



Research briefing:

Infrastructure and its role in Brazil's development process

Summary

- Infrastructure problems lie at the heart of Brazil's growth constraint and go some way to explaining why growth has failed to keep pace with other large emerging markets.
- Transport, energy, water and sanitation provision is all below the standards that might be expected of an economy the size of Brazil, due to decades of under-investment.
- Government investment has recently increased via the 'Growth Acceleration Programme' (or PAC). While 82% of projects have been completed, investment in certain critical subsectors including urban transportation and sanitation, have met with significant delay.
- Regulatory and environmental disputes are not resolved swiftly, discouraging private sector participation. Technical capacity in both the public and private sector is also lacking.
- If states increase their infrastructure spending by 1%, particularly on transport, then the regional GDP growth rate would increase by 0.11% per year, while the GDP per capita growth rate would increase 7.2% per year.

Historical problems

Until the 1930s federal government involvement in infrastructure projects was almost non-existent. Faced with thin domestic capital markets and a narrow tax base, local policy makers were obliged to draw heavily on inward foreign direct investment (FDI) in order to meet Brazil's fast expanding infrastructural requirements. Infrastructure projects were largely built and operated via concession contracts with companies.

As Brazil moved into the 1940s and 1950s the state took an increasing role as a direct provider of infrastructure, whether in the transportation, power generation and distribution or water and sanitation sectors. The progressive transfer of infrastructure to public ownership not only reflected the need to inject investment where the private sector

had been unable or unwilling to do so, but also an ideological shift that permeated Brazilian economic affairs. Significant improvements were achieved in power generating facilities and some highways, other infrastructure such as railroads were largely neglected.

During the "lost decade" of the 1980s, when Brazil underwent a serious debt crisis, investments in infrastructure withered. By the early 1990s, Brazil faced the necessity of substantially modernizing its infrastructure sector. From the second half of the 1990s Brazil's policymakers were forced to confront the fact that the only way to deal with the need for infrastructure investment was to revert to the old model of appealing to the private sector through concession contracts, or by offering Public Private Partnerships.

Key IRIBA finding: investments in infrastructure will boost growth

New econometric analysis of regional and municipal data from Brazil demonstrates that infrastructure spending has a positive effect on local GDP growth.

If Brazilian states increase their spending by 1%, the regional GDP growth rate would increase by 0.11% per year, while the GDP per capita growth rate would respond with an increase of 7.2% per year.

Investment in transport infrastructure is likely to yield better results than investments in communications or energy.

Contemporary challenges

The World Economic Forum's most recent Global Competitiveness Report (2013-14) ranks the quality of Brazil's infrastructure as 114 out of 148 countries. Clear shortcomings exist in all sectors:

Roads:

By 2011, although Brazil had the world's 4th largest road network, there remained significant quality issues associated with it. According to a 2012 World Bank study, only 18% of Brazil's 1.75 million kilometres of highway are paved. This represents an especially significant deficiency bearing in mind that 60% of Brazil's freight moves by road. As a result, spending on logistics represents a comparatively high 15.4% of GDP.

WEF quality ranking: 120 / 148 countries

Rail:

Unlike in other key emerging market economies, including China and India, rail transportation is almost exclusively the preserve of freight. Freight itself is heavily dominated by iron ore, which accounts for 79% of total rail cargo. Passenger rail is the almost exclusive preserve of a small network of commuter lines around Rio de Janeiro and São Paulo.

WEF quality ranking: 103 / 148 countries

Ports:

For an economy heavily dependent on exports of natural resources-based products, Brazil suffers to a surprising extent from quality and capacity limitations in its port infrastructure. Brazilian ports handle 95% of the country's trade by volume and 85% by value. Delays in loading, unloading and in customs clearance frequently mean trucks spending hours (sometimes days) queuing outside ports. Ships are forced to wait much longer to dock compared to other countries in the region, while costs are also higher.

WEF quality ranking 131 / 148 countries

Air:

The physical scale of Brazil, the absence of long distance rail services and the poor quality of highways infrastructure outside the South and South East mean that Brazil is highly reliant on air transportation. Here, as elsewhere, the infrastructure is associated with a legacy of under-investment and poor connectivity, placing Brazil at a disadvantage in terms of international trade, investment and tourism.

WEF quality ranking 123 / 148 countries

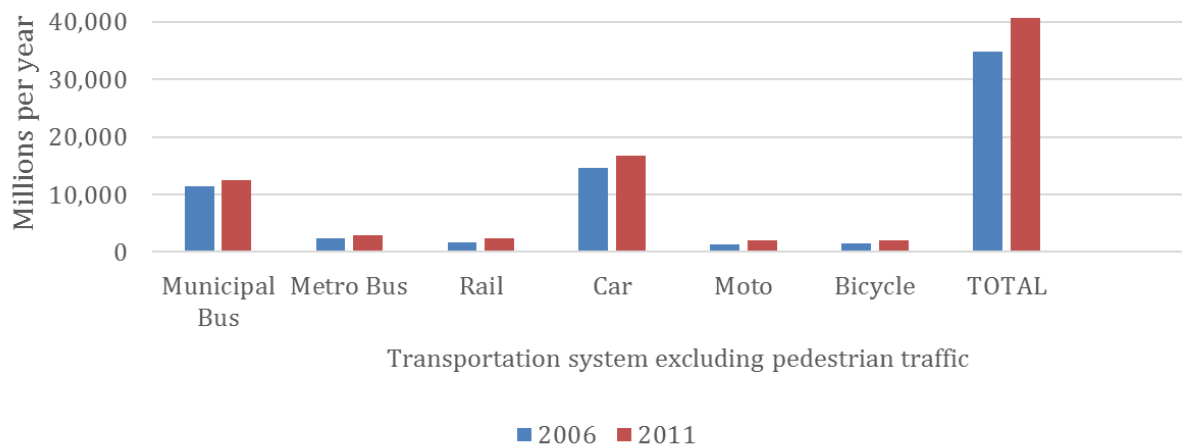
Water and sanitation:

80% of Brazil's population have access to 'improved sanitation facilities' compared with 83% in South America overall and 97.5% for OECD countries. Only 47% of Brazil's population is provided with sewage collection, of which 20% is treated.

Case study: urban transportation

Brazilian cities are among the most car-dependent in the world and sales have doubled between 2005 and 2012. Cars are now the dominant mode of transport, competing for urban space with public buses, which is the only other important mode of transportation in the city. Streetcars have disappeared with no light rail systems built to replace them. Commuter rail usage, even including subways, has barely increased. Approximately 90% of all trips on public transport occur on buses and related informal modes of transport, such as private vans.

Urban trips taken by mode of transport:



As a result congestion is mounting and commuting times in Brazil are among the highest in the world. Most standard solutions, such as congestion charges or circulation restrictions are not politically palatable. Seminars are regularly held in both Rio and São Paulo about what to do when these car-clogged cities eventually 'stop'.

Until relatively recently, there has been little federal oversight of urban transportation, with individual municipalities taking responsibility for infrastructure. However this has begun to change, with the Ministry of Cities created in 2003, in part to address his concern. In the aftermath of the public unrest sparked by the transport system in 2013, the federal government announced additional emphasis on urban mobility programs, though without releasing detailed plans.

Brazil is at this policy crossroads right now, but whether its largest municipalities and the federal government will have the political courage and technical vision to make the right choices remains an open question.

Government response

Since 2007, the authorities have been attempting to engineer a step change in the scale and quality of infrastructure across a

range of strategic sectors. This effort, known as the Growth Acceleration Program (or PAC, to use the Portuguese acronym) envisages significantly raised investments in highways, railways, energy, air transportation,

telecommunications, housing, water and sanitation.

PAC I (2007-10) envisaged spending of R\$ 503.9 bn while the more ambitious PAC 2 (2010-14) proposes spending of R\$ 958.9 bn over its lifespan (around 2.7% of 2010 GDP per year), with a further R\$631.6bn of investments planned beyond 2014.

PAC Investments, Percent by Sector

Sectors	2007-10	After 2010	Total
Logistics	14.9	7.2	11.5
Energy	45.7	92.4	66.1
Social & Urban	39.5	0.4	22.2
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Source: PAC, Morgan Stanley LatAm Economics

With the policy decision to tackle Brazil's legacy of ingrained under spending on infrastructure two things became obvious; first that the state did not have the technical or managerial means to accomplish these projects by itself, and second, that it did not have the financial wherewithal to see these projects through to completion. It was thus decided to turn to two models; the Public Private Partnership (PPP) and the longer-established model of concession contracts.

The program has come under criticism for not delivering on its ambitious targets sufficiently rapidly. A brief review of the data suggests that these concerns may be overblown. Between the beginning of 2007 and the end of 2010, 82% of planned PAC 1 projects were completed with public investment rising to 3.2% of GDP compared with around 2% prior to the program's launch.

Data released in February 2014 show that 82.3% of PAC 2's projects had been completed by the end of 2013 with accumulated spending reaching R\$773.4bn, or 76.1% of the program's total budget. Despite the scale of the program's achievements in overall terms, it remains true that investment in certain critical subsectors (notably urban transportation and sanitation) have met with significant delay.

Perhaps the most glaring obstacle to accelerated progress has centred on the delayed issue of environmental permits. The delays here have largely concerned the slow operation of dispute resolution procedures and the licensing mechanisms rather than the environmental regulatory provisions themselves.

Corruption remains a major issue, with estimates suggesting that Brazil lost R\$ 40 billion between 2002 and 2008. Most of this was attributed to the infrastructure sector.

This briefing is based upon an IRIBA working paper by Edmund Amann, Thomas Trebat and Juan Villa, available at <http://www.brazil4africa.org>

Further reading:

- Crunch Time for Brazilian Infrastructure, PWC (2013) <http://pwc.to/NbTHag>
- The Economic Infrastructure Gap in Latin America and the Caribbean, CEPAL (2011) <http://bit.ly/1naMsJS>
- The Road To Hell, The Economist (2013) <http://econ.st/1naNVif>
- Brazil: Infrastructure Special Report (2013) <http://on.ft.com/1zryWva>

IRIBA is a DFID funded research programme, based at the University of Manchester. It brings together an international team of researchers, examining how lessons from Brazil's development experience can be learned and adapted for African countries.

July 2014

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