exports	63%
3.	Share of GDP	14%
4.	Share of total imports	34%
5.	Share of GDP	6%
6.	CPI weight (raw foods, h/hold energy)	48%
7.	Poverty Basket CPI	74%
8.	Share of total Government revenues	23%
9.	Share of tax revenues	8%
10.	Market capitalisation of Commodity shares on IDX	18%

Sources: *ISE, CIEC, BPS, MOF, Forbes*

Share (%) of Commodities in Exports

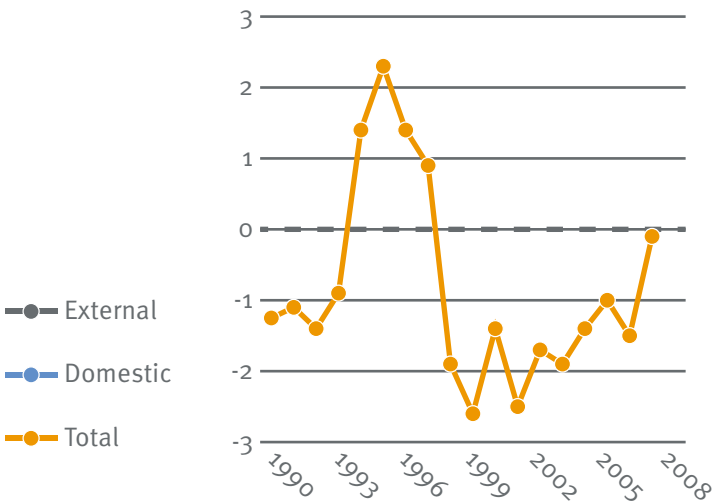


Source: *CIEC*

producer of tin, third-largest thermal coal exporter (after Australia and South Africa) and third-largest copper producer (after the United States and Chile). It also produces gold and is the largest revenue earner in bauxite, phosphates and non-sand. With an increase in both the global recovery and commodity prices, Indonesia is well-placed to capitalize on the global demand for commodities. Following upturns in 2009 and 2010 as well as a general increase in metal prices, Indonesia led the region with a 63% share of the commodities in exports in 2010, which accounted for 14% of GDP.

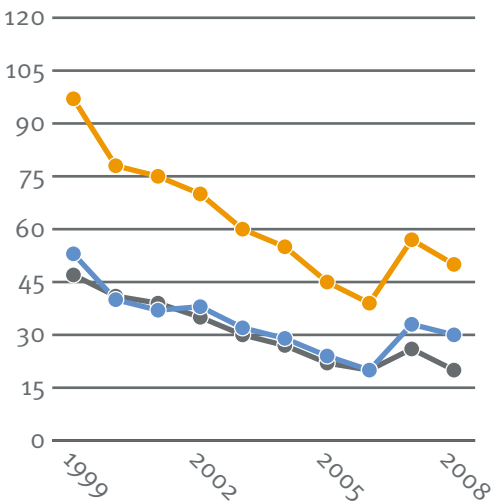
Indonesia's sound fiscal management and credible fiscal discipline. In 2010, global investors were nervous about European debt woes and their implications for the global outlook. Unfortunately, 2011 is likely to raise still more issues about debt, with periodic market plunges due to fears about bailouts and debt sustainability. As is true of all metrics, the gross public debt ratio to GDP provides only a partial measure of a nation's solvency. The debt-to-GDP ratio of Indonesia's government fell to 28% in 2009, continuing a decline that has cut the ratio in half in five years. An expanding economy, fiscal consolidation and lower interest rates have helped bring the debt burden down. Reflecting improvements in the country's public and external positions, Standard & Poor's raised its foreign currency credit rating for Indonesia's sovereign debt

Debt to GDP Ratio (percent of GDP)



GDP = gross domestic product
Source: *ADB (2009)*

Fiscal Position of the National Government



Source: *Bank of Indonesia, Indonesia Economic Monetary Statistics Weekly Report*

to BB+ from BB in January 2010. The deficit in the government's proposed 2011 budget is 1.7% of GNP. Given the strength of its economy, Indonesia is likely to see public debt levels continue to decline toward 25% of GDP. The 2011 budget takes a new direction, setting improvement in quality of spending as a key priority and allocating 20% (a significant increase) to allay the country's severe infrastructure weakness in energy and irrigation.

The success of achieving these Indonesian investment themes depends on overcoming the following risks and constraints to its growth and development:

- Vulnerability to ongoing commodity price volatility, which could affect real economic forecasts and the budget
- Vulnerability of financial markets to capital outflows—compared to late 1980, Indonesia's financial markets are now more exposed to a sudden reversal of capital holdings due to a higher holding of foreign holdings of equities, bonds and SBI

Other critical constraints (ADB 2010) that are hampering the government's development goals include:

- Inadequate and poor quality of infrastructure, particularly transport, electricity supply and irrigation in some provinces
- Mechanisms in governance and institutions, especially the

prevalence of poor government effectiveness and corruption

- Unequal access to and poor education, particularly secondary and vocational education
- Vulnerability to climate change and natural disasters such as earthquakes and volcanoes

Overcoming these constraints will enable the economy to achieve a sustainable, inclusive growth basis.

The State of Indonesia's Infrastructure

Indonesia's level of infrastructure is influenced by how much the government invests in infrastructure. The importance of economic infrastructure was recognized early on by the government of Indonesia (GOI). In the past 15 years (1975 – 1989), the GOI allocated more than 40% of all development spending to infrastructure, which led to an impressive growth in services. For example, the installed capacity of the State Electric Company (PLN) increased eighteenfold, while the length of paved roads increased sixfold. The rapid expansion of economic infrastructure supported strong growth in economic activity of 7 – 8% per annum during the 1970s and facilitated the economic recovery of the 1980s. At the same time, the development of infrastructure, especially irrigation and transport, was a major factor in reducing poverty in Java (World Bank, 1992).

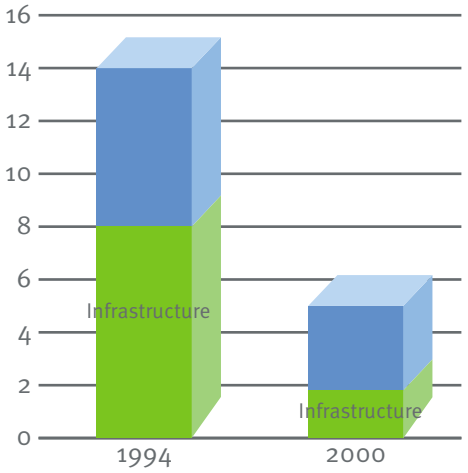
The deficiencies in Indonesian infrastructure can be partly traced to the Asian financial crisis of 1997 – 1998. Following the crisis, many projects that depended on both public and private spending were canceled. The data on public spending on infrastructure indicated that spending dropped from US$7.98 billion in 1994, when its share accounted for 57% of the total development spending from the central government's budget, to less than US$1.5 billion in 2000, which is approximately 30% of the government's total development spending (World Bank, 2004).

Selected Rates of Expansion of Indonesia's Economic Infrastructure 1970 – 1990 (percent per annum)

	1970 – 1975	1975 – 1980	1980 – 1985	1985 – 1990
Power: PLN Sales	11.5	18.1	14.2	14.0
Telecommunications: Telephone Lines	4.6	15.4	7.5	13.2
Transport: Paved Roads	10.2	11.3	8.0	n/a
Water: Land Under Irrigation	2.9	1.8	5.0	1.0

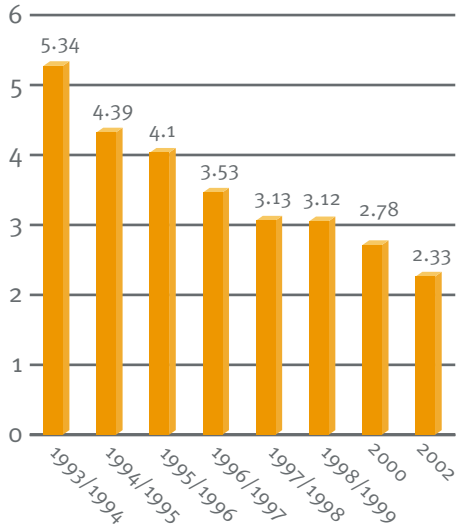
Source: *GOI, World Bank Staff Report (1992)*

Central Government's Development Spending (US$ in billions)



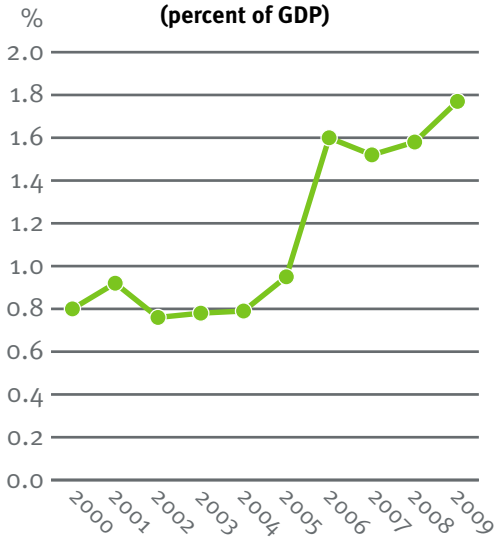
Source: *World Bank (2004)*

Ratio of Public Infrastructure Investment to GDP (percent)



Source: *Bappenas (2003)*

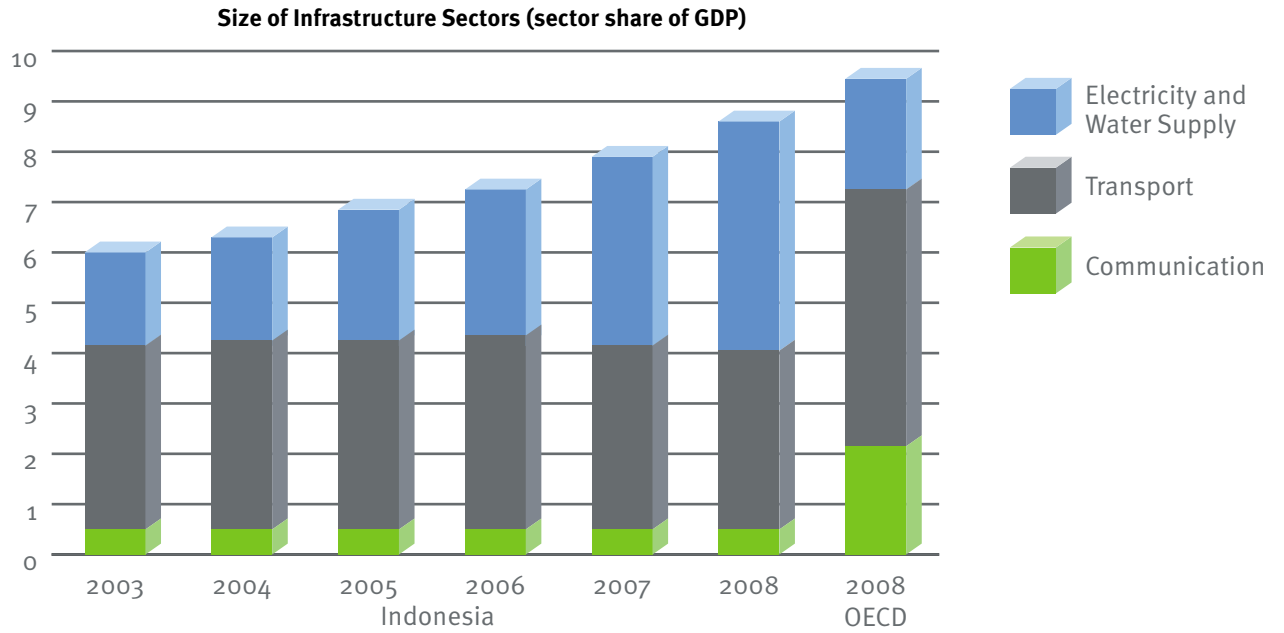
Public Infrastructure Spending (percent of GDP)



Source: *OECD (2010)*

This means that the ratio of public infrastructure to GDP declined from 5.34% in fiscal year 1993–1994 to 2.33% in 2002. As the above figure shows, the ratio of public infrastructure investment to GDP displayed a negative trend. This underinvestment resulted in deteriorating quality and quantity of the Indonesian infrastructure.

However, from 2006 to 2009, public spending rose from 0.8% to 1.8% of GDP due to the country's economic recovery and the telecommunications industry's increasing share of the output, higher than in the average OECD country.



Source: *STAN database and BPS*

The figures for the electricity and water supply sectors are aggregated since many OECD members do not report separate figures. In Indonesia, water supply is the smallest among all infrastructure sectors, accounting for a stable share of GDP (0.5%) from 2003 to 2008. The share of electricity remained at less than 1% of GDP during the same period. The OECD excludes Chile, Israel, Mexico, Slovenia and Turkey.

As reflected in the table on the following page, the quality of existing infrastructure stock seems to have deteriorated because of a lack of adequate maintenance. Transmission and distribution losses are higher than in regional peers and the OECD. Electricity blowouts are frequent. A large share of the roads is also not in good condition. As compared to its southeastern peers, Indonesia has much to gain by improving and expanding its infrastructure.

KEY INFRASTRUCTURE SECTORS: WHERE INDONESIA STANDS

Among the key infrastructure subsectors, investors consider poor transport networks and inadequate electricity supply as the most critical. The Global Competitiveness Report 2010–2011 ranked Indonesia far behind Brunei, Malaysia and Thailand

in the quality of its road network, air transport infrastructure and electricity supply. These findings are consistent with the feedback received by investment clients' surveys in 2005, 2007 and 2010 (ADB 2010, LPEH-FEUI 2007 and OECD 2010). The 2007 survey found poor transport as the second-most binding constraint to doing business in Indonesia, with 49% identifying it as a major constraint—up from 29% in 2003 and 42% in 2005.

The government has made improving infrastructure a top priority. In its medium-term development plan

Selected Infrastructure Indicators

	Indonesia			Southeast Asia[1]	OECD[2]
	1995	2000	2008[3]	2008[3]	2008[3]
Water and sanitation					
Improved sanitation facilities *(% of population with access)*	51	52	52	83.3	99.9
Improved water source *(% of population with access)*	74	77	80	95.5	99.6
Energy and transport					
Electric power consumption *(kWh per capita)*	271.6	402.3	566.0	1759.2	9871.4
Electric power transmission and distribution losses *(% of output)*	11.7	10.9	10.6	7.9	5.9
Roads, paved *(% of total roads)*	52.4	57.1	55.4	79.8	79.0
Information and communication technologies					
Fixed broadband subscribers *(per 100 people)*	..	0.002	0.176	2.5	25.0
International Internet bandwidth *(bits per person)*	..	1.2	34.9	2375.5	19342.6
Internet users *(per 100 people)*	0.03	0.93	7.9	27.5	71.1
Personal computers *(per 100 people)*	0.5	1.0	2.0	13.3	69.9
Fixed broadband Internet access tariff *(USD per month)*	..	..	21.7	19.7	30.4
Mobile and fixed-line telephone subscribers *(per 100 people)*	1.8	5.0	74.9	98.0	149.5
Mobile cellular subscriptions *(per 100 people)*	0.1	1.8	61.6	86.4	103.4

1 Unweighted average of Malaysia, Thailand, Philippines and Vietnam.

2 OECD excludes Chile, Israel, Mexico, Poland, Slovania and Turkey.

3 2008 or latest available year.

Source: *World Bank* (World Development Indicators)

(2010 – 2014), it announced plans to invest IDR 1,429 trillion (US$157 billion or 25% of 2009 GDP), with 64% privately financed.

Transport Network

Indonesia's transport system is shaped by the country's geographic location as an archipelago, with thousands of islands and a population of 240 million people concentrated in Java and Sumatra. All transport models play a role in the country's transport infrastructure. Road transport is predominant, while sea transport is important for domestic and foreign trade. A railway system is situated primarily in Java and Sumatra for long-distance transport of passengers and bulk commodities.

Road Network

From 1969 to 1989, the government allocated 55% of its expenditure on transportation infrastructure to roads, buildings and maintenance, with the rest for ports and marine transportation. This trend continued in the 1990s and, as a result, Indonesia had more than 212,954 miles of roads in 1997, although only a little more than half of those roads were paved. At year-end 2007, Indonesia had more than 396,000 km of roads, with 75% paved, 50% asphalted and 19% gravel surfaced. The country's road density is among the lowest in Southeast Asia whether measured in terms of all roads paved or the length of the road per 100 people.

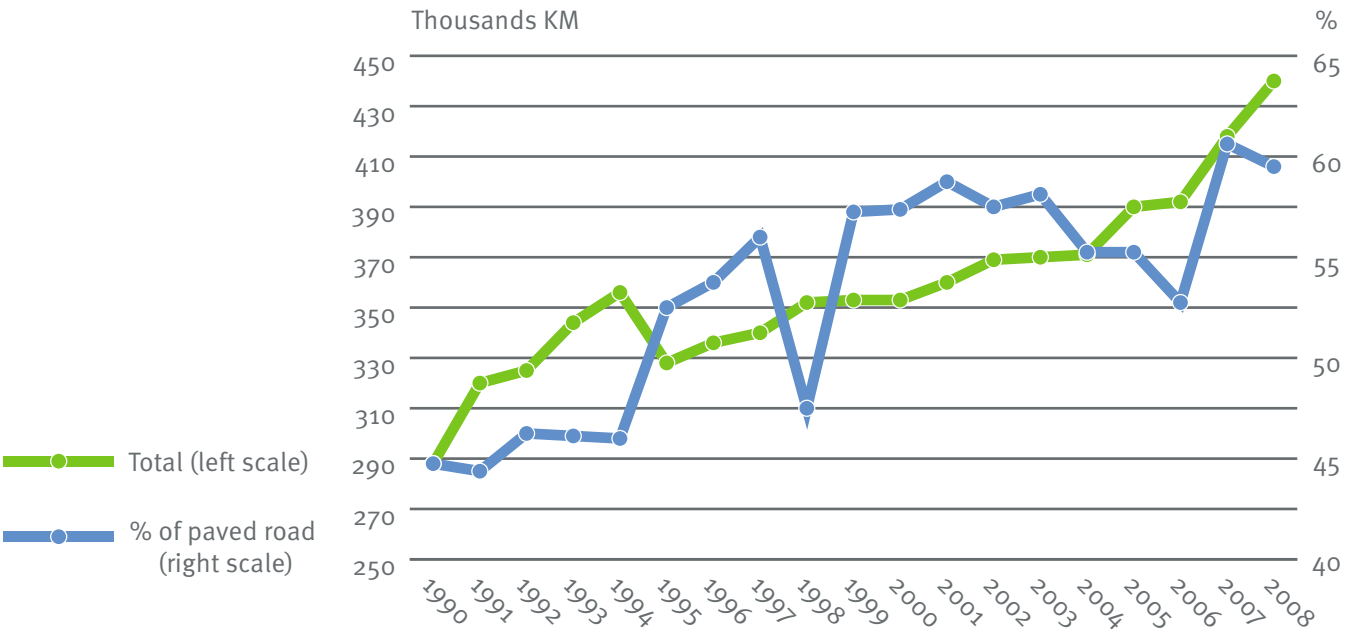
Indonesia currently has a toll road network of around 600 km constructed on the island of Java. Paved roads rose from around 45% of total roads at the beginning of the 1990s to approximately 60% in 2008. Road infrastructure is currently regulated by Law 38/2004, which covers regulation, maintenance, development and supervision of roads, with the Ministry of Public Works responsible for building and maintaining road structure. Land acquisition is one of the main obstacles in toll road development and infrastructure. Since starting in 1978, Indonesia has only built an average of 23 km of toll roads per year. By contrast, Malaysia's total road network is 6,000 km long.

Today, traffic jams are prevalent in big cities like Jakarta, where the population has tripled to 9.5 million in the past eight years. However, road space only grew 1% per year during that same time period. A mass transit railroad is planned to commence in 2012, accommodating 400,000 passengers per day. The government has also announced plans to build 1,000 km of toll roads in Java, South Sulawesi and North Sumatra.

Ports

Most contained cargoes are processed through three main container terminals: Tanjang Priok in Jakarta, Tangjang Priok in Surabaya and Tangjang Emas

Total Length of Road Networks and Share of Paved Roads



Source: *BPS*

in Semasang. The rapid increase in oil exports has been reflected in strong growth in throughputs at Java's main general cargo ports, particularly in Tangjang Priok, the country's largest container terminal with a total throughput of 4.2 million 20-foot equivalent units. However, Tangjang Priok's performance lags most behind Southeast Asian ports. In terms of volume handling, Tangjang Priok ranked 25th out of 50 major ports in the 2008 world port rankings (Fossey, 2008), while Singapore Port was ranked first and Port Klang of Malaysia was 14th. Providing additional capacity at this and other large cargo ports in Java and Sumatra will account for the major improvements in the medium term. The performance of smaller ports mainly catering to interisland cargo is also poor. The underlying problems at these ports show low productivity and less competitiveness in port access, shallow routers, inefficient work methods, and limited berth lengths. Once highly restricted, interisland shipping was deregulated in the economic reform of the 1980s. As an archipelago, traditional shipping will continue to play an important role in Indonesia, and required expansion of shipping services as well as shipbuilding and repair services can be left to the private sector.

Railroads

Compared with other countries in the region, Indonesia has the largest and most intensively used railroad network with 5,824 km of railways. The network is mainly single-track and limited to Java, which has two major rail lines covering the length of the island for passenger and freight service. The other railroad system is located in Sumatra and has three lines: to the north to Mediuam, to the west to Padong and to the south to Bannan Lampung. The railroad's performance is generally poor because of weak management, old rolling stock and outdated signaling and telecommunications systems. The government's major priority is to reduce the backlog of deferred maintenance and asset replacement of its locomotive rolling stock, which is prone to service failures.

Air Transport

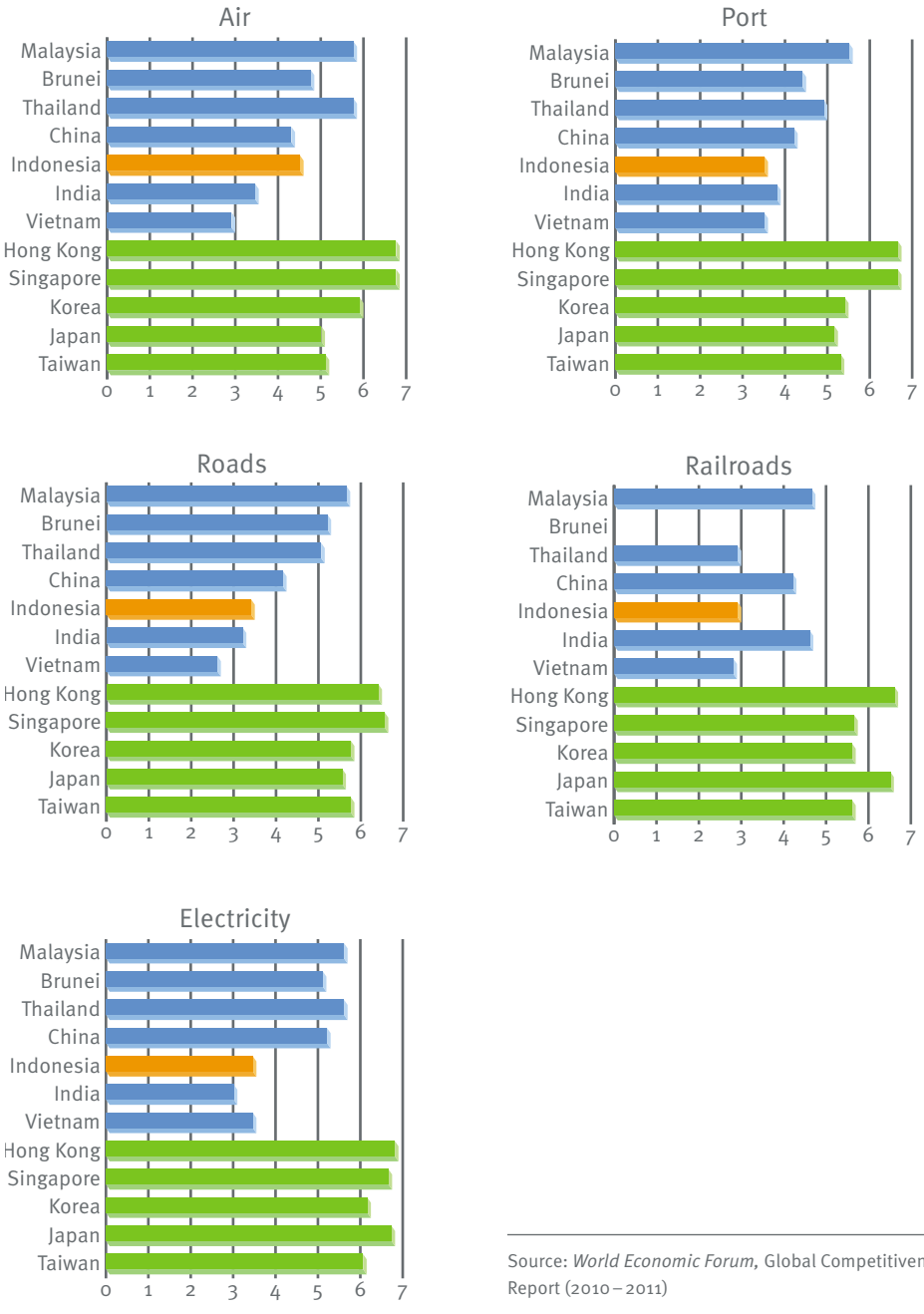
Indonesia's air transport function is significant, particularly where land or water transport is deficient or nonexistent. As of 2009, Indonesia's air transport infrastructure consisted of 668 airports, with 161 paved runways and 501 unpaved runways, and 23 heliports. Suekarno Hatta International in Jakarta serves as the country's main air transport hub. Deregulation of the airline industry in 1999 opened the sector to private airline companies, which led to lower fares and more scheduled flights to existing and new destinations. The entry of low-cost operations was a major factor in the rapid expansion of air traffic, causing annual passenger traffic to rise from 7 million in 2000 to 34 million in 2007. The average passenger load factor averaged 70% during that period, while freight load factor also rose from 31% in 2002 to 50% in 2007 (BPS, 2008). International aircraft arrivals also increased significantly, rising from 23,000 in 1990 to 48,000 in 2007.

The expansion in air traffic, however, increased pressures on inadequate traffic control and overcrowded airport terminals. Air safety became a concern, with the rate of fatal air collisions rising 15 times higher than the world average. The Ministry of Transport introduced more stringent controls in air safety after a government study on flight safety in March 2007.

Electricity and Power Sector

Indonesia's electricity sector is characterized as having low electrification rates, low consumption and lack of access to electricity, with disparities among regions and households. Relative to its peers, Indonesia ranks below Malaysia, Thailand and Brunei, but is ahead of India and the Philippines in its ranking of the quality of electricity infrastructure, according to the latest World Economic Forum.

Transport Infrastructure: Indonesia's Rankings in the Global Competitiveness Report
2010 – 2011



Source: *World Economic Forum*, Global Competitiveness Report (2010 – 2011)

Sources of Light by Income Levels, 2008

	Lowest quintile	2nd quintile	3rd quintile	4th quintile	Highest quintile	Difference Highest – Lowest	
						2008	2005
Electricity supplied by PLN	70.8	76.8	80.5	84.2	89.9	19.1	47.8
Torch	21.5	14.9	10.6	6.1	2.0	-19.5	-41.0
Other	7.8	8.3	8.9	9.8	8.1	0.4	-6.8

Source: *Susenas and OECD calculations*

Some of the issues facing Indonesia's electricity and power sectors are:

- *A low electrification rate, with over 70 million people still without access to electricity, especially the poor.* However, the gap between the lowest and highest income groups in terms of electricity has narrowed sharply from 2005 to 2008 as indicated in the table above.

  About 80% of those without power live in rural areas outside of Java and Bali. The government is aiming to increase the electrification rate to 80% by 2014 and 90% by 2020. To achieve these targets, the government needs to connect roughly 2 million new subscribers annually, which is double the rate of 2009 and 2010. The government has two fast-track programs of 10,000 megawatts to be completed in 2013 and 2015.

- *The size of public investment programs*. A key issue in the power sector is the size of the public investment program, Perusahan Listrir Negara (PLN). Although significantly weakened by the Asian crisis of 1998, the power sector is gradually recovering. By year-end 2008, the total installed generation capacity of the national power system reached 30,000 megawatts, which is one of the largest in the region. Given the size of the population, Indonesia's per capita electricity consumption remains the lowest among the developing Asian countries. Under the present international program, PLN's capacity to meet an expansion plan between 2008 and 2018 requires an investment of US$83 billion, and the balance of funding calls for significant private participation.

- *The issue of PLN's financial viability* has also been raised since the current tariff level cannot cover the supply cost for all customer categories. The main obstacle for increased private participation

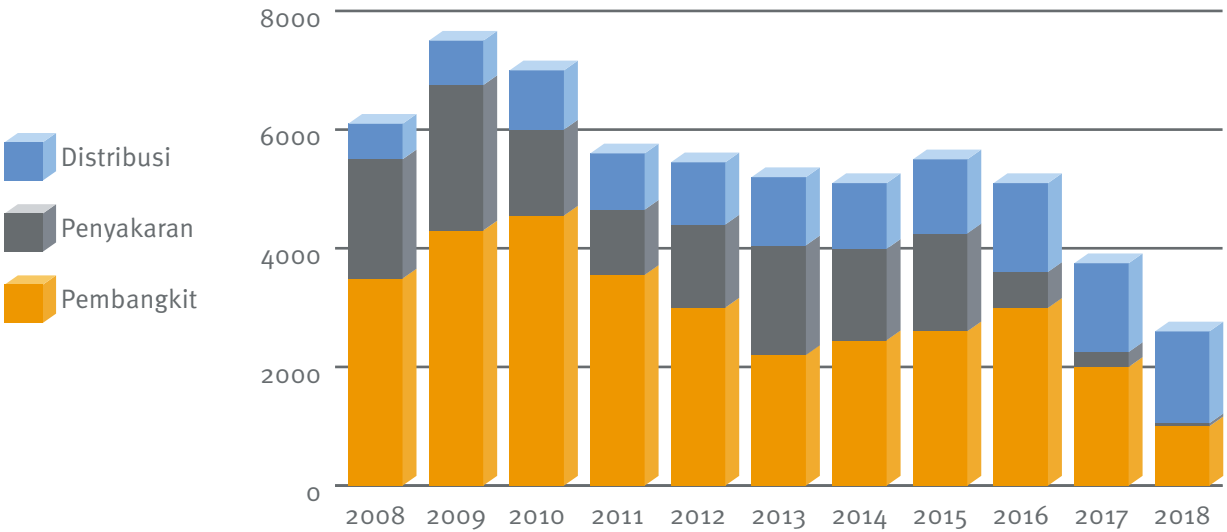
relates to the electricity charges. PLN charges to final consumers are set by the government at well-below cost recovery level. As the below chart shows, PLN's financial situation has deteriorated with the suspension of electricity power increases in 2004 and removal of fuel subsidies in 2005. The government is subsidizing PLN to keep it viable.

- *The issue of independent power producers (IPPs) under the regulatory framework.* After the annulment of the 2002 electricity law, the government of the sector reverted back to the 1985 electricity law designed for a vertically integrated monopoly. The growth of IPR has been slow pending clarifications of the regulatory framework.

IPPs and captive power plants, which are electricity-generating plants, had been increasing with an installed capacity estimate of 5,000 MW against 25,000 MW for PLN (PLN 2009, World Bank 2004, IEA 2008).

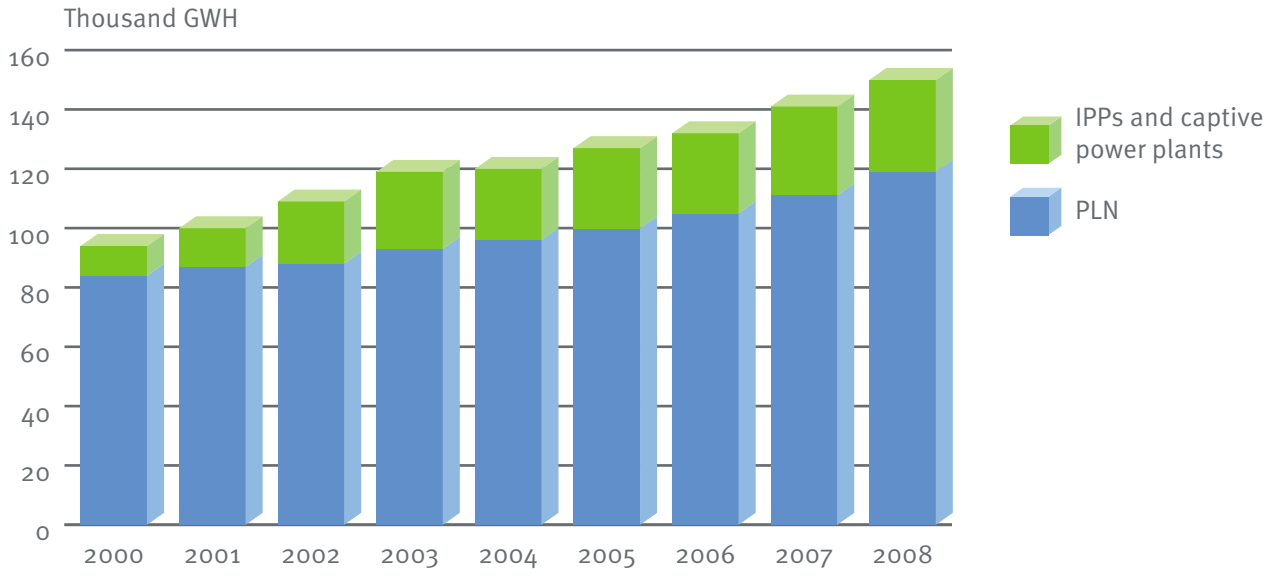
Enacting a new law took five years from the court decision and eight years from the passage of the 2002 law. The Indonesian Parliament passed the electricity law of 2009 (Law 30/2009) on Sept. 9, 2009, introducing the change that PLN will no longer have the monopoly of supplying and distributing to

Estimate of PLN's Financing Requirement (Excluding Independent Power Producers)



Source: *PLN RUPTL (2008)*

Private and Captive Power Plant Production



Source: *Ministry of Energy and Mineral Resources (2009)*

end customers. IPPs were allowed in these functions, particularly in the regions, but subject to the "right of first priority" provided to PLN. Hopefully, this implementation of rules and regulations will work in the general public's interest.

- *Issue of alternative source of energy mix.* Although significant progress has been achieved in improving the balance between generation transmission and distributions, efforts are needed to ensure the generation of electric power based on a lowest-cost option. A comparison of economic costs indicated that natural gas, compared to oil, nuclear, geothermal or other renewables, is the least costly alternative for power generation. According to PLN's long-term plan, the share of coal will increase from 35% in 2011 to 70% by 2020 in order to relieve dependence on oil in its power generation fuel mix. Indonesia has a rich base of renewable energy sources, such as biomass, geothermal and hydropower, that has yet to be developed. Implementing coal as a substitute means a bigger environmental challenge for Indonesia in its carbon emissions. For Indonesia

to achieve its development goal as an economic power, it must address these critical issues in electricity and power in the areas of reliability, affordability, sustainable supply and environmental friendliness.

Water Resources Development

The growth of the infrastructure sector is still behind that of other countries. Among the 11 countries listed in the following table, Indonesia ranks seventh. Based on the data, 78% of the Indonesian population has access to improved water, while only 55% of the population has access to improved sanitation.

The source of clean water is piped water. In Indonesia, water and sanitation are likely the infrastructure sectors where reforms are most needed. As in other countries, responsibilities are fragmented between various ministries and local governments. In Indonesia, distribution of clean piped water is the responsibility of about 314 municipal water supply companies, collectively known as Perusahaan Daerah Air Minum (PDAM), under the ownership/jurisdiction of local governments. In Jakarta and Bataan, concessions for water supply have been awarded to the private companies Thames International Water from the United Kingdom and Lyonnaise des Eaux from France, with two local partners, Kali and GDS, which respectively signed agreements in 1998 for a 25-year period. However, the Asian crisis put these cooperation agreements

Percentage of Population With Access to Water and Sanitation Infrastructure

	Population With Access to Improved Water (percent)	Population With Access to Improved Sanitation (percent)
Australia	100	100
Singapore	100	100
Korea	92	63
Philippines	85	83
Thailand	84	96
India	84	28
Indonesia	78	55
Sri Lanka	77	94
Vietnam	77	47
China	75	38
Mongolia	60	30

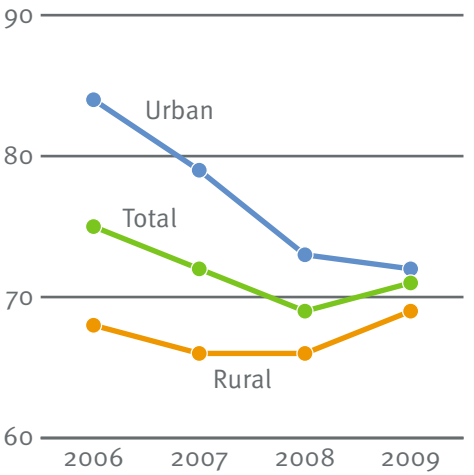
Source: *World Bank (2004)*

under severe strain and led to their renegotiations in October 2001. One of the major changes of the restated cooperation agreements was the introduction of the Jakarta Water Supply Regulatory Board (JWSRB). JWSRB has gained experience and credibility over time, but it still needs to resist tendencies to staff itself with PDAM employees (Lanti et al., 2001).

Access to piped water remains low, especially in rural areas. Except for the previously noted example of two foreign companies with local partners in 1997, private participation in the water sector is rare. However, the concession has improved the efficiency level of the water sector in Jakarta as well as its transparency. Decentralization through PDAMs has not translated into service improvements in the water supply sector since most PDAMs are small and cannot benefit from economies of scale. To respond to the obstacles of the sector, the government has established working groups at the local and provincial districts. The challenge of future water balances in Indonesia will depend on a number of factors, including population and economic growth, the efficiency of use, and the structure of production.

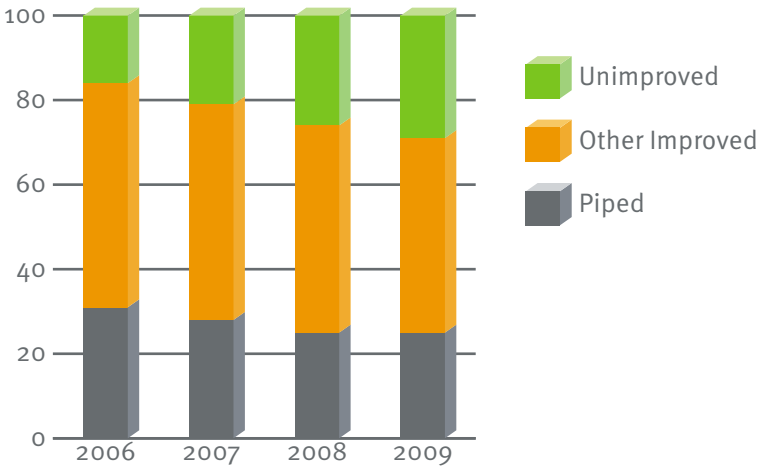
Declining Total Access to Improved Water Supply

(percent of population with improved water supply)



Urban Usage of Unimproved Water Supply Has Risen

(type of water supply, percent of urban population)



Source: *Susena (various years)*

INDONESIA'S ROADMAP FOR PUBLIC-PRIVATE PARTNERSHIP IN INFRASTRUCTURE

Development of Indonesia's PPPs

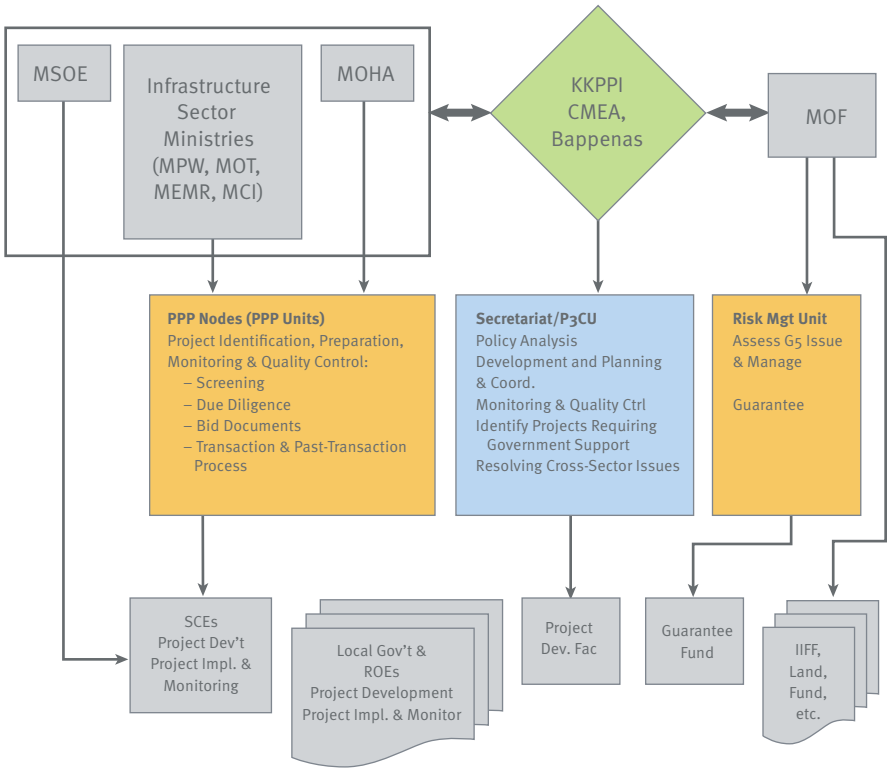
A lack of financing sources from government budgets has led policymakers to think PPPs are a promising solution to infrastructure investing. Infrastructure projects have traditionally been financed by government budgets and foreign loans and then operated by public entities. Driven by fiscal constraints, the Indonesian government is now turning to the private sector to build, operate, finance, own and transfer infrastructure facilities in several sectors.

Starting with the Suharto government regime that began in 1964, key components of the centralized system of public administration were put into place. The Suharto system required all local governments to be tied to a ministry of the central government for budget and responsibilities. The central government operated offices at the local level, and revenues for these offices came directly from the central government.

After Suharto's fall in 1998, and particularly after the Asian financial crisis, there have been marked changes in the public management of infrastructure. The environment in which policymaking takes place has changed. There is now greater distribution of resources in decision-making. In the past, Bappenas (Ministry of National Development Planning) coordinated Indonesia's policy development with the government's full-year plan (or Repehta) and had budgetary powers. The role of budget allocation was then shared between the Ministry of Finance and the House of Representatives. As part of the institutional reforms for infrastructure-related activities, new committees, such as the Committee on Policy for the Acceleration of Infrastructure Development (KKPPI), the Toll Road Authority Agency (BPJI), the Telecommunications Regulatory Agency (Badan Regulasi Telekomunikasi Indonesia—BRII) and other sector-specific committees, were set up. Responsibilities were divided both horizontally and vertically, making integration of planning and coordination of implementation a formidable challenge (World Bank, 2004).

Bappenas serves as a planning adviser for these committees. Bappenas established a PPP Central Unit (P3CU) and takes a lead role in facilitating PPP promotion and quality control of the PPP process, standardizing procurement rates and reviewing bidding documents, facilitating screening of projects, monitoring PPP results, and updating the PPP bond. Thus, new institutions and new participants as well as

Indonesia PPP Institutional Framework



Source: *Bappenas*

- The Committee on the Policy for the Acceleration of Infrastructure Provision (KKPPI) established under Perpres 42/2005
- A Risk Management Unit on Fiscal Support already up and running since 2006 in the Ministry of Finance
- PT. SMI/Indonesia Infrastructure Financing Facility (IIFF) established in February 2009
- PPP Nodes established in the (MEMR, MPW, and MOT)
- PPP Units in various local governments
- P3CU in Bappenas
- Infrastructure Guarantee Fund (under preparation)

changing roles for the actors have resulted in more widely dispersed decision-making powers. Much effort has been made since the collapse of Suharto's government to tackle corruption and create better governance.

Regulatory Environment for Indonesian PPPs

The government's drive to improve the regulatory framework for infrastructure is evident from the various infrastructure policy changes issued in 2003 through 2009. The main objectives were to eliminate discrimination practices, increase competition and unbundle the role of government as policymaker, regulator and service provider (QECD, 2010). Based on these objectives, the government established a number of regulatory authorities, but not in all infrastructure sectors. As pointed out by the OECD, this is in contrast to the vast majority of OECD countries, where regulatory authorities are more widespread. There is no independent

Indonesian authority regulating water supply, electricity and rail transport, and authorities for road, water and transport are not independent from the executive branch of the government.

To reform its institutions in the infrastructure sector, it is recommended that Indonesia establish effective regulatory authorities in areas such as water supply and railways, where they do not currently exist. Entrenching regulatory authorities' general responsibilities in law rather than ministerial decrees has been recommended to reduce uncertainties (Latifulhayat, 2008). The OECD Infrastructure Questionnaire on page 145 offers a comparative analysis of the powers of regulatory authorities in infrastructure industries in Indonesia compared with OECD countries.

Regulatory Framework

PPP Regulations:

- Presidential Regulation (Perpres) No. 67/2007 on Cooperation Between the Government and Business Entity in the Provision of Infrastructure
- Minister of Finance Regulation (Permenkeu) No. 38/2006 on Risk Management Guidelines for PPP in Infrastructure
- Minister of National Development Planning/Chairman of Bappenas Regulation No. 3/2009 on Procedure for Formulation of PPP Book

Sector Laws and Regulations:

- Toll Roads: Law 38/2004 and PP 15/2005
- Railways: Law 23/2007
- Air Transport: Law 1/2009 and PP 70/2001 (airport)
- Sea Transport: Law 17/2008 and PP 69/2001 (seaport), PP 82/1999
- Water Supply & Sanitation: Law 7/2004 and PP 16/2005
- Telecommunications: Law 36/1999 and PP 52/2000 and PP 53/2000
- Oil & Gas: Law 22/2001 and PP 42/2002 (upstream), PP 67/2002 (downstream), PP 37/1994 (PGN), PP 31/2003 (Pertamina)
- Electricity (Power): Law 15/1985, PP 3/2005

Cross-Sector Laws and Regulations:

- State Finance: Law 17/2003
- National Development Planning: Law 25/2004 and PP 20/2004, PP 21/2004
- Regional Governance: Law 32/2004 and PP 25/2000
- Fiscal Decentralization: Law 33/2004 and PP 105/2000, PP 107/2000, PP 65/2001, PP 66/2001
- State-Owned Enterprise: Law 19/2003
- Investment: Law 1/1967 (foreign) and Law 6/1968 (domestic)
- Environmental Management: Law 23/1997 and PP 27/1999
- Construction Services: Law 18/1999 and PP 29/2000
- Government Procurement: Keppres 80/2003, Keppres 61/2004 (Amendment 1), Perpres 32/2005 (Amendment 2)
- Land Acquisition: Perpres 65/2006 and Law 20/1961

PPP Projects Ready to Offer

No.	PPP Project	Location	Project Cost (US$)
1	Medan-Binjai Toll Road	North Sumatera	129 million
2	Medan-Kualanamu-Tebing Tinggi Toll Road	North Sumatera	476 million
3	Cileunyi-Sumedang-Dawuan Toll Road	West Java	395 million
4	Tanah Ampo Cruise Terminal	Bali	24 million
5	Palaci-Bangkuang Railway	Central Kalimantan	740 million
6	Soekarno Hatta Airport-Manggarai Railway Development	Jakarta and Banten	700 million
7	Bandung Municipal Water Supply	West Java	54 million
8	Central Java Power Plant	Central Java	2,000 million

Source: *Bappenas*

Powers of Regulatory Authorities in Infrastructure Industries

	Design specific rules for the sector		Implement regulations and verify compliance		Power to apply fines and sanctions	
	Indonesia	OECD[1]	Indonesia	OECD[1]	Indonesia	OECD[1]
Electricity, consisting of						
electricity generation	No	64%	No	68%	No	68%
electricity transmission	No	84%	No	92%	No	92%
electricity distribution and supply	No	88%	No	92%	No	92%
Gas, consisting of						
gas production	No	28%	No	36%	No	36%
gas transmission	No	84%	No	92%	No	92%
gas distribution and supply	No	88%	No	92%	No	92%
Water collection, purification and distribution	No	40%	No	44%	No	44%
Railway transportation						
passenger transport	No	40%	No	52%	No	52%
freight transport	No	40%	No	48%	No	48%
operation of railroad infrastructure	No	36%	No	56%	No	56%
Operation of road infrastructure	No	44%	Yes	44%	No	44%
Operation of water transport Infrastructure	No	44%	No	48%	No	48%
Air transportation, consisting of						
air transport	No	44%	No	48%	No	48%
operation of air transport infrastructure	No	48%	No	48%	No	48%
Telecommunications, consisting of						
fixed-line network	No	80%	No	96%	No	96%
fixed-line services	No	80%	No	96%	No	96%
mobile services	No	80%	No	96%	No	96%
internet services	No	76%	No	88%	No	88%

1 Percentage of OECD countries whose regulatory authorities are responsible for the specific issue (25 countries).
Source: *OECD Infrastructure Questionnaire*

The Indonesian PPP Experience

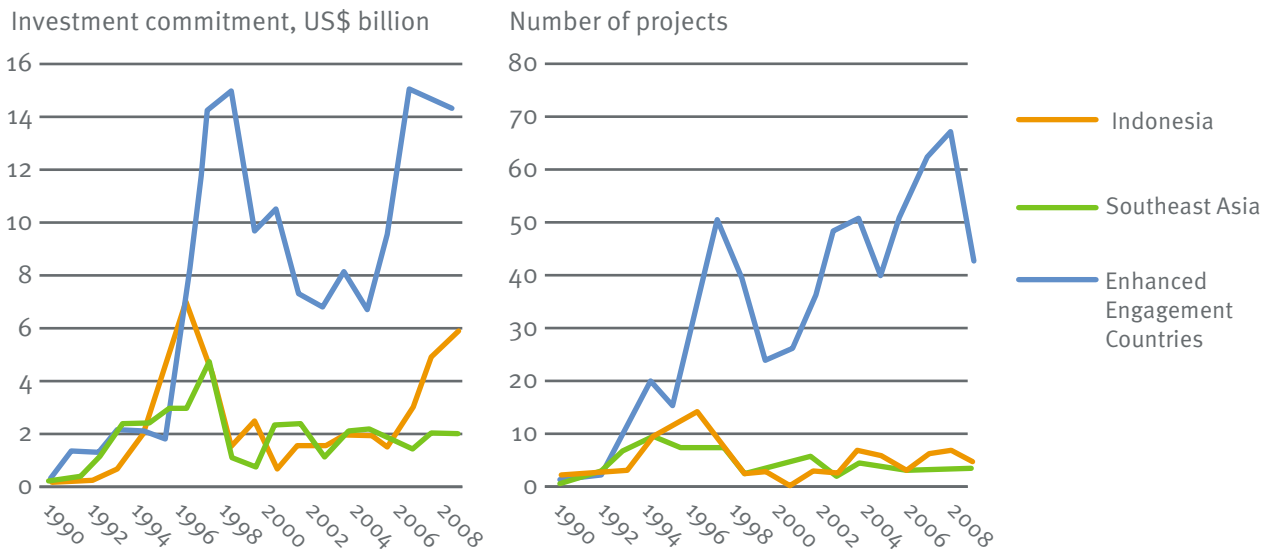
The history of PPPs in Indonesia shows that the number and commitments of PPPs collapsed after the Asian crisis. Prior to the 1998 crisis, Indonesia attracted more PPPs than its Southeast Asian peers. Since 2005, PPPs have recovered after the new government introduced reforms, thereby improving economic conditions and efforts to push PPPs in infrastructure.

The breakdown of PPPs by sector varies over time, but there has been a greater shift of investment commitments to telecommunications and energy, while water and transport, because of land acquisitions, have had modest commitments (as shown in the chart below).

Outlook for Indonesian PPPs

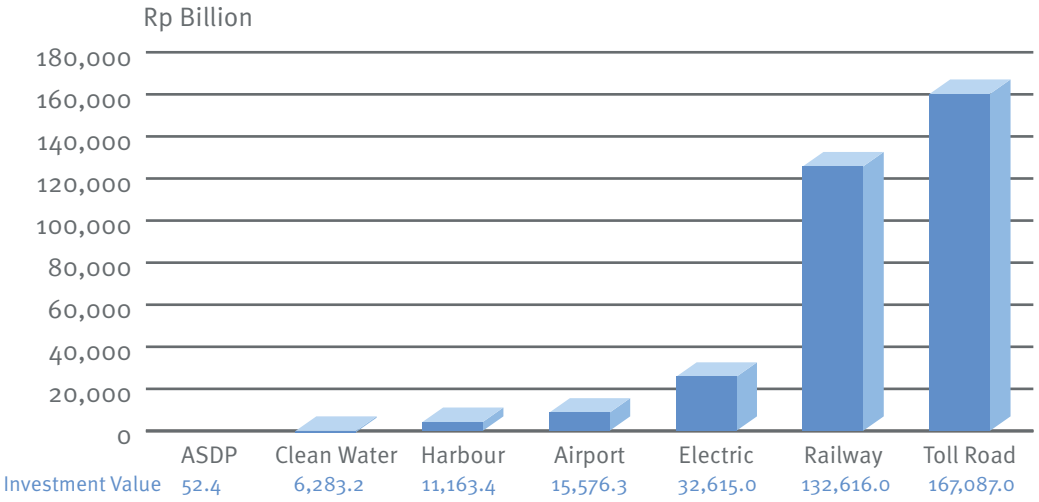
The increase in infrastructure (as set in the government medium-term development plan) depends heavily on private financing, with expectations for the sector to meet the 64% planned investment expenditure for infrastructure over the 2010 – 2014 period, which will require a US$20 million commitment each year based

Value and Number of PPP Projects Over Time



Source: *World Bank and PPIAF (PPI Project Database)*

Forecast of PPP Share in Various Sectors (2010 – 2014)



Source: *Bappenas (2010)*

on a targeted goal of Rp 1.429 trillion or US$120 billion. The financing gap of Rp 978 trillion or 69% is expected to be covered through PPP, CSR and community participation, while Rp 45 trillion or 31% is estimated to come from the Indonesian government's financing capacity. Other project facilitation facilities including World Bank — PPTA and Asian Development Bank — IRSDP are in place to assist relevant PPP units for institutional development and project execution.

The government also established the Indonesia Infrastructure Guarantee Fund (JGF) in 2009. It offers guarantees for government obligation for PPPs upon payment by an operator and has an initial capital of Rp 1 trillion, which is expected to enhance the creditworthiness of insured infrastructure economies. The government has a PPP book of priority projects by subsector and provinces.

CONCLUSION

The government of Indonesia, in its national development plan of 2005 – 2025, envisions a developed economic nation with justice and fair socioeconomic welfare for its people; one that is environmentally friendly and playing an active role in the regional and world economies. To meet this vision, this big, diverse archipelagic nation must be sustained by an effective, reliable and improved quality of infrastructure. Nevertheless,

Indonesia's infrastructure requirements are daunting—an estimated US$150 billion over the next 10 years.

Indonesia commenced the 21st century while still recovering from the Asian crisis of 1997, when infrastructure spending dropped dramatically. Public spending fell as the government entered a period of fiscal consolidations. Private investment halted due to weakness in the investment climate, which the crisis both exposed and exacerbated. However, Indonesia has not stood still—successive governments have worked to repair past problems and appropriately reallocated risks. In the worst global recession in more than 60 years, Indonesia achieved growth of 6%, behind China and India, but better than its neighboring Asian peers. Domestic demand and fiscal discipline, coupled with private investment, has been the country's growth engine.

More recently, Indonesia's government has renewed its emphasis on a midterm growth target of 6–7%. To achieve this, the government aims to boost public and private investment through the framework of PPPs. Over the past five years, Indonesia has built considerable momentum for infrastructure reform. It has established a sound regulatory framework for private sector participation in line with international practices and has also adopted a risk management framework and put in place regulations to allow cost recovery in key sectors. These are indeed noteworthy achievements. But the government is not stopping there. As it begins the second decade of the 21st century, Indonesia's government is continuing to expedite PPP project implementations and seek optimal financing options to accelerate PPP development, with a greater concern for poverty alleviation and environmental sustainability imbedded in infrastructure delivery. In this context, Indonesia will move forward in its infrastructure developments with steady efforts and significant progress.

REFERENCES

ASEAN Secretariat, *Fourth ASEAN State of the Environment Report 2009*, Malaysia (2009)

Asian Development Bank, *Rural Development Strategy Study*, Manila

Asian Development Bank, *Country Environmental Analysis, Indonesia*, Manila (2005)

Asian Development Bank, *Indonesia Water Sector Profile* (unpublished), Manila (2006)

Asian Development Bank, *Indonesia Critical Development Constraints* (2010)

Asian Development Bank and World Bank, *Improving the Investment Climate in Indonesia*, Manila

Asian Foundation, *Cost of Moving Goods — Road Transportation, Regulation and Charges in Indonesia*, Jakarta (2008)

Badan Pusat Statistik (BPS — Statistics Indonesia), *Large and Medium Manufacturing Indicators (Indikator Industri Besar Dan Sedang)*, Jakarta (2005)

Bank Indonesia, *Indonesia Economic Monetary Statistics Weekly Report*, http://www.bi.go.id/web/en/Statistik/Statistik+Ekonomi+dan+Keuangan+Indoneisa/Versi+HTML/Sektor+Moneter/ (last accessed in October 2009)

Gibson, J., *The Constraints Associated With Infrastructure Faced by Non-Farm Enterprises at the Kabupatan Level*, in N. McCulloch, Ed., *Rural Investment Climate in Indonesia*, Singapore: Institute of Southeast Asian Studies (2009)

IMT-GT Secretariat and ADB, *Indonesia-Malaysia-Thailand Growth Triangle — Building a Dynamic Future: A Roadmap for Development 2007 – 2011*, Manila (2007)

Islamic Development Bank, *Indonesia: Critical Constraints to Infrastructure Development*, Jeddah (2010)

Japan External Trade Organization, *Survey on International Operations of Japanese Firms (FY2008)*, Tokyo (2009)