

CADERNOS

# FGV PROJETOS

OCTOBER/NOVEMBER 2012 • YEAR 7 • Nº 21 • ISSN 1984-4883



## INFRASTRUCTURE: ACCELERATING BRAZIL'S GROWTH

### INTERVIEWS

BENJAMIN ZYMLER  
SERGIO F. QUINTELLA

### TESTIMONIALS

JOÃO CARLOS FERRAZ  
JAIME LERNER

CADERNOS

# FGV PROJETOS

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# *editorial*

## FGV PROJETOS

Brazil's strong economic performance over the past few years has enabled its government to expand investments in the country's infrastructure, increasing opportunities for both further growth and encouraging a national dialog about its future. Economic turbulence in Europe and the sluggish recovery of the U.S. economy have led many international investors to refocus their attention to opportunities in Brazil, which at this time is considered a far more attractive place to invest than in the past.

In this context, important measures are being taken by the Brazilian government to expand business opportunities, among them an increase in Public-Private Partnerships (PPPs) and a set of laws and regulations that guarantee investment security to new investors, especially those mechanisms that are underlying to the participation of the private sector. Also, worth mentioning is the Differential Procurement Regime (Regime de Contratações Públicas – RDC), which applies to all contracts related to the Confederations Cup, the FIFA World Cup, and the 2016 Olympic and Paralympic Games.

We therefore find ourselves in the midst of a historic moment in Brazil, in which we are making important changes that improve the lives of

Brazil's citizens will improve opportunities and possibilities for social progress.

This issue of “Cadernos FGV Projetos” was published especially for the Third Brazil Infrastructure Investment Forum in the U.S., an event organized by The Brazilian-American Chamber of Commerce with the support of FGV Projetos. It is dedicated to the subject of infrastructure, featuring articles and testimonials written by experts describing experiences, which have successfully contributed to the modernization of Brazil. Among the topics discussed in this publication are basic sanitation, civil construction, transportation, telecommunications, logistics, investments, management and hiring models, challenges faced by cities and municipalities, infrastructure weaknesses, as well as areas for improvement.

This publication shed light on the debate about optimal ways to consolidate best practices and attract investment to the infrastructure sector in Brazil. We hope to contribute to the positive moment Brazil's history, by facilitating discussion and reflection on how to make Brazil's continued economic development as efficient, and sustainable as possible.

Enjoy!

*Cesar Cunha Campos*

DIRECTOR  
FGV PROJETOS





*interview with*

**BENJAMIN ZYMLER**

## *Benjamin Zymler*

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### **PRESIDENT OF THE BRAZILIAN COURT OF AUDIT (TCU)**

Benjamin Zymler graduated with a degree in electrical engineering from the Military Engineering Institute (IME), and bachelor and masters degree in law from UnB. Zymler has 15 years of experience in managing large project teams with a focus on transmission systems. Thereafter, he was an analyst of Finance and External Oversight at the Brazilian Court of Audit (TCU), where he gained experience in auditing and accountability analysis in the public sector, especially in the areas of public companies and mixed societies economy. Currently, he serves as a President of TCU.

### **ABSTRACT**

Brazil is now one of the world's biggest economies. Its growth is reflected by the increase of investment in the country. In an interview with FGV Projetos, the President of the Brazilian Court of Audit (TCU), Benjamin Zymler, says that the Court is prepared for the task of monitoring the new investments. He comments on the measures taken in recent years, highlighting the alignment between government agencies and the Court, and investments for training auditors. He closes by emphasizing the relevance of the actions of the TCU in guaranteeing major infrastructure projects.



**FGV PROJETOS:** BRAZIL IS NOW AMONG THE WORLD’S LARGEST ECONOMIES, WITH ITS IMPACT FELT ON A DAILY BASIS. HOW HAS THE BRAZILIAN COURT OF AUDIT (TRIBUNAL DE CONTAS DA UNIÃO - TCU) BEEN MONITORING THIS GROWTH PROCESS?

**BENJAMIN ZYMLER:** The TCU has dedicated careful attention to the analysis of Brazil’s economic growth. For instance, upon the examination of the accounts submitted annually by the President of Brazil, the Accounts Court has focused on the study of issues such as sustainable growth and infrastructure. In this sense, the TCU has monitored the macroeconomic aspects of the Brazilian scenario, especially with regard to the GDP growth.

The Court’s actions also extend to issues associated with the country’s economic growth, such as public utility concessions and the major construction works required to fill the existing gaps in the infrastructure area. Lastly, the environmental impacts of this growth are also monitored.

IS THE TCU PREPARED TO AUDIT THE LARGE AMOUNT OF INVESTMENTS BEING MADE IN BRAZIL?

>> Over the past few years, the TCU has been preparing to audit the federal investments directed to infrastructure. Presently, the Court relies on four secretariats that audit the main works performed by resources from the federal government.

In addition, there are two secretariats in charge of inspecting the public utility concessions and the public-private partnerships that will be formed to facilitate the investments being made.

The TCU also relies on a secretariat that specializes in the inspection of the Brazilian Social and

Economic Development Bank (Banco Nacional de Desenvolvimento Econômico e Social - BNDES), which finances a considerable share of these investments, and Petrobras, which accounts for a very important share of these expenditures.

Lastly, the Court has developed specific methodologies for auditing of the many different kinds of investments in infrastructure which are required to ensure the sustainability of the country’s growth.

WHAT ARE THE MAIN CHALLENGES FACED BY THE COURT TO ENABLE IT TO GROW IN SYNCH WITH THE PROGRESS AND THE INVESTMENTS BEING MADE IN BRAZIL?

>> TCU now has approximately 1,700 auditors on staff to carry out its duties. This number is not expected to grow much over the next years, so the main challenge is to manage the audit of the growing number of investments with a steady number of personnel.

Within this context, it is necessary to make the Court more efficient, a goal we have been pursuing by several means.

First, we promoted a large-scale auditor training program, which sought to refresh the TCU servers’ knowledge regarding state-of-the-art practices in the inspection of public resources.

Secondly, most of the resources have been allocated to the inspection area. In 2012, a goal was established to achieve a 55% utilization rate of all human resources in the auditing area.

Finally, the auditing methods adopted by the TCU are being enhanced. In this sense, please note that the goal is to adjust those methods to internationally accepted standards.

HAVE THERE BEEN ANY CHANGES IN THE TCU’S RELATIONSHIP WITH THE OTHER GOVERNMENT BODIES ENGAGING IN INFRASTRUCTURE DEVELOPMENT AND CONTROL?

>> Over the past years, the government bodies and the TCU have begun to work together more closely, so when the Executive Branch was preparing extremely relevant projects for the infrastructure area, a communication channel was established which gave the court reasonable time to begin its analysis.

One example of this is the recent case of the concessions for the airports of Brasilia, Viracopos, and Guarulhos, whose draft bid notices were reviewed by TCU teams while they were still being prepared.

This form of work has allowed the TCU’s control procedures to be expedited.

HAS TCU MADE ANY INVESTMENT IN INNOVATION AND TECHNOLOGY TO BETTER MONITOR AND ATTEND THE INCREASED DEMAND FOR INSPECTION OF PUBLIC CONSTRUCTIONS?

>> The TCU has made significant investments in technology, especially with regard to the inspection of major projects. These investments have enabled the execution of highly reliable and comprehensive construction projects.

For example, satellite imaging and sophisticated equipment have been used to confirm excavating and earthwork data. Another example is the progressive increment in the number of lab tests performed to ascertain the quality of the projects in question.

In brief, the Court has been tooling up to perform more and better audits of public construction works.

WHAT INVESTMENTS HAVE BEEN MADE IN THE QUALIFICATION AND DIRECTION OF TCU’S AUDITORS?

>> With regard to qualification, an important initiative was implemented with the admission of new construction work auditors in 2010. In addition to the regular qualification program required for the career of auditor of the TCU, which is the second phase of the public contest, an important supplementary program was offered, quite specifically directed to construction works, which culminated in the immediate execution of an audit, performed by a team of experienced servers.

In addition, late last year, the administration of 41 courses within the construction works area was scheduled, for the short and medium terms, ranging from general courses to highly specialized courses. Among these, 12 have already been held to date and 16 are scheduled to take place by the end of the year. The other courses should be included in the qualification plan for the year 2013. In 2012, approximately 500 vacancies were opened for the specialized units (construction project secretariats), 200 for auditors of the Court in general, and 100 for auditors of other bodies. The annual work load dedicated to the qualification of specialized units should easily exceed 100 hours – which is quite high, even for cutting-edge organizations and sectors.

In addition, internal technical meetings and technical gatherings have been held, such as the one held in April with the Financial Inspection and Control Committee of the House of Representatives, to provide a better understanding of the dynamics of construction work inspection. Like these initiatives, a number of actions result in qualification, enhancement of processes, and advancements in other aspects of the work, even though they are not primarily characterized as formal “qualification actions”.

**“The Court’s actions also extend to issues associated with the country’s economic growth, such as public utility concessions and the major construction works required to fill the existing gaps in the infrastructure area.”**

*Benjamin Zymler*

THERE HAS BEEN SOME CRITICISM ACCUSING THE TCU OF HAMPERING INVESTMENTS THROUGH ITS INSPECTION OF CONSTRUCTION PROJECTS. PLEASE COMMENT.

>> First of all, please note that the prerogative of deciding whether to stop any projects, as well as the responsibility for this decision, lies with the Brazilian Congress and it has been so exercised. The TCU’s participation in the sense of providing the Brazilian Congress with information on works showing signs of irregularities results from the provisions in the Budget Guideline Laws (Leis de Diretrizes Orçamentárias - LDO) for each respective year.

According to the terms of the LDO 2013, in articles 93 through 101, it is incumbent upon the TCU to identify any signs of serious irregularities in the inspected projects and report them to the Brazilian Congress, so that the latter may decide whether to suspend the project in question.

It is important to highlight that, today, out of the tens of thousands of works being executed with funds allocated from the budget of the federal government, only five projects have been subject to the suspension of their physical, budgetary or financial execution as a result of the aforementioned methodology of inspection of construction projects.

CONCERNING THE INVESTMENTS THAT ARE BEING MADE IN VIEW OF THE 2014 FIFA WORLD CUP , HOW HAS THE COURT BEEN PREPARING TO MONITOR AND INSPECT THEM EFFECTIVELY AND WITHOUT UNDUE DELAYS?

>> Hosting of the World Cup involves considerable materiality, relevance and risks, which have led to the decision to monitor the government actions connected with this event.

Minister Valmir Campelo was assigned by the Plenary Hearing of the TCU to report all the proceedings initiated at the Court concerning the 2014 World Cup.

In light of the diversity of agents involved – Federal Government, States, the Federal District,

and municipalities – a letter of intent was signed, which constituted the Information Network for the Inspection and Control of Public Expenditures in view of the Organization of the 2014 Fifa World Cup (World Cup Network). In addition to the TCU, this inspection process relies on the work of the Brazilian Senate, the House of Representatives, the General Controllershship of the Federal Government (Controladoria Geral da União- CGU), and the State and Municipal Accounting Courts.

The expenditures to be incurred with the 2014 World Cup in the infrastructure area are estimated at approximately R\$ 28 billion, which are concentrated in the construction and renovation of sports arenas (R\$ 7 billion), urban mobility works (R\$ 12 billion), and the expansion and renovation of airports (R\$ 7.4 billion).

The work developed by the TCU resulted in savings of approximately R\$ 600 million, with special notice to the reduction in the expense budgets for Maracanã stadium (R\$ 98 million) and Arena Amazonas (R\$ 87 million).

ARE THE GOVERNMENT BODIES AND PUBLIC ADMINISTRATORS PREPARED TO DEAL WITH MAJOR PUBLIC WORKS? HOW WILL THE TCU POSSIBLY CONTRIBUTE IN THIS SENSE, ESPECIALLY IN TERMS OF THE TRAINING, EDUCATION AND QUALIFICATION OF ITS TECHNICAL PERSONNEL?

>> Dealing with major public works is a challenge that requires advanced methodologies and technologies and, above all, highly qualified personnel. Over the years, the TCU has been preparing for this over the past years, and to support the development of the other controlling institutions in this endeavor.

Since 2010, the Court has been concerned with the dispersal of the control competencies and, more specifically, of public works, in light of the investments related to the upcoming World Cup. This year, a 35-hour course was offered to 62 participants, including permanent staff of the institutions comprising the Control Network in each Brazilian State that will host World Cup games, especially



12 servers of accounting courts of the various states and of the CGU. This was a landmark in the joint effort and an example of the possibility of support to be offered by the TCU.

In 2011, the development of high-level online courses on the auditing of construction works began, with a total workload of 110 hours. The courses covered work budgeting, budget auditing, and worker hiring analysis and auditing, which “close the cycle” of the inspection of construction works. The courses are already available to the control bodies and afford greater breadth to the qualification work.

In 2012, concurrently with the development of the online courses, several actions were implemented that were directed to the “Control Network”. At the beginning of the year, the course “Auditing of Public Works” was held, participation in which was coordinated by the Corporate Education Group, constitutes the qualification divisions of the accounting courts of the states, and supported by Instituto Serzedello Corrêa (ISC/TCU). The course qualified 47 employees.

Additionally, an adapted version of the course, named “Planning, Budgeting, Bidding, and Execution of Public Works”, was offered to the employees and workers of sanitation companies working directly on the preparation of bid notices, pricing schedules and specifications for the bids involving federal resources passed on by the Ministry of the Cities. This is an example of a course directed to the executing institutions, in a preventive effort by the Court.

Other similar courses were offered or are being scheduled, always with a workload of 35 hours and similar contents, or adapted to a specific demand. For 2013, the ISC will carry on the coordinated satisfaction of the control bodies’ demands concerning the matter of “projects”, among others. This anticipates two weeks of the Institute’s exclusive dedication to the control bodies and the offering of online courses of the same level as those offered to in-house personnel.

In addition to the specific courses on the “control of public works”, the qualification in general

auditing has already begun, in the first half of the current year – foundations, planning, execution and reporting of results. The qualification program, totaling 80 hours, is the same applied in the TCU auditors’ refresher course. The program is expected to qualify approximately 100 accounting court workers by the end of this year, and will remain available in 2013.

From mid-2010 through the end of 2012, approximately 300 workers from other bodies will have been qualified to work with the auditing of public works or similar auditing procedures, at a high level, according to the standards of the TCU. With the new courses and the coordination of the satisfaction of the existing demands, our current capacity has been expanded to cover a greater volume every year, which we believe will be sufficient for the dissemination of competencies, enabling their multiplication within the various bodies.

WHICH ELEMENTS ASSOCIATED WITH THE CONTROL EXERCISED BY THE TCU ARE CAPABLE OF MAKING A POSITIVE CONTRIBUTION TO INTERNATIONAL INVESTMENTS IN BRAZIL?

>> The work performed by the TCU has contributed to achieve greater reliability for the major infrastructure projects currently being implemented in Brazil.

Especially with regard to the public utility concessions, the Accounting Court’s work has contributed to the enhancement of the studies conducted by the federal government and, consequently, to the enhancement of investors’ confidence in the accuracy of the numbers presented by the Public Administration.

Similarly, the TCU’s work in the inspection of the compliance with the regulatory framework is important to ensure the legal security and the stability of that framework. Since the two latter qualities are crucial to enable long-term investments, such as the investments made in the infrastructure segment, the relevance of the Court’s timely efforts is clear.

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“Dealing with major public works is a challenge that requires advanced methodologies and technologies and, above all, highly qualified personnel. The TCU has been preparing for this over the past years, and to support the development of the other controlling institutions in this endeavor.”

*Benjamin Zymler*



*interview with*

**SERGIO F. QUINTELLA**

## *Sergio F. Quintella*

**VICE PRESIDENT OF FGV FOUNDATION  
(FGV) AND MEMBER OF THE DIRECTORS'  
BOARD OF PETROBRAS**

Sergio F. Quintella graduated in engineering at the Pontifical Catholic University of Rio de Janeiro (PUC-Rio), in economics from the University of Economics and Finance of Rio de Janeiro (Feferj) and in economical engeneering from the National School of Engineering. Quintella has a master's degree in business administration from the Scuola di Formazione Ipsoa, an MBA from Harvard Business School and an extension course degree in public finances from the Pennsylvania State University. He was the President of the International Engineering and Jarí Company, was a member of the National Monetary Council, and was President of the Brazilian Association of Technical Standards and Regulations and of the State Court in Rio de Janeiro. Currently, he is Vice President of FGV Foundation, a member of the Directors' Board of Petrobras and of the Technical Council of the National Confederation of Commerce.

### **ABSTRACT**

In this testimony, the Vice President of FGV Foundation, Sergio F. Quintella, talks about the importance of planning in the effective implementation of infrastructure projects. After large investments in the sector through the beginning of the 1980s, Brazil has seen stagnation in infrastructure investments. In its recent resurgence, one can observe the effects of that period, such as shortage of labour and the lack of new projects. Without good basic projects, the execution of any project is seriously compromised. Finally, he highlights that Brazil needs to reduce the so-called "Brazil Cost" in order to increase its competitiveness and attract more investments.

**FGV PROJETOS:** WHAT IS YOUR EXPERIENCE IN THE INFRASTRUCTURE SECTOR?

**SERGIO F. QUINTELLA:** I am an engineer by profession and at heart. I graduated from Pontifical Catholic University of Rio de Janeiro (PUC-Rio) during the “developmentalist” phase, with a Target Plan focused on the construction of hydroelectric dams, highways, railways, airports and ports and finally, as a synthesis of the program, the construction of Brasília in Planalto Central. All of my work in engineering is associated with projects and works in this sector, from the construction of the water supply system of Guandú (an enormous project at the time), in Rio de Janeiro, to the central span of the Rio-Niterói bridge. I lead the company responsible for the project for the Hydroelectric Power Plant of Itaipú, for most of the system of electric energy transmission, for the railways for the transport of ore and for the Carajás system (mines, railway and port), in the North of Brazil. Furthermore, and here allow me to digress a little, when we speak about railways, highways, ports and airports, the correct term would be logistics, essential for the outflow of production, and often responsible for the international competition of commodities, such as soybean and ore, for example. The area of infrastructure, therefore, has always occupied a place of prominence in my professional career.

From 1957 until the arrival of the debt crisis at the beginning of the 1980s, when Brazil was at risk of not fulfilling its international commitments, we had major investments in the infrastructure sector. Since then, and for more than 25 years, the need for tax adjustments has contained the public investment within this sector, which is

only now being resumed. During this period of stagnation, there has been a significant reduction in the number of graduating engineers. With a lack of infrastructure works, many young people have migrated to other areas, and so there is currently a lack of qualified engineers with practical experience in large infrastructure projects. This is one reason why, for example, some Brazilian companies have to hire foreign engineers to work in Brazil.

WHICH STAGES SHOULD BE OBSERVED FOR THE SUCCESS OF AN INFRASTRUCTURE PROJECT?

>> Any engineering project requires that a set of stages be fulfilled so that it is conducted within the standards of security, quality and costs. Infrastructure works are no exception, and should be integrated with a plan made well in advance of execution; this integration should be present in the work sites and developed on the sketch boards and computers of project engineers. The project, before becoming a work detailing the foundations, structures and specifications of equipment, passes through the so-called basic project, a key component, for example, for the choice of design, evaluation of the soil conditions, rainfall regime, etc. Only after the completion of this basic project, is it then possible to accurately evaluate the costs of the project. Then there is the detailed project and work begins.

Without a basic project of quality, it is not possible to develop a good budget, or even ensure adequate competition so that the costs are within budget. This is one of the reasons why some projects in Brazil end up costing two or three times over budget.

WHAT ARE THE REFLECTIONS OF THE INFRASTRUCTURE IN THE SO-CALLED “BRAZIL COST”?

>> At a time when investments are being resumed in the infrastructure sector, one question that should be debated relates to the so-called Brazil Cost. Why do certain Brazilian products, in the steel, chemical, petrochemical field, etc. have a competitive cost of manufacture with those on the international market, but, when placed on the domestic market, are more expensive than foreign competitors are?

The “Brazil Cost” is a result of many factors, and many of them are beyond the control of business people with productive activities here. They include the high tax load, the cost of electricity, the complexity of taxes and rates systems, the labour legislation, and finally inadequate infrastructure.

Economist Claudio Frischtak recently performed a study examining the prospects of Brazil and China from the level of compatibility and investments in infrastructure. He concluded the following:

*“In Brazil, there is still very little investment in infrastructure. In the last two decades, the investments have been on average around 2.3% of the GDP, a considerable reduction in comparison to the period beginning in the 1970s. With the exception of the telecommunication sector, the slump in the other sectors has been accentuated, and it is possible that the investments – as a whole – will be incapable of covering the depreciation of fixed capital, estimated at 3%. The implication is clear: deterioration in the quality and costs of services,*

*contributing towards low economic productivity and the inhibition – on the side of offer – of growth.*

*One comparison of Brazilian investments in infrastructure with those of other emerging economies shows not only a considerable dissonance, but also slow recovery. In fact, in 2011 there was a new inflection – the investment rate dropped to 2.05%, and could possibly be less than 2% of the GDP in 2012.”*

There is no adequate infrastructure in Brazil to outflow the Brazilian production. For example, consider the case for agribusiness of the Western Region, which lacks an alternative transport route via the Pacific, and therefore must cross the entire country to access ports that will lead its products to the international market. The experience of transporting fuel via alcohol ducts is extremely recent. The ore produced by Vale, in Carajás, is an exception to this scenario. This is because Vale, before being “just” a large mining company, is an all-round excellent logistics operator, capable of using railways and ports of high efficiency and, thus, of competing with advantages in faraway markets, like the Japanese and Chinese. In my opinion, the potential of the sector are enormous and varied, and the opportunities are open to all sectors and should attract national and international capital. The infrastructure sector is certainly the one that will lead to the reduction of the Brazil Cost, increasing the competitiveness of the country and making it more attractive to the international market

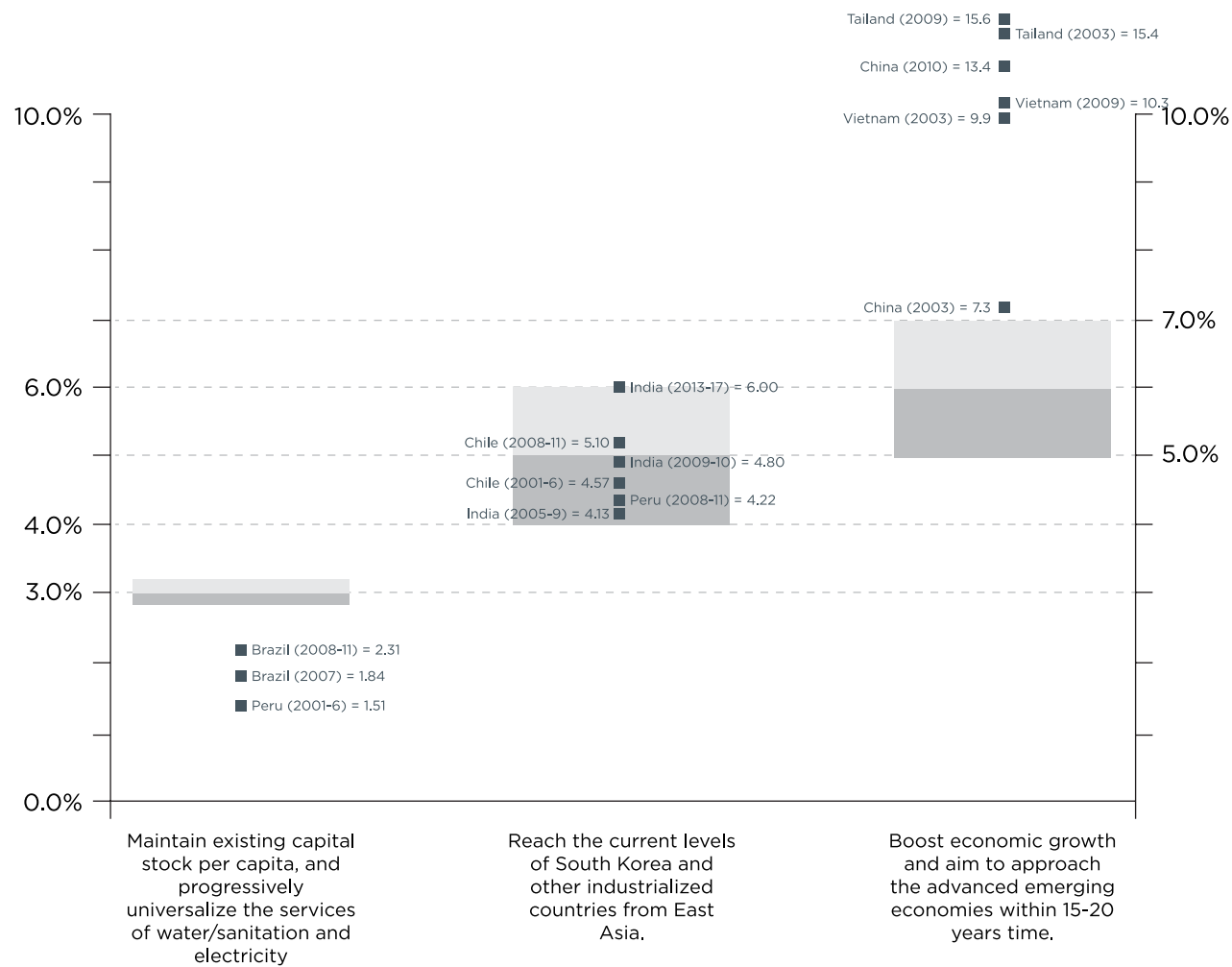


18 TABLE 1  
INVESTMENT IN INFRASTRUCTURE IN BRAZIL (% OF GDP)

PERIOD	1971/1980	1981/1989	1990/2000	2001/2010
TOTAL (% GDP)	5.42	3.62	2.29	2.32
ELECTRICITY	2.13	1.47	0.76	0.67
TELECOMMUNICATION	0.80	0.43	0.73	0.65
TRANSPORTATION	2.03	1.48	0.63	0.71
WATER AND SANITATION	0.46	0.24	0.15	0.29

SOURCE: CASTELAR PINHEIRO (2009) AND FRISCHTAK (2011)

GRAPH 1  
INVESTMENT IN INFRASTRUCTURE (% OF GDP) OF COUNTRIES UNDER DEVELOPMENT



SOURCE: PHILIPPINES, THAILAND AND VIETNAM, WORLD BANK 2009, CHINA, ASIAN DEVELOPMENT BANK (2010), INDIA, NATIONAL TRANSPORT DEVELOPMENT COMMITTEE (2010), CHILE AND COLOMBIA MORGAN STANLEY (2008-2011), FOR BRAZIL, WHOSE DATA REFERS TO THE AVERAGE FOR 2008-2011, OPEN COMPANIES (PUBLIC AND PRIVATE); SIAFI, CNI AND OWN CALCULATIONS AND ESTIMATES.

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“The ‘Brazil Cost’ is a result of many factors, and many of them are beyond the control of business people with productive activities here.”

Sergio F. Quintella





*testimonial*

# THE PERFORMANCE OF BNDES IN THE INFRASTRUCTURE SECTOR

JOÃO CARLOS FERRAZ

*João Carlos Ferraz*

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**VICE PRESIDENT OF THE BRAZILIAN  
DEVELOPMENT BANK (BNDES)**

João Carlos Ferraz graduated with a degree in economics and journalism from the Pontifical Catholic University of Minas Gerais (PUC-Minas) and with a doctorate in economics of innovation and public politics from the University of Sussex, United Kingdom. João Carlos Ferraz has served as Director of the Division of Productive Development and Business of ECLAC (Economic Commission for Latin America and the Caribbean) of the UN and as a visiting professor at the University of Tsukuba, in Japan. He is currently a professor at the Federal University of Rio de Janeiro (UFRJ) and Vice President of the Brazilian Development Bank (Banco Nacional de Desenvolvimento – BNDES).

## **ABSTRACT**

In his testimony, the Vice President of the Brazilian Development Bank (BNDES), João Carlos Ferraz, talks about the challenges that Brazil will face in the coming years and the role BNDES will play in this scenario. All growth generates stress and imbalance; to be successful in maintaining this long term trajectory, a country must depend on the ability of society to recognize the existence of these tensions in order to negotiate and mitigate them. The author mentions the Growth Acceleration Program – GAP (Programa de Aceleração de Crescimento – PAC), which renewed the infrastructure investments in Brazil and related challenges. He concludes by stressing the importance of ensuring the reliability of the new models, in order to attract investment.



22 All growth causes imbalance. This means to say that the beginning of any stage of growth is subject to stress, since development is always of a multidimensional nature.

The first type of stress refers to the increase in consumption and the capacity of supply. If consumption increases then there is a pressure to increase the supply, and in the case of average durable goods, this increase in capacity may take two or three years to materialize. Considering the time it takes for any given infrastructure to mature whilst also bearing in mind a potential increase in consumption, this process of maturation is slower than the process of increasing production capacity, and so arrive at the second source of stress: the capacity of a given infrastructure to bear an increase in the demand for its services. Finally, the third source of stress derives from the need for skills, the main problem being the length of time it takes for people to become qualified and to acquire the necessary skills and training to serve the infrastructure.

These are the stresses and the imbalances that Brazil will need to face over the coming 10 years. The success that the country must achieve in order to maintain this long-term trajectory will mostly depend on the society's ability to recognize the existence of these stresses in order to either negotiate them or to alleviate them. The only way of easing them is to become more efficient at training people and developing the necessary infrastructure and production, as well as improving the quality of consumption. The scenario that we will face over the coming years will require us to concentrate our focus both on the quantity and on the quality of the investments we make. All of these stresses will be alleviated if we adopt an approach of efficiency, quality and technical progress.

The last wave of infrastructural investment in Brazil, undertaken in a systematic and permanent manner, took place over 30 years ago. Since the debt crisis in 1982, the main concern of the country has been to carry out projects necessary for its survival.

One of the immediate reactions to the crisis was to increase foreign currency reserves. This was when the country went from being a small exporter to a

large exporter, especially regarding commodities, which was able to happen thanks to previously made investments. Soon afterwards, infrastructures were developed to channel exports in order to support a debt crisis which already existed. Even now, and for a very long time, a certain company capable of exporting a certain type of commodity, while efficiently maintaining the lowest cost per kilometer/ton shipped out, is highly praised.

After the 1990s, we became successful at stabilizing our economy, and later we began a process of structural reforms, especially with regard to the corporate assets that existed in this country. Privatizations were carried out and regulatory agencies were created, taking into account the time of maturation.

Many changes have also taken place more recently, with investments being the key feature of these changes. Between 2004 and 2005, investments started growing at a greater rate than the GDP. Therefore, we began to see a greater demand for infrastructure. In 2007, the Growth Acceleration Program (Programa de Aceleração do Crescimento – PAC) was set up, which represented the first concentrated effort to resume the investments made in infrastructure after a period of around 25 years. However, there was no readily available model to follow. The model that we had previously followed was based on government-controlled companies, and was already outdated; it did not work because it had been put into practice when we were still being governed by authoritarian regimes.

And so while we were engaged in this new investment effort, we also had to face the challenge of changing the model. This began to accompany the search for lower tariffs, whereby concessions would be granted to those who were able to offer the best price to the consumer.

The initial challenge of putting these actions into practice was huge. The government ministries did not have teams with the necessary skills to develop projects that followed the law, protected the environment, and that were capable of following an engineering or a financial model. The country simply did not have these projects, and nor was it able to develop them.





This reality spanned across all levels. If a given ministry was lacking skilled labour, then there was a lack of skilled labour at the companies or during the execution of works as well. The country was not used to making investments in infrastructure.

The PAC program began in 2007, and from this point on we have been working continually to expand this agenda. An institutional analysis would show that investments made into the PAC program work better where there is already an abundance of skills, both for the private and the public sectors. This was the case with electrical power. This sector benefitted from a relatively well organized ministry; it worked with a model of modest tariffs, and it made use of long term financial concessions granted by the BNDES. The electric power sector is therefore the sector showing the greatest advances, in terms of its compliance with the goals and commitments of the PAC program.

The importance of increasing investment in infrastructure is self evident, and we are continuing to make efforts in this direction. One of the challenges that we face is to improve our ability to develop good quality projects.

A notable example is that of China. When the banking crisis came in 2008, the Chinese, who were following a moderate trajectory to expand their economy, had to boost their economy by launching a US\$ 600 billion infrastructure project. Brazil, on the other hand, continued following its consumer trajectory. The year that followed this news of China's new course, I decided to visit the country, and while there I ascertained that it was implementing projects that would take ten years to be completed. In contrast to Brazil, China had been

experiencing continued growth since 1978, and it so had 30 years of accrued growth in a wide variety of projects, and had already trained the people needed to execute them. So it was just a question of waiting for the opportunity to do so, and once this arrived, the country had an inventory of skills and of projects ready to use.

In Brazil, the creation of the Brazilian projects builder (Estruturadora Brasileira de Projetos – EBP) by the BNDES and by commercial banks represented an important initiative for improving the quality of its projects. The company prepares projects that are capable of being carried out by the public sector, meaning that it is able to offer solutions when concession opportunities arise.

Today the importance of having good quality projects to encourage economical growth is well-known, but this concept is not a new one as far as the BNDES is concerned. All through its history, the Bank has been called upon to provide institutional support to public policies regarding infrastructure, either by performing studies or by participating (through its technicians) in project modeling and project implementation.

The BNDES has clearly been one of the key elements in expanding investments in our country. The BNDES is an institution which possesses two very important characteristics which have made it capable of making commitments which it is encouraged or obligated to accomplish, both in terms of scale and of scope. With assets reaching US\$ 300 billion, the Bank is currently disbursing US\$ 80 billion per year, and has been attracting attention not solely because of its size but also because of its efficiency, which is demonstrated by

its relatively small number of employees, its low level of defaults, and other similar characteristics.

We support large infrastructure projects as well as those that apply to the industrial sector, but we also have products that are specifically intended to foment micro, small and average-size companies, such as the BNDES Card and the Investments Guarantor Fund (Fundo Garantidor de Investimentos – FGI), which have widened credit access for smaller companies. Moreover, the bank participates in non-refundable funds used for cultural, social, technological and environmental development. The bank also provides support to companies in its capacity as an investment bank, thus allowing them to have a stake in variable income companies either through funds or by taking direct risks.

In carrying out of its task of expanding investments, the BNDES has strongly benefitted from a decision taken by the Brazilian State, which made sure that the Bank could have ample access to funds. The logic underlying this decision was that investments need to grow faster than the GDP. We have never needed to make any decisions regarding the allocation of funds, but in the eventuality that these funds become scarce and this need arises, then we have already defined the priorities well in advance. There are three priority areas that supersede the others: the social-environmental area, innovation and infrastructure.

Regarding investments in infrastructure, they are basically divided up between two areas of the Bank: economic and social. Disbursements into the economic infrastructure area, which include

projects on energy and logistics, have been systematically growing above the disbursements being made by the other areas. The economic infrastructure area is quite transparent – it comprises projects of extended maturation, and has been growing by about 20% each year. The newest area is that which we call 'social infrastructure'. It was initially involved in basic sanitation, and in projects for financing urban mobility, such as subways and in-city trains, more recently it began financing the investments made by state governments. Our performance in cooperation with individual States has been growing over the last few years, and this new area should gain greater prominence within our institution.

In summary, we are facing a wide range of challenges in our developing trajectory, in the form of expanding the quantity and quality of the projects and investments in infrastructure within our country.

We are completely capable of accomplishing this, since we are already experiencing a very interesting moment in time, and since there have been very few instances in the history of our country where there has existed a consensus regarding the importance of investments to encourage growth. Between the left and the right, or amongst the more orthodox and the more heterodox economists, a consensus has arisen that investments should be the driving force of the Brazilian economy. This is a beautiful and favorable piece of news, since, politically speaking, it makes it possible to build greater solidarity in order to overcome the bottlenecks that exist within our different sectors. Our opportunity frontiers and the return rates provided by these frontiers are currently very pleasing.





*testimonial*

# RETHINKING THE CITIES: MOBILITY, SUSTAINABILITY AND SOCIABILITY

JAIME LERNER

*Jaime Lerner*

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ARCHITECT, URBANIST AND  
FORMER MAYOR OF CURITIBA

Jaime Lerner graduated with a degree in architecture and urbanism from the Federal University of Parana. He served as mayor of Curitiba for three terms, having participated in the development and implementation of the Master Plan of the city. He was also governor of Paraná for eight consecutive years, and worked as a consultant for urban affairs at the United Nations. Currently he is President of his own architecture firm, developing projects in Brazil and abroad.

## ABSTRACT

It is fundamental to know cities in order to make appropriate investments in their infrastructure and economic development. In this testimonial, Jaime Lerner, discusses the necessary measures needed to ensure sustainable development. He explains that, in addition to the basic needs of education, health and safety, three important factors are needed for the proper functioning of a city: mobility, sustainability and harmony. The author suggests where and how to invest in these three areas, emphasizing the relationship between labour and housing and the importance of encouraging socio-economic and cultural integration in districts and regions. Lerner says that the city should be seen as a living organism and that it is possible to undertake major changes that benefit the population in just a short period of time.



No investment can be made into any type of infrastructure or economic development without first considering the cities involved. Cities are structures that shelter life and provide work and leisure, which are aspects that cannot be separated from one another. There are three additional aspects, apart from the obvious such as education, health, safety etc., which are essential for the proper functioning of any city in the world: mobility, sustainability and sociability – this last one being understood as tolerance and coexistence. It is not possible to separate economic activities from human settlements.

There are some viable solutions regarding mobility: the first one is making the already existing transportation system more efficient. Another solution is to have public transportation - individual transportation is not viable. I even think that we could get buses to run like subways, that is, to get the same level of performance from buses that we get from subways. However, what we really need is to think of alternatives – whether they be subways, investments in surface transportation such as the BRT or even bicycles - as sustainable alternatives, as well as public individual transportation. For example in Paris there is something called Autolib, which is an electric car that can be shared and rented just like a bicycle.

The problem of sustainability can be resolved, as can that of mobility. Some 75% of carbon emissions come from cities. This being the case, we need to think of ways of reducing the emission of gases into the atmosphere. Within the scope of sustainability and the climate, there are simple

actions that can contribute towards decreasing this pollution, such as using cars less, separating our garbage, living closer to work or bringing work closer to our homes. An important component for improving tolerance and sociability is social-economic and cultural integration. It is not possible to live in cities that split people according to their income, age, job position or by any other cultural aspect. Segregation and isolationism are tragic for a city. It would be naive to say that people are going to live in the same building, but sociability within the same region and the same district is fundamental. I like to use a turtle as a metaphor for the city. Just as a turtle can represent life, work and movement, its shell represents the function of a city hall. If the turtle's shell is broken in two halves, signifying life on one side and work on the other, the turtle will die, and this is precisely what is happening in many cities. An ideal city is one where both job positions and incomes are integrated, thus structuring the city's growth. It is necessary to integrate life, movement, transportation and leisure into one single organic and growing structure. The more integrated it is, the more human a city becomes.

This entire movement of integration is only made possible by sustainability, which can be shown by an equation of what is saved and what is wasted. I will summarize with the following: when you want creativity, cut off a zero from your budget; when you want sustainability, cut two zeros off; and finally, if you want solidarity, assume your identity and respect the diversity of others.

The model of constructing popular homes, which moves people ever further from their places of

work, spells disaster. No decent popular home can be built unless it is integrated into the city, and unfortunately this has not been happening in Brazil. The best solution in this context is to fill urban gaps and set up systems that grant people accessibility. Popular homes should not solely be built around the edges of towns. Popular homes do not mean the periphery. They mean integration with the city.

The same thing could be said about slums. Increasingly they need to be a part of the city. More economic and employment alternatives need to be offered to make these communities part of the whole, regardless of their district location. I have always supported the idea of slums being a Free Zone, whereby anyone developing an economic activity capable of generating jobs should be exempt from paying taxes. The creation of jobs and income would contribute towards drawing people away from drugs.

A large portion has been built on hillsides, and every time these occupied land spaces are disturbed, inconveniences happen. Still, there is always the possibility of bringing infrastructure to those dwellings without compromising their integrity, such as water and power supplies, and the collection of sewage along the handrails of the stairs. Not all problems can be solved, but many improvements can be made: first by creating jobs, then by finding a solution for the garbage problem. In truth, this problem can be quite easily resolved. On the hill slopes around Curitiba, for instance, a system called 'Garbage Purchase'<sup>1</sup> has been adopted, which acts as an incentive for the inhabitant to leave his/her garbage at

an appropriate location where it can later be collected. However, sometimes the garbage is left uncollected because the garbage trucks have no way of accessing it.

Since it is possible to arrive at creative solutions within communities, one also needs to reconsider the houses that are being built for the middle and the upper classes. I believe that there is a process of construction becoming "overly ambitious" in some aspects. They are confusing value with price. Both the prices and the size of the houses are absurd, they have been exaggerated. Houses are being over-sized by increasing square footage, which consequently increases the cost of labour. Another problem caused by this over-sizing of buildings, is their removal from places with a fully comprehensive infrastructure, which means building of 'social' areas within the complex that are never used. With regards to construction, the behavior of the 'new rich' ends up costing more for everybody. At some point, the current real-estate situation will become economically unsustainable.

We need to think of the city as a living organism, which everyone has access to. It is both necessary and possible to ensure conditions that integrate living, work, leisure, housing and employment. Those who govern need to direct their energy in order to change the undesirable trends. Cities have a great deal of political strength, but at times their rulers delegate this to bureaucracy. And bureaucracy procrastinates by its very nature. Decisions need to be made that will immediately benefit the population. I always say that it only takes three or four years to make momentous changes in any city, and I stand by this.

<sup>1</sup> The 'Garbage Purchase' (Compra do Lixo) program is an alternative to Home Garbage Collection. It is intended to cater to the less favored strata of the population. For each garbage bag containing between 8 to 10 kg of residues that is garnered inside of the garbage truck, the participant gets a transportation voucher which he may exchange for food products. As a result of their partnership with City Hall, the Dweller's Association gets 10% of the amount paid for each garbage bag dumped into the garbage truck. This money is deposited in a bank account held in the Association's name, which uses the funds in construction works or in services that are defined by the community itself.



The background of the page is a photograph of several large construction cranes against a warm, orange-hued sky, suggesting a sunset or sunrise. The cranes are silhouetted, with their complex metal structures and cables clearly visible. One crane in the foreground is particularly prominent, extending from the bottom left towards the center. Another crane is visible in the middle ground, and a third one is further back on the right. The overall scene conveys a sense of industrial activity and infrastructure development.

*article*

# SCENARIOS AND OPPORTUNITIES FOR THE SERVICE SECTOR: PLANNING, ENGINEERING AND ECONOMIC ANALYSIS

CESAR CUNHA CAMPOS

*Cesar Cunha Campos*

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DIRECTOR OF FGV PROJETOS

Cesar Cunha Campos has a degree in civil engineering from Pontifical Catholic University of Rio de Janeiro (PUC-Rio), a master's in business administration from London Business School and PhD in transportation planning from Technische Universität Wien, Austria. He has been a consultant since 1975, heading and integrating several projects in economics, engineering and finance. He has also developed projects for top Brazilian private and public corporations, especially feasibility studies for raising funds with major banks and development agencies (such as BNDES, IRDB, IDB and OECD) and undertook a number of international projects. Since 2003 he is Director of FGV Projetos, the technical advisory unit of FGV Foundation.

## ABSTRACT

Brazil is currently going through a positive economical phase. Interest rates, inflation and unemployment are kept low, while the economy remains stable. This scenario leverages the demand for services such as energy, transportation, sanitation and housing, and highlights the need for investment in infrastructure. In his article, Cesar Cunha Campos, director of FGV Projetos, outlines an overview of the industry, emphasizing important initiatives that have been out into action, such as the Growth Acceleration Program (Programa de Aceleração de Crescimento – PAC) and the Logistics Investment Program (Programa de Investimento em Logística). It takes structured, integrated and cohesive planning to overcome the existing bottlenecks and, in this context, the opportunities for project development are excellent.

The forecast for Brazilian economic growth for 2013 is around 4%, and this growth rate should remain around this level throughout this coming decade. Interest rates are at historically low levels (7.5% per year) and inflation has remained around its set target (4.5% in 2012), while the unemployment rate stands at 5.4% (July, 2012). The net debt of the public sector continues to decrease, having reached 36.5% of the GDP in 2011. Direct foreign investments reached US\$ 67 billion in 2011, with a forecast of US\$ 55 billion for 2012, with the country's international reserves reaching US\$ 377 billion in August of 2012. Despite the scenario brought about by the international crisis, Brazilian exports are on the rise, having gone from US\$ 137.8 billion in 2006 to US\$ 256 billion in 2011, and are expected to reach some US\$ 264 billion in 2012.

In order for these figures to stabilize and grow it is essential that substantial investments be made into the various infrastructure sectors, such as electrical power, telecommunications, overland, rail and air transportation, ports and airports, waterways and basic sanitation. These segments undoubtedly form the foundation of sustaining the economic activities of a nation.

Throughout the first decade of 2000, the rise in the income level of the population caused a rise in the demand for electrical power, transportation, sanitation and housing, leading to an ever increasing social expectation for greater investments into these sectors. On top of these needs, Brazil relies on important ongoing measures.

The Growth Acceleration Program (Programa de Aceleração do Crescimento – PAC), which began

in 2007 forecasts investments of US\$ 0.7 trillion until 2021, in the implementation of infrastructure projects in the areas of transportation, energy, basic sanitation, housing, and hydric resources. The Program of Investment into Logistics, on the other hand, which was announced in August of 2012, forecasts investments of US\$ 63 billion, of which US\$ 21 billion are to be used to build 7,500 kilometers of highways and US\$ 42 billion are to be invested in the construction of 10,000 km of railways. When adding up all of these needs, it is relevant to also mention the announced investments into the oil and natural gas industry (2012-2016), in the amount of US\$ 236.5 billion, while in the mining industry the investments are estimated to reach US\$ 75 billion. The favorable and promising outlook of these investments is also boosted by the additional motivation given by large sports events, which are to be held in the country in the near future: the 2014 Fifa World Cup and the 2016 Olympic Games.

Even with this high volume of scheduled investments, Brazil still needs to expand its resources in infrastructure. Assuming that the average standard of investments being made by stable economies ranges between 2% and 4% of the GDP, then additional investments of US\$ 1.1 trillion or US\$ 60 billion per year will still be necessary between the 2013-2030 period.

The positive economic results as well as any political decisions taken are essential factors; however, other factors also require attention. Investments in infrastructure, which are essential for economic growth and require enormous financial resources, also rely on some relevant mechanisms. Firstly, they must be well planned so that they are in fact capable of promoting an increase in productivity

and downsizing production costs. Secondly, any expansion in infrastructure must be rapid enough to sustain economic growth. Thirdly, these results must be able to rely on a public planning sector together with an accurate, efficient, and attentive control. Finally, adequate public and private financial mechanisms must be in place, as well as a consistent legal foundation.

Brazilian legislation is based on a State of Law, and is made up of laws and regulations that have been consolidated throughout the last few decades, providing clear bidding invitation processes (Law 8.666), together with Public Concessions and Public and Private Partnerships (among other possibilities). With regard to planning and control bodies, Brazil is able to make use of a solid State structure, equipped with state planning institutions, regulatory agencies, consolidated Accounting Courts on federal, state and local levels, as well as Public Prosecutor's Offices that are both efficient and active. Regarding financial agents, the BNDES is considered the largest investment bank involved in investing funds in the world, which makes its funds freely available to the infrastructure sector. Finally, Brazil is able to make use of a solid and modern financial sector, both private and public, such as Banco do Brasil and Caixa Econômica Federal.

Within this context, one may speculate that there will be a strong and ever increasing demand within the services planning sector for the engineering sector and the economic-financial analysis sectors regarding solutions for technical and control questions relating to the need to cater for the characteristics of both public and private financing, in order to elaborate and to execute engineering projects and their consequential implementations.

Taking into account the investment figures described above, in order to come up with all of these funds it will be necessary to have a planning cycle, which should be made up of Master Plans, Technical, Economic and Financial Viability Projects, Conceptual Projects, Basic and Executive Engineering Projects. If this is accomplished then one may forecast that over the next coming years the services sector will be able to count on obtaining between 5% to 10% of the total amount to be invested in infrastructure in Brazil.

This expectation will only become reality with a strong sector of specialized consultants, with efficient techniques and experienced professionals. Brazilian Engineering and Economy schools need to prepare an army of capable professionals, so that the Brazilian market of specialized services can become ever more attractive on a worldwide scale.

However, in front of all of this great potential, Brazil is still experiencing an anxiety in connection with its development potential and its immense limitations regarding infrastructure. The picture currently being painted now is a positive one, with the proposal of and the possibility of large investments, made real through structured planning that is both integrated and coherent. A reasonable period of time will be needed in order to overcome the huge bottlenecks that exist today, but the opportunities that exist in the planning and project development areas are exceptional, especially with regard to management and the overseeing of construction works, support of supervision and ongoing projects and in the evaluation of the conformity between the project and its execution.





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# PUBLIC-PRIVATE PARTNERSHIPS IN BRAZIL AND THE CHALLENGES THEY FACE

CARLOS ARI SUNDFELD

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Sundfeld graduated with a degree in law from the Pontifical Catholic University of São Paulo (PUC-SP), where he also completed his master's and doctorate degrees in administrative law and works as professor. He is a founding professor of FGV Foundation's School of Law of São Paulo (Direito GV/FGV) and a founding partner of Sundfeld Lawyers. Sundfeld is also President of the Brazilian society of public law and participated in the creation of the national law of Public-Private Partnerships, the Public-Private Partnership law of Minas Gerais, and other projects.

## ABSTRACT

Professor Sundfeld's article refers to Public-Private Partnerships (PPPs). The author addresses the different types of partnerships between the government and private enterprises and Brazil's experience in this area. The concept of PPP as it is currently understood was codified in Law 11.079/2004, which makes a distinction between administrative and sponsored concessions. Brazil has used concession contracts since the 19<sup>th</sup> century. According to Sundfeld, public-private partnerships are as advantageous for the government as they are for the private sector, and there are still many opportunities to explore.



36 The expression public-private partnership has quite restrictive legislative uses. However, it is necessary to establish a distinction between a Public-Private Partnership in its lato sensu, which includes several types of contractual relationships between public authorities and private parties; and the Public-Private Partnership in its stricto sensu which the Brazilian law specifically calls PPP.

Public-private partnerships do not have a recent history, as is often described – neither regarding international nor domestic experiences. With regard to the international experience, with which the Brazilian experience maintains an intensive dialogue, the contracts that would have originally generated these partnerships were called concession agreements. Concession agreements have been in use in Brazil since the middle of the 19th century, agreements which fit into the public-private partnership concept, when used in its lato sensu. These agreements are as follows: the concession of public services and public works, as well as sectorial concessions regulated by law. They represent long-term relationships in which private parties take on the State’s responsibilities in order to make investments, i.e., by creating an infrastructure which they later exploit. Such exploitation is accomplished under the guidelines of a regulation which is based on and originates from an agreement which establishes ties and determines the rules that will govern the exploitation of this infrastructure.

Speaking broadly, the history of partnerships in terms of lato sensu has gone through ups and downs both in terms of legislation and the Brazilian experience. The legislation of the 19th century began to deal with this matter on behalf of a specific sector: railways. In the 20th century, this movement was extended to other sectors that required development. In the 1930s, the Water Code<sup>1</sup> was enacted to regulate electricity concessions, which were on the rise due to the country’s industrialization process. At the start of the 1960s, the Brazilian Telecommunications Code was

enacted, at which time the Federal Union became a large telecommunications service provider. As time went by, laws were enacted for all sectors in order to regulate these types of agreements, which were usually called concessions, and also to eventually permit concessions.

As a result of this, a rich and important jurisprudence was formed regarding the rights and obligations of the parties involved in these agreements. This jurisprudence became a legal doctrine that always dealt with the concession of public services or public works, and which always attempted to highlight the powers that the State should have in these relationships. At the same time, there has always been something untouchable in this contractual relationship: the equation of the economic-financial aspect of the agreement. This tradition became established historically, and continued to exist even during the time when concessions went through a period of decadence and when the State (especially in the 1950s) started making use of large state-controlled companies as part of the country’s development project. Eletrobras (during the 1960s) and Telebras (during the 1970s) are two examples of this. During this period, concession agreements with private parties began being used less and less. However, it is essential to stress that this was not achieved through confiscations.

Brazilian tradition always respected concession agreements, and so created an avant la lettre PPP culture. During the period described above, the public authorities either bought out private concessionaire companies, or they took over bankrupt companies, always abiding by any existing contractual relationships. In some cases they stopped using concession agreements, instead ascribing the services directly to state-controlled companies, albeit never abandoning the idea of concessions.

With regards to public-private partnerships, never in the history of Brazilian Law have we failed to follow the contractual relationship guidelines

which the State must also respect. Therefore the fulfillment of public values was always guided by the contents set out in the clauses of the original agreements, or by any potential modifications that had been made by these public authorities, but always in compliance with the rights expressed in the economic-financial equation as well as in any applicable legal norms.

During the 1990s the laws were renewed, and it was then that the expression PPP was invented. In contrast to what happened in other Latin-American countries, this renewal was extremely successful in Brazil, thanks to the solid legal and institutional foundation that had been built over the decades.

THE LEGISLATION

Law 8987 was enacted in 1995 as a national law for governing concessions. Up until that time only sectorial laws had existed in Brazil. The objective of the new law was to retract the use of all concessions, and to consolidate ideas that already existed in the Brazilian legal culture and experience in order to allow privatizations and other private initiative partnership projects. This law consolidated ideas that already existed in the country’s tradition, adjusting only a few aspects with reference to the powers of the administration and the process of determining prices in contracts.

Despite the fact that concessions were consolidated through contractual relationships with private parties, public administration was still granted so-called exorbitant powers to modify the agreement. According to the existing legal model, the government was entitled to dissolve any concession agreement and to retract any services being provided, making the said private party a creditor of the public administration. Therefore, it was necessary to establish clearly set out and rigid limits for this type of action, in order to increase the security of private parties<sup>2</sup>. The new Concessions Act maintained the public administration’s power to take over services

37 granted to a private, concessionaire company, however, it also established two constraints which were: the necessary agreement of the legislative branch in each case, which made the process of expropriation more difficult, and secondly the requirement for an indemnity payment to be made before an agreement could be dissolved. These initiatives increased the legal security of the agreement since they made it disadvantageous for public authorities to prematurely dissolve these agreements.

It was during the period of state-controlled companies, in which some of these companies were also concessionaires, and when public authorities would assume the role of regulator and benefactor, that these contractual relationships deteriorated. This was the case with tariffs. In the case of state-controlled companies (concessionaires) these tariffs ended up experiencing fluctuations due to government policies, they were also re-elaborated year-in/year-out without abiding by any contractual regulations. The new law reinstated the value of the agreement, and made it mandatory for the public to bid for all concessions, forecasting the tariffs that would be set forth in these agreements.

Law 8987/95 regulates what we understand as regular concession, i.e., the kind that is entirely maintained by tariffs charged to the final users. This law allowed the process of privatization that had begun during the Fernando Collor Administration to acquire a solid legislative foundation based on consistent legal experiences. Since its inception, this law has been used as a reference tool for the judgment of related lawsuits.

A law was elaborated in 2004 to complement Law 8987/95, Law 11.079/2004, the creation of which I was responsible, inaugurated the concept of PPPs (in their strict sense), through the creation and the regulation of two new types of concession agreement. These agreements represent both sponsored and administrative concessions for executing long-term agreements between public

<sup>1</sup> The name derives from the electric power matrix adopted in Brazil, which prioritized hydro-electric power.

<sup>2</sup> It is important to mention that, even though taking over became possible pursuant to law (or pursuant to the text of the agreements) in the case of several sectors no generalized practice took place in Brazil which would allow the State to retract services that had been granted in the form of concessions.



38 authorities and private initiative. According to Brazilian Law, the concept of a PPP therefore refers to both types of agreement.

A sponsored concession means the concession of a public service or the permission to exploit public works, meaning that, besides the tariffs paid by its users; any additional payments will be made by said public authorities. This arrangement applies in cases where the tariffs charged to the users are not enough to offset the investments made by the private partner. However, in the case of the administrative concession the tariffs are fully borne by public authorities and are applied to services for which the State would ordinarily be responsible, such as health, education or public safety, as well as strategic areas involving massive investments in public infrastructure, the management of which is extremely complex and requires in-depth technical knowledge. The logic governing these agreements is the same as that which governs regular concession agreements. The difference here is that the tariff is paid by the State rather than by the final user.

Historically speaking, there was a great deal of difference between administrative concessions and other agreements used by public authorities to create a basic-level infrastructure, which involved the engagement of private initiative. So before, the State would open up separate public bids to contract the design of schools, carry out public works and buy materials, on top of holding official public service exams to hire professionals through a highly complex operational process, while simultaneously managing several agreements. Whereas now, the administrative concession allows this enormous combination of operations to be brought together under one single agreement. This means that the public authorities are able to transfer part of the risk of creating an undertaking, of price fluctuations and of the obsolescence of the services to private parties.

From the early 1990s Brazil witnessed the appearance and renovation of a wide variety of sectorial laws. These laws were intended to regulate in closer detail the application of models intended for use in more specific sectors, as well as to deal with their finer intricacies.

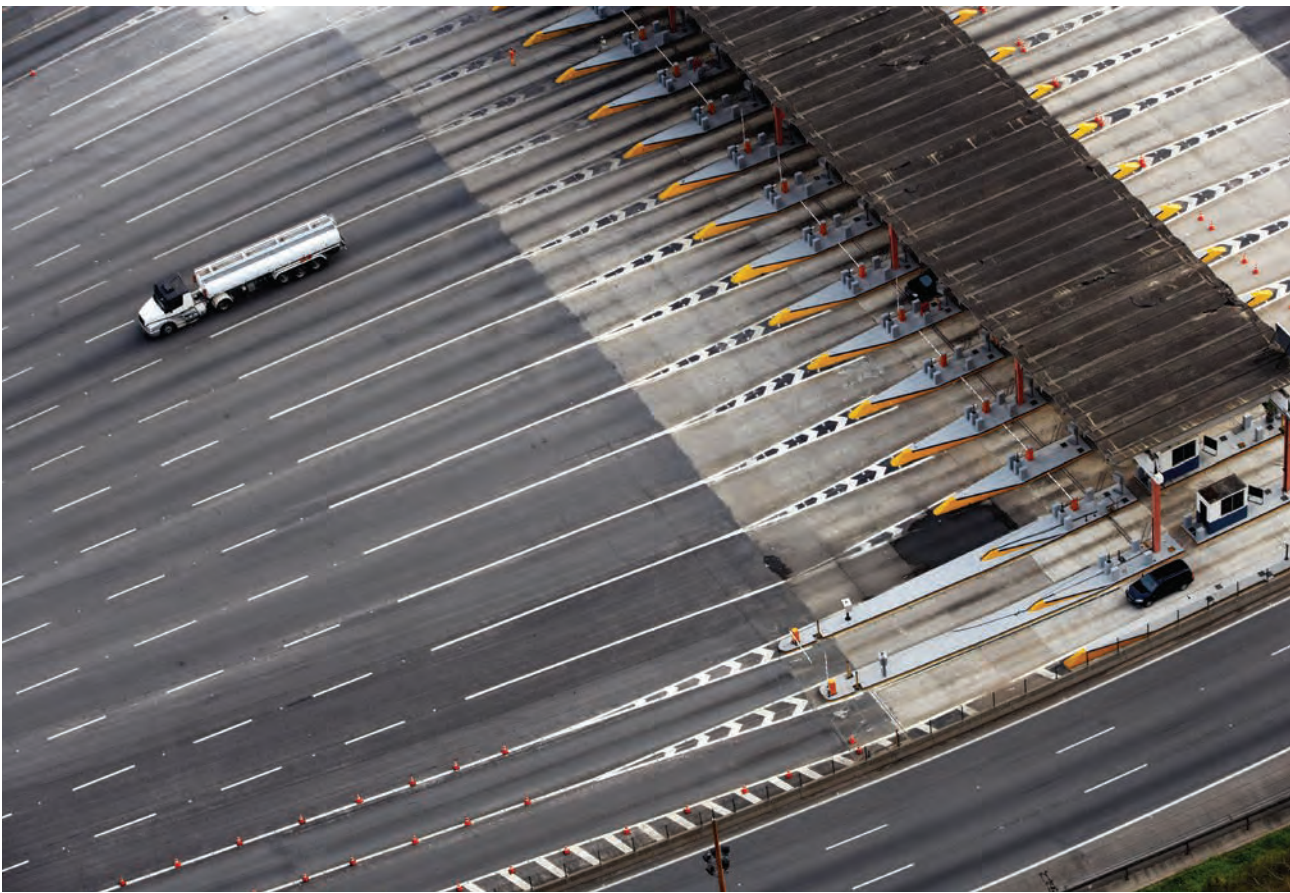
The Brazilian legislation is therefore quite specific. It not only deals with questions that are explicitly agreement-related, but it also regulates, disciplines, organizes and forms the structure of several sectors from an institutional perspective. It has created independent regulatory agencies precisely for this purpose, and has assigned them with the task of establishing regulatory rules and of handling the execution of these agreements.

FINAL CONSIDERATIONS

Public-private partnerships offer just as many advantages for public authorities as they do for private initiative. As far as the government is concerned, they offer the possibility of quickly expanding infrastructure, irrespective of any previous collection of taxes. Moreover, they offer tremendous savings in long-term costs thanks to the efficiency of the agreements.

As far as the private sector is concerned, it gains new business opportunities. The concession models are forcing a rearrangement of the private sector, which is restructuring itself in new types of corporate organization. If in the past, large construction companies used to be those responsible for undertaking the implementation of public infrastructure through construction contracts, then these same companies have now been transformed into concessionaires with the ability to develop a new style of relationship with all the players involved.

Even though the Brazilian experience regarding this sector is both complex and sophisticated, there are still many opportunities to be exploited. The individual states and their municipalities have been applying the new concession mechanisms in the areas for which they are responsible, such as basic education, health and security. The big challenge lies in assembling projects that would be able to account for all of the stages necessary to accomplish the transfer of capital, as well as its sub sequential management. It should be highlighted that in this process, technical quality is the most essential ingredient for the project to be truly successful.







article

# LOGISTICS AND INFRASTRUCTURE IN BRAZIL

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## ABSTRACT

In recent decades, we have witnessed an increase in competitiveness which has made markets more dynamic and globalized. In his article, Manoel Reis writes about Brazil's current position in this new competitive scenario, our weaknesses in the area of transportation, and the consequences of such bottlenecks. He comments on the two editions of the Growth Acceleration Program - GAP and GAP 2 (Programa de Aceleração de Crescimento - PAC e PAC2) and the National Plan of Logistics and Transport - NPLT (Plano Nacional de Logística e Transporte - PNLT), developed by the Ministry of Transport. Finally, the author highlights perspectives and suggestions so that we can address our logistical infrastructure weaknesses.



OVERVIEW

Up through the 1960s, the uncertainties of the market were less intense thanks to longer product life cycles and lower competition. In this environment, it made sense to pursue excellence in business through efficient management of isolated activities such as purchases, transport, storage, production, material handling and distribution.

From the 1970s onward, business became increasingly competitive, and as a result of the increased supply of goods and services, which gradually, surpassed demand, making markets more dynamic and globalized and bringing about a variety of consequences, chief among them the shortening of product life cycles. In this context of extreme competition, customers have become increasingly more informed and demanding, a fact that in recent years has led to a focus on the integrated management of the activities that make up the chain of supply, both internally within companies and in the relationship between members of the extended supply chain. The great similarity among products from different suppliers (which reflects a certain commoditization) has made it necessary to establish a competitive differentiation between them. The two most important factors in this differentiation are the reduction of costs and the aggregation of value, especially intangible value which is not intrinsically associated with the goods but that is offered along with them, such as availability, service, and customer service, to name a few.

Logistics is the part of supply chain management responsible for managing the flow of materials and corresponding information along the chain; its principal goal is to efficiently and effectively provide materials and products where they are needed and to deliver the finished products to respond to demand.

Logistics is, therefore, essential in contributing to the intangible value of goods, rationalizing operations and consequently reducing their costs and for enhancing the differentiation and competitiveness of both companies and countries.

THE CURRENT STATE OF BRAZIL'S LOGISTICS INFRASTRUCTURE

In Brazil, the changes mentioned above began to occur at a significant rate in the early 1990s with the opening up of trade, which greatly increased competition for Brazilian companies which, until then, were accustomed to the protectionism of the state.

At a time when, due to the onslaught of international competition, conditions in the country demanded the development of a suitable logistics infrastructure. Brazilian competitiveness is complicated by the poor situation of its logistics infrastructure, a fact that is common knowledge and has been the aim of government initiatives. However, until now little has changed, making the problem even worse. There has been great ineptitude in planning and in particular, in the accomplishment of infrastructure projects, which have been taking far too long, causing increases in costs and consistently preventing compliance with the established timetables.

As shown in Graph 1, in 1975, Brazilian investments in logistics infrastructure represented about 1.8 % of GDP. However, this percentage has dropped over the years and stabilized at around 0.2% of GDP between 1990 and 2004. From 2004 onwards, investments increased, reaching about 0.65% of GDP in 2011.

Brazil is the fifth largest country in the world in terms of geographical territory --behind Russia, Canada, China and the United States – and has a strong edge in the production and export of agricultural and minerals commodities. Within this context, the need for the lowest possible cost of modals, such as waterways and railway, becomes clear, for the long distance handling of these charges and to put intermodality into practice. However, modal distribution has a strong concentration in the road modals, with: 61% in transport production; 21% in the railroad modal; about 1% in the fluvial modal; 13% in the maritime modal in the cabotage; and the remaining 4% in the pipeline and air modals. Compared to the transport matrices in other

GRAPH 1  
INVESTMENT OF THE MINISTRY OF TRANSPORT IN LOGISTICS INFRASTRUCTURE BETWEEN 1975 AND 2010 (AS A PERCENTAGE OF GDP)



SOURCE: PNLT - NATIONAL PLAN OF LOGISTICS AND TRANSPORT, 2011 (NPLT)

major countries, which have considerably greater participation in rail and fluvial modals, Brazil's distribution is considered inadequate, leading to exorbitant costs and considerable increases in transit times, a burden that diminishes the country's competitiveness.

Low investments in infrastructure have created bottlenecks in all transport modes, as follows:

HIGHWAYS

- Insufficient levels of conservation and restoration
- Insufficient capacity of the mesh in developed regions
- Inadequate coverage in the developing regions

RAILROADS

- Extension and insufficient coverage of the mesh in the national territory
- Excessive quantity of passages in level

- Lack of contours in urban areas
- Invasions of the official land strip

PORTS

- Limitations to sea access
- Restrictions on land access (road and rail)
- Poor retro areas and cradles
- An outdated model of management of port administration

WATERWAYS

- Navigation restrictions due to the lack of locks
- Restrictions of vessels laden draught
- Poor signaling and beaconing

MAIN EFFECTS OF BOTTLENECKS:

- High logistical costs
- Inappropriate transport matrix considering what should be Brazil's competitive advantage in the production and export of commodities



- Critical shortage of railroads, and of their integration with two gauge alternatives
- Impossibility of intermodality practice in most of the national territory
- Difficulty in accessing land and sea ports
- Navigability of rivers obstructed by the lack of dams
- Lack of pipelines for the transport of ethanol
- Low use of cabotage which has great potential due to a national coastline extending about 8,000 km

So the country faces a huge challenge to achieve a level of competitiveness compatible with the current world market. In 2007 the Federal Government launched the Growth Acceleration Program - GAP (Programa de Aceleração do Crescimento - PAC). to refocus on planning and execution of major works of social, urban, logistics and energy infrastructure in the country, and to contribute to its accelerated and sustainable development.

In 2010, the second phase of the Growth Acceleration Program - GAP 2 (Programa de Aceleração do Crescimento - PAC2), was launched. This program incorporates works in the social and urban areas, bringing more resources to continue building the logistics and energy infrastructure to sustain the country’s growth.

In reality, the outcomes of the two editions of the GAP were insufficient, as only a small fraction of the proposed projects have been implemented.

BOX 1  
LOGISTICAL GOALS OF CAP

- REDUCTION IN LOGISTICS COSTS, TRAVEL TIMES AND INVENTORIES
- PROMOTION OF INTERMODAL INTEGRATION, GEOGRAPHICALLY WIDER AND GREATER INTEGRATION OF BRAZIL WITH NEIGHBORING COUNTRIES
- CREATION OF CONDITIONS FOR THE DEVELOPMENT OF THE REGIONS, WITH ECONOMIC AND SOCIAL INDICATORS BELOW THE NATIONAL AVERAGE
- PREFERENCE FOR INVESTMENTS IN RAIL AND RIVER TRANSPORT

FUTURE PROSPECTS

Another indicator that illustrates the problems associated with the lag in Brazilian logistics infrastructure is the LPI (Logistics Performance Index) of the World Bank. This logistics performance index of countries, whose maximum value is 5, reflects the perception of the logistics of a country based on its efficiency in releasing processes at customs, the quality of trade and transportation infrastructure, the ability in obtaining competitive values of freight, quality of logistics services, efficiency in tracking and monitoring consignments, and the punctuality of deliveries.

Table 1 shows the LPI for a group of countries for the years 2010-2012 and illustrates the problem in Brazil, which saw its index fall from 3.20 to 3.13 during this period, falling from 41st to 45th place, representing the biggest drop in the rankings for any of the countries measured.

The Plano Nacional de Logística e Transporte - PNLT, (National Plan of Logistics and Transport -NPLT), considered to be a plan of the state, has been developed and overseen by the Ministry of Transport over the past decade and proposes a set of projects for transport infrastructure that aim to provide a solution to the logistics infrastructure problems currently facing Brazil.

The PNLT foresees a significant change in the transport matrix by the year 2025, making it more

TABLE 1  
RATES FOR THE LOGISTICS PERFORMANCE INDEX (LPI) OF THE WORLD BANK FOR VARIOUS COUNTRIES BETWEEN 2010 AND 2012

COUNTRY	2010		2012	
	RATE	RANK	RATE	RANK
CANADA	3.87	14	3.85	14
USA	3.86	15	3.93	9
AUSTRALIA	3.84	18	3.73	18
CHINA	3.49	27	3.52	26
SOUTH AFRICA	3.46	28	3.67	23
BRAZIL	3.20	41	3.13	45
INDIA	3.12	47	3.08	46
RUSSIA	2.61	94	2.58	95
ARGENTINA	3.10	48	3.05	49
CHILE	3.09	49	3.17	39
MEXICO	3.05	50	3.06	47

SOURCE: WORLD BANK

- balanced and duplicating the production of cargo transport by rail, with the following consequences:
- a 38% increase in energy efficiency
  - a 41% reduction in fuel consumption
  - a 32% reduction in CO2 emissions
  - a 39% reduction in Nox emissions

Some parts of PNLT were incorporated in both editions of the PAC but, as previously mentioned, the results were quite inadequate. In August 2012, the federal government launched a program of investment of R\$ 133 billion, stipulating investments of R\$ 91 billion in railroads and R\$ 42 billion in highways. The program was very well received, especially because it corresponds to the concessions for the private sector, and in the case of railroads, through Public Private Partnerships (PPPs). However, there is a history of incompetence in the

management of programs this size, which is very serious. The government is committed to proposals which might define the beginning of a solution for Brazil to these critical infrastructure issues.

Although this program, which is focused on railroads and highways, has been launched only recently, and still needs more clarification from the government, the foreseen railway deployments seem to align only partially with the PNLT, which was developed in a systematic and orderly manner over several years.

The inefficiency of the Brazilian logistics infrastructure may be about to change through a consistent and sustainable process. To achieve this, we must rely on increasingly competent and professional management.



*article*

# THE FEDERAL ACCOUNTING COURT'S OVERSIGHT OF THE CONCESSION OF PUBLIC SERVICES

JOSÉ MUCIO

*José Múcio*

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MINISTER OF THE BRAZILIAN  
COURT OF AUDIT (TCU)

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## ABSTRACT

At the federal level, external oversight is the monitoring exercised by the National Congress of the acts and activities of public administration. It is the quintessential public control of state activities, exercised by functionally independent bodies. As Brazilian urbanization has increased in recent years, the possibilities for the provision of public services by private entities have increased as a result. In his article, José Mucio writes about that increase, stressing the importance of the Court's oversight of concession contracts and how they must always respond to the interests of society. The author concludes by emphasizing the importance of awareness regarding administrative rationality, procedural economy and reasonability.



48 Accounting Courts are a necessary part of the modern political-constitutional system, which cannot cope without autonomous, dominant agencies with pre-established oversight functions which are not subject to political interference or subordinate to governing authorities.

Within this context, external monitoring institutions take the position of independent agencies with regards to the Brazilian legal system, originating from the Constitution and representing the powers of the state, which function according to special, regimented norms. Accordingly, they must be placed at the top of the governmental pyramid without any hierarchical or functional subordination. In other words, they are functionally independent bodies, and their members (justices in the case of the Brazilian Court of Audit - TCU - or counselors in the case of state or municipal Courts of Audits) form part of the ‘political agents’ category, which should not be confused with the public servants employed by the respective institutions, which are ‘administrative agents’.

In the federal sphere, external oversight is the supervision exercised by National Congress over the actions and activities of the public administration, intended to make sure that these acts do not deviate from any norms that may be in effect, from any reasonable and efficient management standards, from the parsimonious handling of budgetary funds, or from public interest. This oversight includes accounting, financial, budgetary, operational and asset inspections, examining them with regard to lawfulness, legitimacy, efficiency, grant investments, and waivers of income.

This represents quintessential political oversight of the state’s activities, exercised by the legislative branch with the intention of vouching for the integrity of the acts of the administration in terms of regulation of money expenditure and the use of public goods, valuables and money, as well as the reliable fulfillment of budgetary laws. To that effect, the legislative branch’s external oversight relies on the support of the Federal Union’s Courts of Accounts, as stated in Article 70 of the 1988 Federal Constitution (CF/1988).

In recent years, Brazil has become a primarily urban country, and the sixth largest economy in the

world. At the same time, enormous investments have been made in infrastructure to prepare the country for imminent world events that will be hosted in Brazil, such as the 2014 Soccer World Cup and the 2016 Olympic Games. This process was preceded by a policy of privatizations and of public service concessions. A new model, which was established by these constitutional changes, led to the reworking of the management of the Brazilian state. The possibility that private entities would be granted the power of providing public services was increased, very often within a competitive atmosphere, with an emphasis on new state-controlled entities created to regulate the provision of these services which, until then, had been largely under the control of state monopolies.

The significant reforms within the infrastructure sectors in Brazil, which were intensified during the 1990s, were largely a result of the downsizing of direct state intervention in the provision of public services due either to a withdrawal of state intervention or an increase in private entity participation in areas that used to be dominated by state monopolies.

Privatization and the delegation of public service provision (the transfer of responsibility to provide public services to third parties without also transferring the ownership of said services – to concessionaires, for instance) were the instruments used to implement this strategy. Among the many justifications for the changes to this model, one should highlight the ones associated with the lack of public funds to finance the maintenance and expansion of these services, including ones with an ideological-economic basis, founded on the not always unanimously held belief that private initiative would be more efficient at managing public services from an operational point of view.

The TCU redacted the regulatory instructions of a specific regulation, in order to monitor and oversee it in advance as well as to facilitate the process of granting permission to use federal highways. It performed this in concordance with the aforementioned changes, making use of its jurisdiction and legal prerogatives as set forth in its Organic Law in the 1988 Federal Constitution, and more specifically under the law that granted the Court of Accounts the power to examine the privatization processes enumerated in the National Privatization

Program (Programa Nacional de Desestatização - PND), which also included those related to public services that are subject to concessions, permits or authorizations.

One cannot deny the importance of public policy in granting concessions to use highways in Brazil, a country famed for its traffic accidents. The National Department of Transportation Infrastructure (Departamento Nacional de Infraestrutura em Transportes - DNIT)<sup>1</sup> has stated that three measures need to be taken to mitigate this serious national problem: “education, in the sense of teaching users about the adequate and safe ways of using public highways; law enforcement, especially with regard to traffic rules; and engineering, in the sense of providing a road system with elements that allow both vehicles and people to move easily, comfortably and safely, and also an improvement in the safety and performance of motor-driven vehicles. The process of granting concessions to highways is addressed by this last measure.

Undoubtedly, the costs arising from traffic accidents (such as medical care) are mostly borne by the state and exceed the costs that the users of the highways under concession will be expected to bear in tariffs.

49 This is to say nothing of the incalculable personal costs resulting from the loss of lives.

Highway concession policies alone may be unable to solve the problem, but at the very least they represent a firm step towards its mitigation and can therefore be considered of relevant public interest.

Furthermore, the logic underlying the delegation of public services to private parties is right on the mark, pursuant to which the state, making use of the concessions regime, seeks to provide better quality services and divide up the risks involved to relieve itself from some of its obligations so that it may have more resources available for other essential activities. Concession is granted by the public authority by way of public bids to legal entities or to company consortiums that have proven their ability to perform tasks at their own cost and risk and within a finite period of time.

As a result of this, and also of the enormous monetary resources involved in concessions (amounting to billions of reais), the strictest regulations need to be followed.

In addition to the rules set forth by the TCU, ANTT must also follow the rules set forth in the National



<sup>1</sup> (<http://www.dnit.gov.br/rodovias/operacoes-rodoviaras/estatisticas-de-acidentes>)

Privatization Program and the laws that make provisions regarding: the concessions regime and the permits for providing public services; the restructuring of the waterway and overland transportation system; and concessions and permits for providing public services, bidding procedures and agreements. This should not, however, harm the Administration nor the objectives that guide the concession process.

The diversity and complexity of the new national reality have led the Federal Union’s Court of Accounts to monitor the precision, lawfulness and efficiency of the processes of privatization and of the granting of public services, as well as to supervise the correct execution of these concession agreements and the very actions of regulatory agencies which made the need to recruit and train teams of highly specialized technical auditors evident.

The review carried out by the Justices of the Court of Accounts was preceded by technical reports, which are based on very detailed audits carried out by two technical units, both of which were created specifically to provide subsidies to the Court (Inspection and Privatization Offices 1 and 2) and whose expertise lies in the supervising of the privatization and regulation activities for the following areas: the provision of services for and the use of overland, waterway and air transportation infrastructures; dry docks; supplementary health; electricity generation, transmission and distribution; the exploitation, production, refining, transportation and distribution of petroleum and its infrastructure; the exploitation and transportation of natural gas and biofuels; telecommunications services provided by public and private regimes; the use of radiofrequencies; and the use of satellites as well as of postal services.

The initiative taken by the TCU to create specialized technical units and to train its auditors has been achieving significant results. For instance, if we add together the specific deliberations requesting measures from agencies and entities that represent significant financial gains for both the Administration and for individual citizens, especially those which lead to convictions and the subsequent levying of fines, we arrive at the amount of R\$ 482,887,322.80 for the first quarter of 2012. The total financial

benefits obtained from oversight measures was 1.55 times greater than the cost of the TCU operations themselves in that period, which came to a total of R\$ 310,007,515.23. So, on average, each real spent by the TCU in this quarter had a return of R\$1.55 for Brazilian society.

Citizens’ interests must be always considered when public services are being offered. Concession agreements must preserve their primary interests, which must take priority over the pecuniary (secondary) interests of the state as well as over the interests of the provider of these services. These primary interests must also be the primary objectives of public agents, of those that act on behalf of the executory agencies as well as those that act as supervisors, especially when we consider that liberalization, deregulation and privatization do not always result in direct benefits for all sections of the population.

At any rate, concession agreements should always aim to meet public needs. The objective of the contracted party is to gain profits, which are obtained through remuneration as stated in the financial and economic clauses of the agreement. The guarantee that the public is of primary interest with regards to a concession ensures the continuity and efficiency of the services being provided, without users being forced to foot the bill for exorbitant profits.

Therefore, the TCU must focus its concerns on guaranteeing the legal principle of ensuring reasonable tariffs as well as the quality of the public services being provided.

By following this line of thinking, and in an attempt to prevent the execution of agreements that would prove too cumbersome for the users of concession services, the Court of Accounts ordered the National Overland Transportation Agency (ANTT, or Agência Nacional de Transportes Terrestres) to include a section forbidding the periodic review of tariffs in order to transfer the gains obtained as a result of productivity and technical efficiency, as well as any extraordinary increase or downsizing of costs and/or the expenses of the concessionaire or any changes that may have taken place regarding business opportunity costs. This was part of a decision made in 2008 which discussed the concession of Highways BR 324/BA and BR 116/BA.

As well as the aforementioned decision taken in 2008, the TCU delivered other measures intended to guarantee fair tariffs, as well as to ensure the quality provision of public services. This being the case, the following orders were issued: to adjust the procedures adopted for the review of electric power distribution tariffs; to have the granting agency remove the control booths that had been unlawfully installed on toll roads; and to make exempt any tolls on federal highways that had been placed under concession so as to disregard the effect of the taxes unlawfully calculated by those benefitting from these concessions.

Recently, Anatel took strict measures against cell phone operators (suspending the sale of new lines) in order to protect potential customers from poor-quality service. In 2009, TCU carried out an operational audit to evaluate the performance of this regulatory agency as part of its monitoring of the quality of the telephone services being provided. It identified, and informed Anatel of, gaps in regulations, weaknesses in inspection processes, and a lack of effectiveness in the sanctions being applied, among other findings. After taking the above into account, one should point out that various actions were adopted by the agency, such as new sanction regulations and new supervisory regulations, together with the use of online tools for supervising the service providers while at the same time preserving communication confidentiality. Other actions included finding alternative penalties besides fines, in order to incentivize the accomplishment of quality goals which had been the main reason for the suspension of the sale of new lines by some operators.

Therefore, it is a fact that on top of achieving financial gains and greater administrative efficiency, the contribution of the TCU towards the regulatory process also achieved other benefits, which, while intangible, are no less important. These benefits were achieved in the sense that, as well as evaluating the actions of the agencies, the TCU also encouraged the transparency and exercise of civil rights by more weakened social groups.

Moreover, by monitoring the delegation of public services, together with the execution of agreements, and by attempting to contribute towards the provision of adequate services, the Court of Accounts

has ordered the regulatory agents responsible to carry out fully comprehensive viability studies capable of providing detailed descriptions of their investments.

The inspections carried out by the TCU on regulatory agencies comply with the commands of the Magna Charta, which gives it the powers necessary to carry out operational audits, the objective of which are to determine whether the results obtained are in compliance with the objectives of the agency or entity being inspected. According to their findings, the TCU must determine whether these entities are operating in an efficient manner by examining their actions with regard to economy, efficiency and effectiveness, and through this to determine whether the objectives of the agencies are being achieved, which involves evaluating the accomplishments of their regulatory and inspection-related mission. The Court of Accounts must carry out its constitutional mission to supervise all regulatory agencies with regard to all their areas of operation, carrying out audits that seek to determine whether these entities are accomplishing their institutional objectives, one of which is the inspection of how public services are being provided.

However, the TCU have not been granted the power to superimpose the regulatory roles of these quasi-governmental companies. In view of the prevalence of so-called primary and secondary interests, it would not be appropriate for these supervisory agencies to order the shutdown of the concession processes as a result of any impropriety or other formal failing, especially considering that these agencies have the power to take remedial measures during the course of the proceedings.

I will conclude this text by stressing the need for both the managing agency and the inspection agencies to remain attentive not only with regard to regulatory principles, but also to the principles of administrative rationality, of procedural economy and of reasonability. This is necessary to ensure that the decisions made by the agents and by institutions to resolve disputes are guided by good sense, prudence, and moderation as well as by adequate and coherent attitudes that take into account the proportionality between the means employed and the purpose to be attained, as well as any objective circumstances that involve administrative acts and procedures.





article

# PROVIDING INFRASTRUCTURE: THE MARATHON OF CHALLENGES FACING BRAZILIAN MUNICIPALITIES

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## ABSTRACT

In this article, Luiz Gustavo Barbosa writes about the demands and challenges of Brazil's states and municipalities with regard to their infrastructure. Even though the Brazilian federative pact provides administrative autonomy for its entities, the reality of municipal public administrations combined with their financial dependence on the federal government become real barriers for the effective implementation of investments in the sector. Some initiatives, however, tend to overcome barriers in the processes of capturing, managing and implementing resources intended for urban and social developments in the municipalities, such as the Excellence Arrangement for the management of investments, a partnership with Petrobras, FGV, Caixa and the Ministry of Cities that offers various forms of technical support to strengthen and ensure the autonomy of municipalities under their areas of influence.



In spite of the federal pact regarding the administrative autonomy of its entities (including municipalities), the realities being faced by municipal public administrations, combined with their financial dependence on the Federal Union, have turned into veritable shackles regarding effective investments in infrastructure. Irrespective of their regional location, most Brazilian municipalities suffer from structural deficiencies, which are aggravated by constant changes in management, often making it very difficult to obtain federal funds and consequentially to provide the necessary infrastructure. Combine a complex technical, bureaucratic and administrative framework with this fact and we have a situation which causes delays and raises difficulties in executing important projects for local development.

With the objective of encouraging investments in infrastructure within the country, and in order to overcome the ever increasing deficit that has arisen over the last decades, the Federal Administration created a Growth Acceleration Program (Programa de Aceleração do Crescimento – PAC). Through this program, the Federal Administration hoped to make investments throughout the entire country, counting on the participation of municipalities to execute the projects. In order to achieve this, it simplified the process of raising funds under the rubric of PAC, which made it mandatory to transfer funds to the municipalities and to the states, allowing funds to flow and investments to be effectively executed. This has been an important initiative in allowing public managers

to implement infrastructure projects in areas such as energy, basic sanitation, transportation and mobility. In the case of urban dwellings, a program that stands out is My Home, My Life (Minha Casa, Minha Vida), which changes the system of transferring funds to the municipalities.

Recently disclosed data from the Ministry of Planning have shown that the program still has a lot to contribute towards the execution of infrastructure works in the municipalities. The Federal Administration forecasts the release of R\$ 955 billion for PAC2 related projects alone up until 2014. In 2011, R\$204.4 billion of this total amount was invested, equating to approximately 21% of the total expenditure forecast up until 2014.

However, it is possible to observe a hiatus between the demand of Brazilian cities for structural investments and the sum of the funds made available by federal sources and specific lines of funding. This hiatus occurs during the fund raising process used by the municipalities, and from the expectations of both the government and the population. Even when sufficient funds are available to execute infrastructure projects, these public administrations effectively lack technical capital in their own trained public servants, meaning they are forced to cope with limitations in accessing essential information on the processes, requirements and specifications of Federal programs. For this reason they are unable to comply with even the most basic requirements stated by the PAC program: the submission of a

work and project plan. These difficulties extend to all stages of the fund-raising process and in their subsequent management, including the monitoring of the timeframes for making claims and rendering accounts, confirmation of documents, and organization and preparation of monitoring reports (among other items).

In other words, the federal viability of providing transportation and mobility, dwellings and health equipment to the different municipalities is directly associated with their capacity to negotiate agreements that revolve around these programs as well as technical stumbling blocks. In practice, these deadlocks reflect their ability to raise funds, and therefore to have future access to most of the available funds.

The limitations being faced by municipalities in the performance of structure-related projects arise from the fear of municipal managers directing the few resources available to them to elaborate projects, without first obtaining support guarantees from Federal counterparts, or from outside sources of investment. If one considers this state of affairs, it becomes clear that any chance of even catching a glimpse of the finish line in this “marathon of raising and executing funds” is still a distant reality for municipal managers.

Nonetheless, some initiatives have been taken to minimize these stumbling blocks when it comes to raising, managing and executing funds intended for the urban and social development of the

municipalities. Within this context, one highlight is the Investments Management Excellence Covenant (Convênio Excelência na Gestão de Investimentos) which is a movement sponsored by Petrobras in order to provide the municipalities located within the vicinity of its new ventures with the necessary technical support and training to execute structural projects.

Within the context of the Covenant - an initiative carried out in partnership with Caixa, the Ministry of Cities and FGV Foundation - it offers project conception studies, technical support for management consultants and training intended to improve municipal processes in order to raise funds. An integrated, computerized management system is going to be offered to the municipalities as a new tool, which will help municipal technicians to monitor claims and procedures for fund-raising in areas such as infrastructure, social development and management. All actions are directed towards the strengthening and the autonomy of the municipal team.

Projects such as this tend to leave a positive legacy within the chosen municipalities, in that they reaffirm the prerogatives of the Brazilian Federative Pact, reinforcing and qualifying the role of the municipality in working in partnership with the Federal Government. After all, municipal managers play a decisive role in providing the adequate urban infrastructure needed for local development, as well as quality public services.





article

# CIVIL CONSTRUCTION: A PERFORMANCE ANALYSIS

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## ABSTRACT

In this article, Ana Maria Castelo writes about the growth of the civil construction sector in recent years. Household consumption and investment have been key to coping with the crisis that occurred in 2009, a year of economic stagnation when the construction sector grew by 8.3 %. A poll carried out by FGV shows that even though the sector's performance has been exceptional over the past two years, it will grow at a slower pace over the next three months. Despite the slowdown, the majority of entrepreneurs believe the sector is stabilizing.



Besides family consumption, investment is the demand component that has assured significant growth rates for the economy. Investment in construction was a determining factor when facing the effects of the 2009 crisis. In a year when the economy as a whole was essentially stagnant, the GDP for the sector posted real gains of 8.3%<sup>1</sup>. This expansion was boosted by the activity of construction companies who posted a growth rate of 18.5%, and who were responsible for the hiring of over 230 thousand officially registered construction workers.

On the other hand, the performance achieved by the sector reflects decisions that had been taken many months previous to the crisis, and this performance is currently slowing down. In the second quarter of this year, construction companies created only 70.7 thousand job positions, which is a drop of almost 40% in comparison with 2011. Regarding building construction, the downturn was even greater – close to 70%. Even so, during the first semester of 2012, the number of employed people in the entire country rose to 3.368 million, an increase of 7.5% when compared with the same period in 2011.

A survey of the construction activity carried out by FGV indicates that over the coming three months the sector is expected to work at a slower pace. As of April, FGV’s Construction Confidence Index (Índice de Confiança da Construção) – ICST, posted a loss in comparison with the same period of the previous year. In July the Quarterly Indicator<sup>2</sup> reached 9.9%, the worst result since November 2011 (-10.2%). This deterioration of confidence reflects both increasingly negative future prospects for businessmen – during the quarter ending in July, the Expectations Index (Índice de Expectativas) - IE-CST fell by 9.2% – and the less positive estimations for the current picture. In this same comparison, the Current Status Index (Índice da Situação Atual) also dropped by 10.6%.

In July, the confidence shown by construction entrepreneurs regarding all segments of activity was lower than that shown in 2011, and one should stress that there was a deterioration in the ICST for the building construction segment, which dropped from -5.8% in March to -8.6% in July.

This current slowdown has contributed to the aggravation of one of the key problems being faced by companies: a construction survey showed that the percentage of building construction companies reporting a “lack of qualified labour” as a limiting factor for business improvements had dropped by 9.5 percentage points in comparison with July, 2011. Nonetheless, a lack of qualified labour continues to be placed at the top of the list of sectorial concerns, being pointed out by 42.5% of the companies as being their greatest limitation. As of 2009, agreements regarding salary raises have assured increases higher than those shown by consumer price indexes, and despite the drop in the employment growth rate, the cost of labour (as a limiting factor) has increased over the last 12 months.

As a result of the slowdown, the difficulty of finding people to work lost its importance, while “competition within the sector itself” rose by 10.5 points from July, 2011.

In light of these recent figures, the question that has been gaining importance is whether this recent slowdown, especially with regard to the building construction sector, signifies a change in the growth landscape over the last few years. However, it should be noted that even in face of a lower volume of business, demand concerns have only affected 7% of companies involved in the building construction business, with these concerns having grown by less than 3 points in 12 months. Moreover, even though companies’ prospects regarding their business development is at a lower level than last year, 43% of the companies continue to believe that the trend points toward improvement, while only 4.7% believe that things may get worse. The point here is that a feeling of stability was reported by over 50% of the companies. With regards to new recruitments, the picture is the same: 40.9% of companies believe that employment levels will rise, whereas only 8.7% believe that they will drop, and 50.4% believe that employment levels will remain stable.

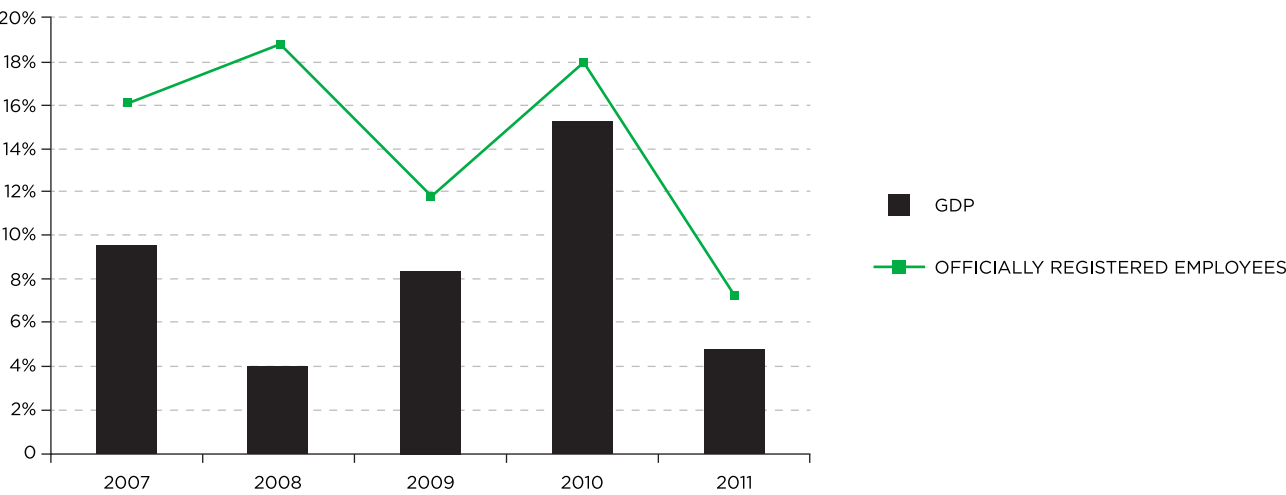
It is a fact that the recent and exceptional performance of the sector placed it at a much higher level than that of the manufacturing industry, which allows one to interpret the results

that were obtained during the second quarter as an adjustment to these new circumstances. Financial pressures and a lack of qualified labour have caused delays in the completion of buildings, which have been counteracted by the downsizing of new launches in several Brazilian cities.

After over 20 years of a performance that fell much below the needs of Brazilian families, investments in home construction reappeared in the dynamics of the economy. There were many years of reduced credit for the middle class and scarce resources

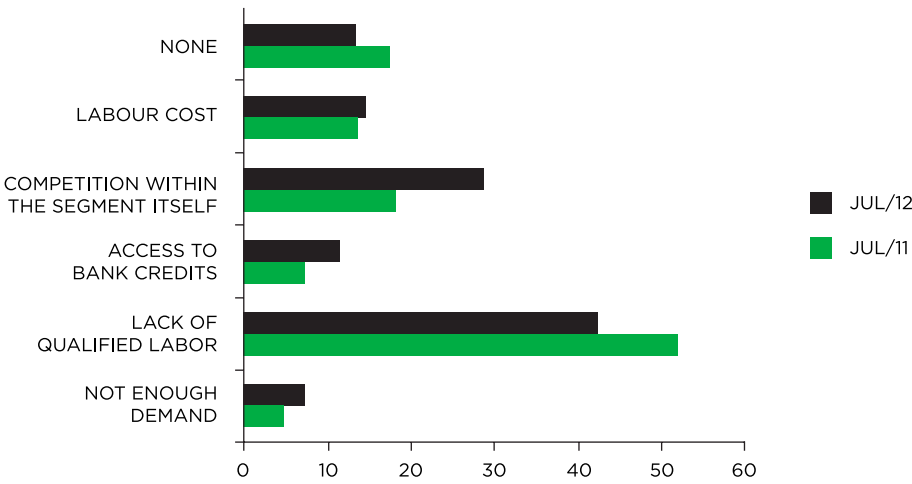
for low income families. There is still a lot to do: the housing deficit is in excess of 5 million units and the infrastructure demands are high, which means that the sector should once again grow more vigorously, although it is not likely that it will reproduce the two-digit growth rates achieved in 2010. At any rate, the feeling of the companies is that this recuperation will not happen over the next coming months, and that therefore the contribution of the construction industry to the growth of the economy in 2012 will be positive, but less than that recorded in 2009 and in 2010.

GRAPH 1  
GROWTH RATES IN CONSTRUCTION



SOURCE: AUTHOR

GRAPH 2  
FACTORS LIMITING BUSINESS IMPROVEMENT IN THE CONSTRUCTION SEGMENT



SOURCE: CONSTRUCTION SURVEY/ FGV.

<sup>1</sup> The construction GDP was corrected by the INCC-DI Index.

<sup>2</sup> The Quarterly Indicator is understood as being the average of the confidence index for the quarter ending during the month of reference.





article

# NAVAL INFRASTRUCTURE: A NECESSARY ADVANCE

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## ABSTRACT

In 2008, Brazil and France signed an agreement for the construction of the first Brazilian nuclear submarine. In addition to its significance regarding national security, the submarine will be an important tool for the development of Brazil. In this article, Mauricio Costa writes about the partnership between the Brazilian Navy and FGV Projetos in developing the conformity analysis methodology for the planning and construction of the new yard, the naval base, and the factory of metallic alloys outlined in the Prosub, highlighting the importance of planning, predicting demand, and developing good projects, to ensure agility in the process.



29 Brazil has about 324,000 km<sup>2</sup> of coastal area and a sea area of approximately 3.5 million km<sup>2</sup>. It is estimated that a quarter of the Brazilian population lives in coastal area, representing a contingent of 42 million inhabitants. As a way to protect this territory, the Brazilian Navy has invested in the expansion of its naval force.

Currently, only five nations have a nuclear submarine: the United States, Russia, France, England, and China. Brazil will be soon become the sixth, which is important not only for security but also for economic development, especially regarding infrastructure.

Brazil recently discovered one of the largest oil reserves in the world. At the same time that this discovery represents an opportunity for Brazil, it poses the country with an enormous challenge as well since the reserve is located in very deep waters for which Brazil does not yet possess the type of technology needed to extract it. For this reason, Brazil is now committed to an effort that combines various technologies to develop this capacity and to discover different alternatives. The government, for its part, has been investing in new ports and deep water technologies, but until now it has lacked a nuclear submarine, which is needed to safety complete the extraction. In addition to representing a defense system, either for the vast area to be covered or for working at great depths, the project for developing a Brazilian nuclear submarine represents the only efficient way that Brazil found to patrol the coast.

In development for over 20 years, this project had previously focused on the construction of a nuclear reactor, even though this equipment was already available in Brazil. Then, in 2008, Brazil and France signed an agreement for the construction of the first Brazilian nuclear propulsion submarine, along with four more conventional submarines. The agreement led to the Program for Submarine Development (Prosub), which includes the building of a new shipyard and naval base in Sepetiba Bay, Itaguaí, and Rio de Janeiro.

The monitoring and supervision of the civil works and naval installations project has been overseen by the Department of Civil Works of the Brazilian Navy (DOCM), and FGV Projetos has been responsible for

the development and implementation of the Model of Conformity Analysis of Projects and advisory assistance of related activities. The model includes the preparation, financial administration and progress of these projects, the strategic monitoring of projects relating to contracts of the complex, and the qualification of DOCM technicians for implementation of the methodology.

The need for infrastructure to build these submarines has stimulated the implementation of three major projects, which have been carried out by FGV to support the Brazilian Navy. The first of these is a metal structures plant, which will be responsible for the manufacturing of the submarine cylinders, using special technology. The second project, in which Brazil has taken the lead, entails the construction of the Navy shipyard, which required Brazilian infrastructure to support it. There are now more than 135 buildings under construction, all of which are expected to be completed within years. Finally, the third great challenge is the construction of the naval base, the permanent home of the nuclear submarine and also of five other conventional submarines that are being built.

The benefits resulting from this infrastructure are not limited to the project itself, but will extend to surrounding areas. From a military perspective, one can say that the nuclear submarine is a weapon of vital importance because it allows the crew, under submerged conditions, to remain underwater without coming to the surface for up to five months

Due to the size of the project, it was not feasible to import labour. Instead, the Brazilian Navy is employing an entirely Brazilian labour force, including local labour, which means that it benefits the local population, commerce, and industries. The construction of the submarine itself is actually the final product; in the intermediary stages, Brazil needs to develop infrastructure projects, creating physical conditions for the civil construction in the development phase, and to train the local labour force, which the Navy and the city of Itaguaí have been doing through the building companies, training centers, and other bodies.

The immediate advantage of this is the possibility of involving the community in the project, ensuring

that the labour force directly and indirectly benefits since the success of all these structures depends upon the creation of new roads, schools, and other infrastructure. We can therefore see a direction connection between infrastructure projects and economic growth. In a recent seminar sponsored by the Ministry of Infrastructure Planning, it was stated that Brazil has been slow to develop infrastructure, which is demonstrated by the fact that many projects that are 25 years old are only now being put into practice. Therefore, there is a pressing need to form a portfolio of infrastructure projects if we want to see growth. With the World Cup and Olympics coming to Brazil in the next 2-4 years, the need to develop infrastructure is a great challenge for Brazil. But the greatest challenge found by the study led by FGV in the accomplishment of a project of this magnitude is to analyze all the environment, social, health and occupation impacts in such a short space of time. In addition to these limitations, the entire project must rigorously follow the norms of Contracting Law 8666 in light of the fact that it will involve the use of public resources, and therefore, they must be applied and monitored very carefully.

Likewise, a new methodology control has been developed which not only gives support to construction, but also ensures that the Navy has the power it needs vis-à-vis the approval of processes.

This methodology should allow for verification at any time and must also correspond 100% to what the Court of Auditors of the Union determines as a work properly controlled.

Our great challenge is to support a state-of-the project of unparalleled quality.

What we must bear in mind is that the support of this great infrastructure project will result in an extensive technological development for Brazil. The economic cycle of the new infrastructure is infinitely greater than of its building. If properly planned, implemented and monitored, it will have a permanent effect.

Under the schedule drawn up for the nuclear submarine, its development began in 2008 and was to be completed by 2020. We need to continue to plan and organize infrastructure projects so they are ready when they are needed and not wait until those needs are urgent. Brazil's efficiency will be related to the country's ability to predict and anticipate these needs so that Brazil can develop the infrastructure it needs to grow. The more responsive and accurate we are in this implementation, the better the results will be. If, on the contrary, we do not have the plans, projects, and foresight to anticipate the future, we will continue to suffer from problems such as those which currently plague our airports and roads.





*article*

# THE EVOLUTION AND CHALLENGES OF TELECOMMUNICATIONS IN BRAZIL

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## ABSTRACT

In his article, Marcio Couto presents an overall picture of the telecommunications infrastructure in Brazil. From the promulgation of the General Telecommunication Law which has brought about several changes in the sector to the advent of convergence of networks, the author give us an account of how the emergence of mobile telephony, new technologies and new actors in that market have changed the configuration of the sector. He also writes about the role of the government in that context. It is about an extremely competitive and dynamic market, subject to constant changes.



66 TELECOMMUNICATION IN BRAZIL: A BRIEF HISTORY

Over the past few decades Brazil’s telecommunication sector has been undergoing important changes. The most important milestone was the announcement of the General Telecommunication Law (Lei Geral das Telecomunicações - LGT) in 1997. Within its scope, the LGT promoted a radical change in the model of monopoly-based telecommunication. At the time the sector was shared by two companies: Telebras and Embratel. Telebras was the holding of state telecommunication companies such as Telerj, Telesp, Telemig, etc., and Embratel was responsible for long distance services. The main feature of this model was state governance, with a strong political influence and a low volume of investments, which was primarily the result of successive economic crises as well as the growing demand for public resources for social areas.

In 1998, Brazil had approximately 20 million landlines and 7.4 million mobile lines, representing a density of 12 landline access points per 100 inhabitants, and 4.4 mobile access points per 100 inhabitants. It was at this time that privatization was first seen as an alternative for bringing private capital, in order to expand the sector’s infrastructure.

In addition to involving the privatization of companies within the sector, (i.e. State-owned companies and Embratel), the telecommunication sector reforms also established a new regulatory

model, supported by an independent regulatory agency, namely Anatel. The LGT’s objective was to open up the market to private capital and to establish a regulatory model in compliance with international standards. With this in mind, as part of the process of privatization Embratel and Telebras, the holding of the state companies, were both put up for auction. The state companies were grouped into three companies operating in the following regions: São Paulo, North-East, and South-Central. The region of São Paulo was bought by Telefônica, the North-East by Telemar, and the South-Central by Brasil Telecom. Embratel remained the national and international long distance carrier.

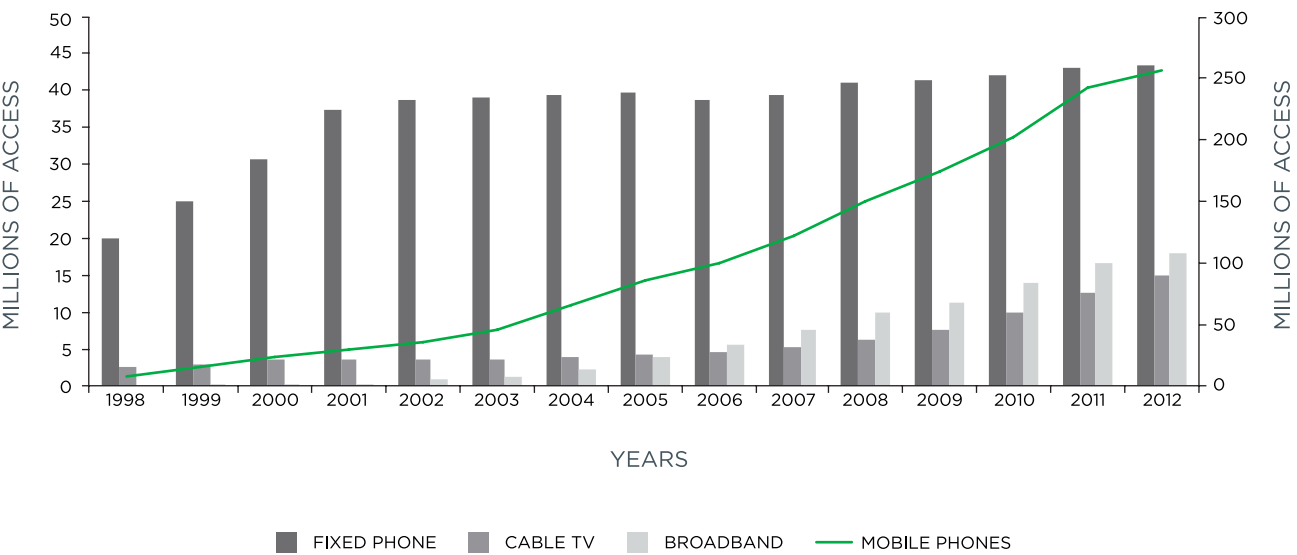
One of the initial challenges for the model was to eliminate the cross-subsidization that prevailed between local calls and long-distance calls. Since the new model was based on private companies, the focus of the regulation was to expand competition and eliminate tariff plans that caused distortions in the model.

GUIDELINES FOR REGULATION

The regulatory agency Anatel was created in 1998 with two basic principles: competition and universalization. The goal was to guarantee all citizens access to telephone services, as well as guaranteeing competition between the companies, thus avoiding the risk of moving from a state monopoly to a private monopoly. From a management point of view, Anatel was created



GRAPH 1  
EVOLUTION OF THE ACCESS NUMBERS



SOURCE: ANATEL, TELECOM

with administrative and financial autonomy, receiving resources from the Telecommunication Surveillance Fund (Fistel tax), which consisted of a percentage of the phone bill.

Over the course of the first five years there was a huge expansion in landline telephone services, funded by private investment. Around 2003, universalization had already been achieved. Despite this intense growth in services, the criteria of a readjustment distributed within a service package (subscription, connection charge, etc.), at the discretion of the operators, added greatly to the price of basic subscription, raising prices to the point of excluding low-income consumers from the service. Accompanying this elevation of the basic subscription price, mobile phones increasingly began to attract consumers with their portability and prepaid tariffs. The prepaid model attracted low-income consumers, since it allowed them to access the service by making a minimum recharge on their prepaid card, without needing to pay for a subscription as was the case

with landlines, thereby transforming the user into a virtual call recipient. This great success rescued the cross subsidies of the model since the operation of the mobile telephone now depended on interconnection resources paid between operators and in particular by landline operators in view of the high cost of interconnection involved when connecting a landline to a mobile phone.

This very expensive interconnection, which allowed the prepaid mobile user to make a minimum number of calls and yet still receive calls, became an important instrument of social inclusion for people, via telephone. Over the following years, mostly after 2000, there has been a significant growth in the use of mobile telephones, reaching 250 million registered devices<sup>1</sup> in 2012. Whereas the number of fixed telephone lines being added began to decline after reaching nearly 40 million lines.

In the early years of sector-restructuring, the telecommunication sector focused on the universalization of access, which was achieved with

<sup>1</sup> It is important to note that 250 million activated numbers does not mean the same number of customers



great success by the privatization of the landline telephone operators. With this success the first of Anatel’s goals was achieved. Once universalization was achieved, the focus turned to LGT’s second objective, competition. The aim was to guarantee more competitive prices for the user by promoting competition between companies, something which was not wholly achieved. As for local landlines, the initial configuration performed by a local company, called the incumbent, and by mirror companies, failed to show the expected results because in practice these mirror companies were unable to provide effective competition. These difficulties were partly caused by technological issues, which led to a virtual local private monopoly between the incumbent companies (Telefônica, Telemar and Brasil Telecom), represented by the large participation of these companies in their local markets, which was also powered by the difficulties the regulators have, both in Brazil and in other parts of the world, in asserting an environment of greater equality between the companies, meaning that landline telephone prices are to remain high for a long period.<sup>2</sup>

Only Embratel, the long-distance carrier, and GVT, the mirror company in the South-Central region, had the potential to become competitors that would threaten this concentration in local markets. In this sense, landline services showed strong competition in national and international long distance calls, and weak competition in local calls.

The lack of landline competition would not be repeated in mobile telephone services. In this market, the balance of power between the big four companies, i.e. Vivo, Tim, Claro and Oi, was driven by prices as consumers realized that there was very little difference between the services and so made their choices according to the rates offered, as was particularly the case with low income consumers.

Thus, in the center of the competition, the agency had more success with the mobile telephone than with landlines. This unbalance was perfectly understandable, since the control of local access held by landline telephone companies could not be reproduced in the mobile telephone markets. Therefore, in this first phase of telecommunication sector reform, the progress of landline services

was one of great network expansion, featuring the universalization of the services, but with little competition, whereas the mobile telephone area had greater competition and popularization of services.

Although these were the major telecommunication markets, at the time there were two other services being provided with penetration rates that were still in the early stages of development: cable TV (payed) and broadband internet. With the population having little access to both services, it was only after 2005, with the stagnation of landline telephone services and the reduction in mobile telephone growth rates, that these services began to gain momentum. Although at the beginning of the post-privatization period the regulatory agency felt that each service should have a single network, after 2005 it became clear that it needed to address the convergence of landline telephone services, mobile services, cable TV, and internet in a single network.

THE INTERNET IN NETWORK CONVERGENCE

The concept of network convergence presented a series of new challenges for the regulatory agency: the tendency for companies to become concentrated in large groups; a more diffuse competition with signs of interchangeability between services; and the network, formerly split between a public and reversible fixed network, and a private mobile network, which now required new investments in broadband services and cable TV, without it being clear which part of the network should receive public or private resources.

From the consumer’s side, the provision of access to different services within the same network (triple play for example) enabled the expansion of competition in markets that used to be uncompetitive, particularly that of landline telephone. Thus, the consumer gained the option of receiving the services integrated by a single company, which encouraged the entry of other competitors in certain market segments, especially Embratel and GVT, and in some cases cable TV companies, such as NET and Sky.

In this new setting, the largest competition began in the high income areas of large cities, to the detriment

of the suburbs. Companies such as Embratel, NET, GVT, etc. began to enter into this market and to compete for space with the incumbent companies, Telefônica and Oi, in the prime areas where it is advantageous to install a network, since there are consumers with enough income to pay for the investment. While the companies offer converged network services in these areas, the suburbs remain subject to the monopoly of the incumbent companies, which in turn serve the consumer according to the universalization obligations imposed by Anatel. In face of this, and with the increasing pressure for lower prices, especially with basic subscription, these companies are now dealing with a risk of imbalance, because they are required to invest in order to serve a consumer who does not give financial return, while at the same time suffering from fierce competition in areas of higher income.

Although these impacts have boosted landline telephone services, the offer of mobile services was also affected by this process of network convergence. With the availability of more powerful networks, represented by greater transmission capacity on the one hand, and data compression on the other hand, new generations of mobile data transmission technologies emerged (2G, 3G and 4G), which increased the need for new investments and increased the pressure on the performance of the companies. With these news developments, the growing demand for services was not always accompanied by a corresponding increase in revenue, i.e. the customer wants more services, but without having to pay more to access them.

In face of these advances, Anatel has been pressed to ensure that the population has access to these new technologies, without allowing companies to have large price increases or loss of quality. This is leading to increasing conflicts between the Government and operators. With major events soon to take place in Brazil especially the FIFA World Cup in 2014 and the Olympic Games in 2016, the need for the modernization of infrastructure of telecommunication services will probably cause these conflicts to grow again.

In the midst of so many transformations, the Internet is beginning to stand out as the main service provider. Newly available technologies that enable voice traffic

through the Internet, the so-called VoIP, as well as the increase in video transfer and the emergence of new devices that seek to take this convergent environment to the consumer, are increasing the interest of companies in other sectors, notably those of computers (Apple, Microsoft), the Internet (Google and Facebook), and handset manufacturers (Nokia, Sony, etc.), in addition to television, which will enter this new coming convergent market.

With investments in the third and fourth generations (4G), the mobile telephone follows the trajectory of the popularization of the Internet. Thus, the Internet services previously restricted to a portion of the Brazilian population with greater purchasing power begin to spread to low-income regions and consumers, who are also eager for information and entertainment.

An example of the conflicts inherent to this new market occurred in the exclusivity agreement between AT&T and Apple, which was for the exclusive sale of iPhones under that operator. With more and more applications focused on data transfer, the use of the iPhone has resulted in a rapid congestion of the AT&T networks. The operator found itself pressured by consumers who were dissatisfied with the services provided, and so it asked Apple to reduce the availability of streaming videos over the Internet. Understanding that their partnership did not include limitations on the use of their handsets, Apple decided not to do as AT&T had asked. This meant that AT&T was forced to make a growing amount of investments in network capacity, whilst being unsure that those customers now demanding greater provision of services would remain in their networks long-term.

A similar phenomenon is beginning to be observed in Brazil. The pressure of price competition, coupled with new investments in 3G and 4G networks to serve the forthcoming events, are increasing the efforts to acquire new customers. As a consequence, the number of complaints has grown, and the Government increasingly recognizes the need for new investments in the network.

In short, what the future promises is to bring an integration of media, where the consumer wants to communicate all the time, anywhere, either through

<sup>2</sup>Exception to this case is the long-distance rates, which market belonged to Embratel.





a phone or tablet, by voice, SMS or e-mail. In this new world television is no longer responsible for this integration between consumers and services, it is the Internet that owns this responsibility, and this requires large investments in network capacity, but without the consumer necessarily wanting to pay more for it. Thus, at one side there will be the consumer, who is served by the operators' services, demanding more services at a lower price, and the Government, which is pressed by the consumers to regulate the services with the aim of having more higher quality services, and on the other side there will be the operators, who need to respond with greater investments, without any guarantee that these services will generate new revenues.

CHALLENGES FOR THE REGULATION IN TELECOMMUNICATION SYSTEM

The regulation of the telecommunication sector comprises Anatel, which is responsible for the implementation of public policies and supervisory actions within the sector, and by the Ministry of Communications, as the developer of sectorial policies. Over the past few years, the coordination of the actions of Anatel and the Ministry has varied with the increased uncertainty of the sector. In addition to these instances directly linked to the sector, the National Secretary of Consumer Affairs and the Administrative Council for Economic Defense (CADE) act in a complementary manner to ensure that consumer rights are respected and that concentration movements in the market will not burden the consumer with price increases.

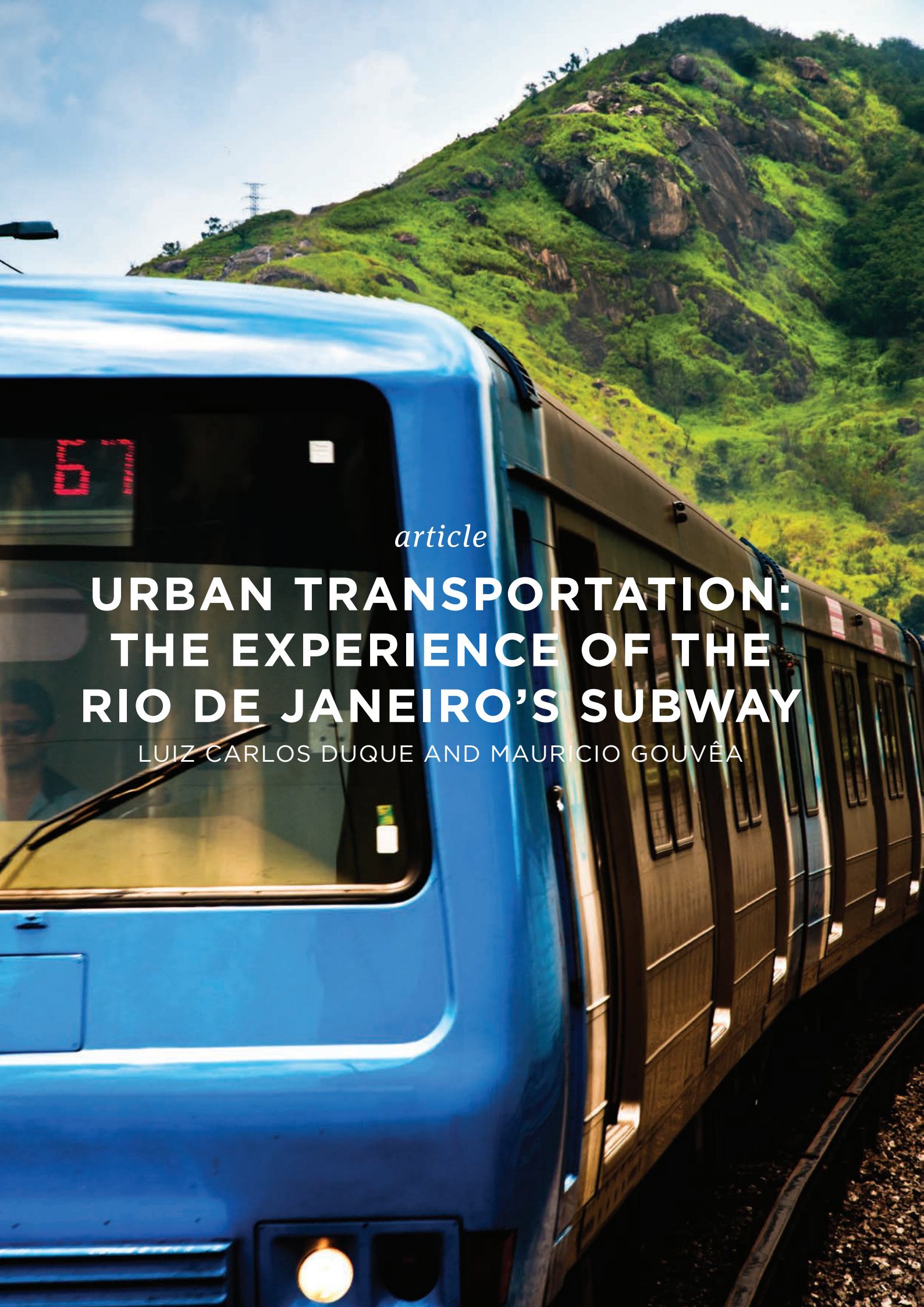
The tension between the Government and operators for new network investments is expected to grow in the coming years. In this sense, Anatel will face a major challenge in ensuring compliance with the contracts, both by the company and the consumer.

Currently, consumer protection is very efficient in serving the consumers after the detection of the problem, but still encounters many difficulties in preventing the problem from arising in the first place. In fact, companies have had these problems since privatization, especially due to the rapid growth of infrastructure without a proper after-sales service.

This does not mean that the problem is easy to fix. It is a market that possesses a rich technological dynamic and is full of opportunities, but it requires huge investments. Operators hold the power to encourage the market within the existing technological alternatives, but depend on adequate remuneration in order to promote the expansion of resources invested in the new networks. Thus, it is normal that there are conflicts inherent to the issue of quality, investment, etc. However, the Governmental control bodies will have the central role of mediating tensions between companies and consumers, so that the growth can be sustainable and at the speed required by technological innovations, i.e. the regulatory bodies must build a technological and legal framework capable of maintaining the stability of the contracts without inhibiting future technological developments.

Due to the very dynamics of capitalism, the companies can always reinvent their business by changing the way through which the telephone market meets market challenges. Thus, it is the role of the Government to be an effective mediator and supporter of the development that the society expects the telecommunication services to offer the country. To do this, the important thing is for the Government not to be swayed by short-term pressures, which often serve more to political pressures rather than to the understanding of what is needed for the country to develop, and it is also important for the operators to understand that the relationship with the customer means more than a sales channel.





article

# URBAN TRANSPORTATION: THE EXPERIENCE OF THE RIO DE JANEIRO'S SUBWAY

LUIZ CARLOS DUQUE AND MAURICIO GOUVÊA

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## ABSTRACT

Mass transport is the only sustainable solution for large metropolitan areas, a fact which makes the expansion of the network of public transport in large cities as a priority for public investment. The subway system in particular has a fundamental role in meeting the ever-increasing need for the daily movement of citizens. Upcoming international events, particularly in the city of Rio de Janeiro, must be seen as a clear opportunity for the viability of financing such projects of mass transport, to leave a legacy of great value to Rio society. This article describes the history of the construction of Line 4 of the Rio de Janeiro subway system - from bidding to the current stages of the project, which involves construction projects in the western and southern areas of the city and emphasizes the participation of FGV Projetos in this project.



74 LINE 4 OF THE RIO DE JANEIRO SUBWAY SYSTEM – ITS ORIGINS

The Rio de Janeiro subway system began operating in 1979. In a little over 30 years, the subway network reached an approximate extension of 40 km, distributed along two subway lines - 1 and 2, and including 35 stations. Throughout this period, a great deal of effort was made to expand the network, and even with the advances made, this network is still not extensive enough to serve the entire population of Rio de Janeiro. Currently, some 600 thousand passengers travel on the subway every day.

The geographical characteristics of the Rio de Janeiro metropolitan area, which include the Atlantic Ocean, Guanabara Bay and the mountains, have sparked discussions among various types of specialists regarding the best solution for the expansion of the subway system in the city.

BOX 1  
MAIN CHARACTERISTICS OF THE LINE PROPOSED IN THE CONCESSION AGREEMENT

THE CONCESSION AGREEMENT IS ESSENTIALLY GOVERNED BY THE GENERAL NORMS THAT HAVE BEEN SET FORTH IN FEDERAL LAWS Nº 8.987 AND 9.074 AND STATE LAWS Nº 2.686, 2.831 AND 2.869
THE CONCESSION TO OPERATE A SECTION OF LINE 4, PRECEDED BY CIVIL CONSTRUCTION WORKS
CONNECTION WITH LINE 1 IN BOTAFOGO BY WAY OF PASSENGER TRANSFERS
LINE 4 IS CONSTRUED AS BEING THE STRETCH THAT STARTS AT THE MORRO DE SÃO JOÃO STATION (BOTAFOGO), GOING THROUGH THE INTERMEDIATE STATIONS OF HUMAITÁ, JÓQUEI (GÁVEA), AND SÃO CONRADO, ENDING AT THE JARDIM OCEÂNICO
AN APPROXIMATE EXTENSION OF 16.3 KM
MAINTENANCE AND OPERATIONAL CONTROL CENTERS BUILT EXCLUSIVELY TO BE USED BY LINE 4
ESTIMATED BUDGET OF R\$ 900 MILLION (APPROXIMATELY R\$ 3 BILLION IF ADJUSTED TO THE PRESENT DATE)
SHARES IN TOTAL INVESTMENTS – THE STATE: APPROXIMATELY 45%; THE CONCESSIONAIRE APPROXIMATELY 55% (INCLUDING INVESTMENTS IN ROLLING STOCK)
TERM OF THE CONCESSION: 25 YEARS, WITH THE POSSIBILITY OF BEING EXTENDED FOR A LIKE TIME PERIOD
EXCLUSIVE FARE TO USE LINE 4 AT THE AMOUNT OF R\$2.50 (APPROXIMATELY R\$8.00 IF ADJUSTED TO THE PRESENT DATE)

According to that shown in Table 1, the connection between Line 4 and the existing railway grid would have been established between the stations of Botafogo and Cardeal Arcoverde, in the form of a future passenger transfer station called Morro de

Pursuant to the bidding notice, which was put out during the second semester of 1998, the original Line 4 sought firstly to make a connection between the districts of Gávea and Barra da Tijuca, and secondly to connect Line 4 with a stretch of Line 1 which is currently in operation. It should be remembered that at that particular point in time, Line 1 comprised the stretch between the Saens Peña and Cardeal Arcoverde stations which had just been opened. Bearing this configuration in mind, the main objective was to allow the connection between Barra da Tijuca and Downtown Rio, and to transport the segment of the population already clamoring for this stretch. At the end of the bidding process in December 1998, a Concession Agreement was signed between the government of the State of Rio de Janeiro and the Rio-Barra Concessionaire that had been awarded the bid. The main characteristics proposed for the Line in the original Award Agreement are illustrated in Box 1.

São João. Following these contractual premises, studies for Line 4 indicate the use of technical options that differ from those being used by the current Rio de Janeiro subway system, such as:

- A standard track gauge (rails measuring 1.435 mm in width);
- Narrower Rolling stock (trains);
- A “Communication Based Train Control” (CBTC) signaling system, which allows integrated operations involving the platform doors and the trains to be conducted without the need for on-board drivers, among other facilities; and
- An airborne electric power feeding system (Rigid Catenary Curve).

On the other hand, the stations that were proposed in the original concession agreement had been positioned along the rocky massif that runs along the stretch between Barra da Tijuca and Botafogo, which made it easier for the stretch to be built. Building stations on a rock bed causes less impact on the environment, even if in some cases this means that they are farther away from the concentrations of demand, as was the case with the Humaitá station. Studies regarding the Maintenance and Operational Control Centers predicted that these constructions would be erected at Barra da Tijuca, situated nearby Jardim Oceânico, one of the Line 4 terminal stations.

Another important point to be considered regarding the original profile for Line 4 is that since the intention was to have a passenger transfer between Lines 4 and 1 at the Morro de São João Station, an additional fare would have been charged to those passengers who wished to transfer between Lines 4 and 1. It was found that at current values, the cost of a trip to Barra da Tijuca – Downtown would be worth over R\$11 today.

TABLE 1  
PASSENGERS EMBARKING BY STATION – A DEMAND STUDY CARRIED OUT IN 2008

STATIONS	FORECAST FOR 2008
TRANSF. L1/L2	38,700
MORRO DE SÃO JOÃO	14,000
HUMAITÁ	1,100
JARDIM BOTÂNICO	4,800
GÁVEA	24,500
SÃO CONRADO	10,000
JARDIM OCEÂNICO	49,000
TOTAL	142,100

Following these premises, the Concessionaire Rio-Barra developed and delivered studies to the Rio de Janeiro licensing agency, regarding the impact that the Jardim Oceânico – Gávea stretch would have on the environment, which were opened for public consultation in 2003. It is important to stress that according to the Brazilian Institute for the Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis – Ibama), environmental licensing is a legal obligation that needs to be complied with prior to the installation of any potentially polluting or environmentally harmful undertaking or activity. One of its more expressive characteristics is that it involves the participation of society in its decision making, by holding public hearings as part of its process.

The stretch that was the object of this licensing formed Stage 1 of this project, connecting Jardim Oceânico and Gávea, where the estimated demand for Line 4 shown in this document was to the tune of 160 thousand passengers per day. In August 2004, a Preliminary Permit was issued to the Rio-Barra Concessionaire, and from that point on, since the said Preliminary Permit did not authorize the installation of the project, detailed studies were made in order to comply with the necessary conditions to obtain the Installation License for the stretch regarding Stage 1, and to vouch for the technical feasibility of the stretch between Gávea and Morro de São João, which would form Stage 2.

SOURCE: AUTHORS



76 When the installation of the Jardim Botânico station was considered in 2008 (which had not been included in the original project), new demand studies were carried out. This time the potential demand for Line 4 was estimated at approximately 140 thousand passengers, as shown in Table 2.

Conceptually, a railway connection, which is part of a mass transportation system, should cater to regions with large population concentrations thus relieving the railway network, as well as encouraging trips to areas with good economic potential. The result was that throughout the years, the concession model which formed part of the bidding process had not been economically viable, this being the reason why no advances were made towards its implementation.

ADDENDUM TO THE CONCESSION AGREEMENT FOR LINE 4 - AMENDMENTS

In 2009, Rio de Janeiro was elected as the “Host City for the 2016 Olympic Games”. It is important to make it clear that the Caderno de Encargos (a document detailing specification guidelines), which was mostly responsible for the choice of cities, did not include Subway Line 4. It was envisaged in this document that the Barra da Tijuca connection, where a good portion of the competitions will take place, would use a bus system, the so-called BRT (Bus Rapid Transit) System. However, the State administration saw an opportunity in the Olympic Games to solve one of the main mobility problems in the city, leaving it as a legacy for the population. The idea was to replace the overland transportation system with a subway transportation system.

However, at that time the reality being faced by the city was different: Line 1 of the Rio de Janeiro subway had already reached Ipanema with the opening of the General Osório Station in 2009, and the population’s desire to connect the West and South Sides of the city became manifest. After this new development, the State Government proposed the inclusion of Subway Line 4 as an Olympic commitment, essentially in order to:

- Retrieve the Implementation Plan for the Rio de Janeiro Subway System by implementing Lines 1, 2, 3 and 4, and in the future, extending the

expansion to Barra da Tijuca and the connection between Gávea down to Botafogo/Downtown

- Increase the flow of passengers transported by Line 4 by lowering the fares, and by integrating Line 4 with Line 1 on the South Side (Leblon – Ipanema)
- To equally cater to travel needs between Barra da Tijuca – Downtown, as to the connection between the city’s West and South Sides
- Improve the traffic system between Barra da Tijuca and the South Side through a more environmentally sustainable transportation modality, reducing the number of vehicles on the streets and, consequently, the pollution of the atmosphere caused by buses and private cars.

With this in mind, in February 2010, the Government of the State of Rio de Janeiro and the Rio-Barra Concessionaire executed the Addendum to the Concession Agreement that was in effect at that time. This addendum proposed changing the point of integration of Line 4 with Line 1 (which started from Gávea), transferring it from Botafogo to Ipanema.

Once the Installation License for the Jardim Oceânico-Gávea stretch had been issued by the State’s licensing agency in March 2010, the work for implementing the stretch began that same year. The new approach proposed for Line 4 required new studies to be made that would make the stretch that had been licensed (Stage 1) compatible with the new integration point at the General Osório station in Ipanema, as well as requiring new studies to reestablish the balance of the concession agreement in order to satisfy both the State and the Concessionaire.

THE AGREEMENT WITH FGV - ITS OBJECTIVES

Within this context, the Civil Cabinet of the State of Rio de Janeiro engaged the services of FGV Foundation to coordinate the technical-economic evaluation studies regarding the possible effects that may arise from the integration of Line 4 with Line 1 at the General Osório Station (The Gávea-Ipanema stretch), and to rebalance the concession agreement with regard to this integration. The scope of FGV’s Agreement objectively set forth the points highlighted in box 2.

BOX 2  
SCOPE OF FGV’S CONCESSION AGREEMENT

COORDINATION OF THE ELABORATION OF THE CONCEPTUAL PROJECT FOR LINE 4, WHICH INVOLVED ALTERNATES FOR THE ROUTE; THE POSITIONING OF THE STATIONS, DEMAND, AS WELL AS THE OPERATIONAL AND TECHNICAL ANALYSES WHICH WERE TO BE ADOPTED

TO DEVELOP STUDIES TO REESTABLISH THE ECONOMIC-FINANCIAL BALANCE OF THE LINE 4 CONCESSION AGREEMENT

LEGAL, TECHNICAL AND ECONOMIC-FINANCIAL INSTITUTIONAL SUPPORT, ON TOP OF THE SUPPORT TO THE ELABORATION OF THE REFERENCE POINTS PERTAINING TO THE ENVIRONMENTAL STUDIES (INCLUDING ADVISORY SERVICES REGARDING THE COORDINATION OF DELIVERY TIMEFRAMES), AND OF THE BASIC PROJECT FOR LINE 4, WHICH WOULD BE EXECUTED BY COMPANIES ENGAGED BY THE CIVIL CABINET OF THE STATE OF RIO DE JANEIRO

It is important to clarify the importance of these economic-financial balance studies with regards to the concession agreement. From an economic point of view, the analysis of this balance represents the analysis of the sustainable outlook of the price/returns ratio which lays the foundation for the original concession agreement. The discounted cash flow methodology proved to be the most adequate methodology for analyzing the returns to be obtained from the concession, to the extent that the discount rate used (or Internal Return Rate – TIR) represented the return expected by investors when they direct their funds toward a specific investment. In summary, the Economic-Financial Balance of the Line 4 Concession Agreement is a study which, as a function of changing premise for the implementation of Line 4, is intended to ensure that both parties – the contractor and the provider – get an adequate return on their investments, abiding by the adoption of a single fare for Lines 1, 2 and 4.

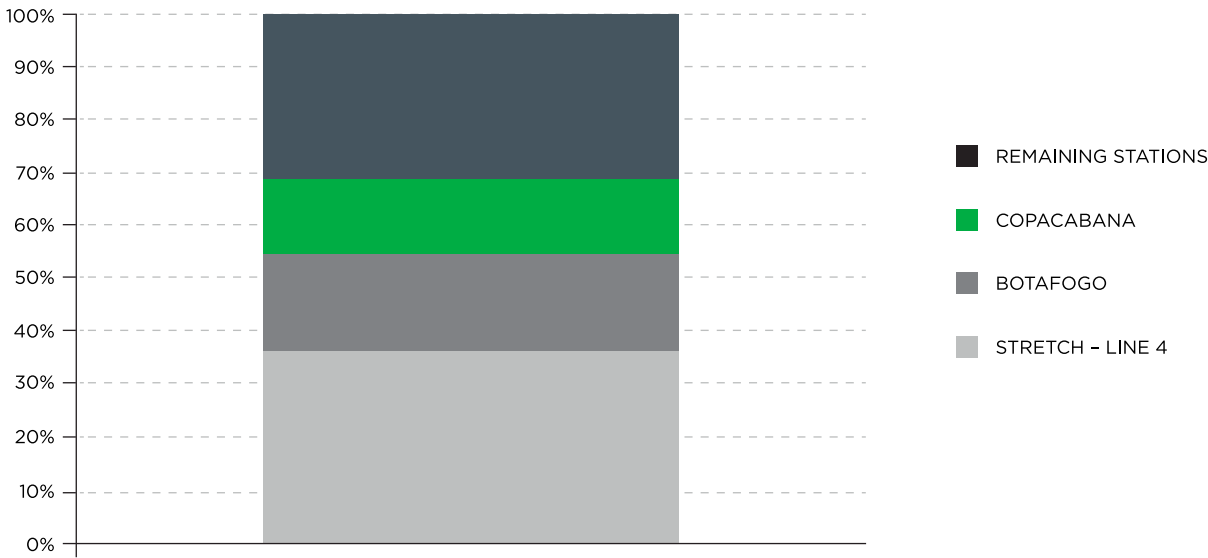
In order to accomplish this combination of activities, FGV Foundation worked with a group of experts who were trained to deal with the above themes and who

would advise the Government representatives of the State of Rio de Janeiro and the concessionaires involved. The scope of this task involved a preliminary analysis of travel alternatives and demand, as well as the selection of the most appropriate technologies for the operation and for the viability of the connection. Environmental, social, legal and economic questions were taken into consideration during each stage of the project.

Among the different results obtained from this study, one should highlight the conclusions pertaining to demand, which showed a contingent of approximately 300 thousand passengers/day (taking 2011 as the base year) for Line 4, which was way above what had been originally estimated. The potential of integrating Barra da Tijuca and the city’s South Side was also demonstrated, together with the accomplishment of the original objective of interconnecting Barra da Tijuca with Downtown. The increase in mobility between the West and the South Sides can be seen in the final figures: almost 70% of Line 4 passengers travel back and forth between Barra da Tijuca and Botafogo, as shown in Chart 1.



CHART 1  
SHARE OF THE DEMAND PER REGION (BASE YEAR 2011) - EXCHANGES WITH LINE 4



SOURCE : AUTHORS

With regards to the aforementioned operational studies, they also simulated all possible services that could be offered during the 2016 - 2040 period. By examining the results, it was possible to determine the travel times between all the stations, also taking into account the construction of a new station (Uruguai) the opening of which has been forecast for 2014. A trip along the Jardim Oceânico-Carioca stretch is now being accomplished in only 34 minutes. It was also concluded that Line 4 will be able to operate in accordance with international standards comfortably up until approximately 2034, handling an operational fleet of 17 trains.

The data obtained from all technical studies served as inputs to the Economic-Financial Balancing-out Studies for the Concession Agreement.

FGV'S RECOMMENDATION - TO MAKE CHANGES VIABLE

The studies that were coordinated by FGV Foundation were fairly judicious in the sense that they minimized engineering risks, timeframes and

costs. Their final recommendation suggested a stretch between Gávea and Ipanema which would integrate Lines 4 and 1, without any passengers being transferred at the General Osório Station which will be expanded, thereby making it feasible to physically integrate all the Lines without generating any risks or inconvenience to those living in buildings located close to this station.

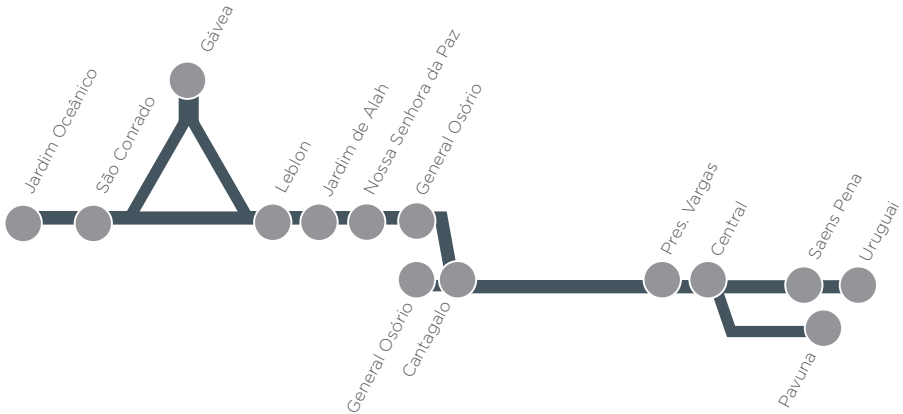
These studies did not indicate as mandatory for passengers going in the same direction to transfer, especially due to the great likelihood that users would transfer between Lines 4 and 1, as determined in the demand studies. It was thus recommended that the 1,600 mm track gauge be maintained along the entire Rio de Janeiro Subway system. Other inconveniences reinforced this recommended alternative, such as the mandatory construction of Maintenance and Operational Control Centers at Barra da Tijuca, which would mean additional costs, as well as making it impossible to integrate the use of the trains.

Line 4 will interconnect Barra da Tijuca and Ipanema through approximately 18 km of rails

(including train parking and maneuvering areas), as well as through the construction of 6 new stations: Jardim Oceânico, São Conrado, Gávea, Leblon, Jardim de Alah and Nossa Sra. da Paz,

which will interconnect to Line 1 at the General Osório Station. The Gávea station will be accessed through two spurs on the Line, on both South and West Sides, as shown by the following schematic diagram:

FIGURE 1  
SCHEMATIC DIAGRAM OF LINE 4



SOURCE: AUTHORS

The powering-up, signaling and communications systems that will be used will undergo the necessary changes in order to make them compatible with the systems and rolling stock (trains) currently being used by the Rio de Janeiro subway system, so as to technically make the option (which has been adopted) of interconnecting Lines 1 and 4 feasible. The same thing is to apply to the permanent rolling track.

Due to the geological characteristics of the regions that will be affected by the diggings in the South section, it was proposed to adopt a building method which would use something called a Shield or TBM - Tunnel Boring Machine. This large scale equipment will ensure both safety and high productivity, as well as a silent operation which will not disturb the population.

Based on these conclusions and along with the elimination of any additional fares as originally

envisaged, the proposed solution intends to offer a quality service capable of fully integrating the existing railway system with Line 4 at a lower cost to users, as well as maintaining the flexibility of a potential expansion towards Downtown, Botafogo or Barra da Tijuca (the Uruguai Station) through two access spurs to Gávea (the South and West Sides).

Due to this study, in February 2011 the Government of the State of Rio de Janeiro decided which guideline to apply, using the results obtained from this analysis as the basis for their decision, which served both for the Environmental Impact Study as well as for the elaboration of the Basic Project, which occurred subsequently to this project.

Figure 1 shows the Rio de Janeiro subway system, including the stretches pertaining to Line 4 (both current and the original ones).





FIGURE 2  
RIO DE JANEIRO'S SUBWAY SYSTEM (INCLUDING LINE 4)

- LINE 1
- LINE 2
- LINE 4 (ORIGINAL PLAN)
- LINE 4 (CURRENT)



SOURCE: AUTHORS

The environmental study regarding the Gávea-Ipanema stretch, which was carried out by a company hired by the Civil Cabinet of the State of Rio de Janeiro (with the timeframe of delivery being coordinated by FGV Projetos), was delivered to the State's licensing agency in December 2011. After several debates between public agencies and society in general, regarding the scope of the project, the Installation License was granted in June, 2012, which was an essential requirement for starting work.

THE CURRENT STATUS OF THE PROJECT

At this point in time, FGV Foundation is assisting the government on how to finalize the discussions on the Economic-Financial Balancing of the Concession Agreement for Line 4. At the same time, the company which is responsible for the

Basic Project is in the final stages of delivering these Projects, while the Rio-Barra Concessionaire is mobilizing all infrastructure that may be needed to start construction on the South Side, since the necessary licenses for this purpose have already been made available.

FGV Foundation is aware that the work performed so far has contributed towards the creation of a technical and economic framework which provided support for the Government to seek better alternatives for integrating Lines 4 and 1 at the General Osório station in Ipanema. In addition, it is important to stress that these studies have also given the managers of the Line 4 project a long-term view, together with the projections and reflections on integrating Lines 1, 2 and 4, as well as the possibility of further expanding the rail networks within our city.



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# BANKS OF DEVELOPMENT, FINANCING OF INFRASTRUCTURE AND ECONOMIC DEVELOPMENT

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## ABSTRACT

In his article, Rogério Sobreira talks about development banks and the role they play in the development of countries. Giving a brief overview of the history of these institutions, he highlights the Crédit Foncier and the Crédit Mobilier, which were founded in France and became models for other countries. He comments on their emergence post World War II and defends the model as an important instrument of incentive to economic development.

The story of the role played by the financial system in economic development shows that during the first years of the nineteenth century there was no need, in either Europe or Great Britain, for the creation of an institution that would provide long-term investment for the effectuation of investments<sup>1</sup>. The main reason for this was the ability of companies to generate their own funds for the financing of investments, with the purpose of reducing the amount of long-term capital necessary at the beginning of the industrial revolution.

Such a situation, however, was not observed in the European countries that followed Great Britain into the industrial revolution<sup>2</sup> In these cases, “[t]he capital required to make the critical jump from a small enterprise into a large one or create a new enterprise on a large scale was greater than the banks could provide, even when they were willing to provide long-term finance.” (Diamond, *ibid*, p. 21)

One of the solutions adopted by these countries was the gradual development of a capital market through which the companies could issue shares and debt securities to finance their investment needs. In this new environment, the commercial banks (joint investment banks) have come to play a central role, since they began to invest actively in activities that required large capital inflows. In this sense, it should be noted that the action of banks and investors has been a feature of European countries, notably France.

In this environment, two important institutions emerged, although, as previously noted, they did

not match up with the typical characteristics of development banks described in the literature (Diamond, *ibid.*). They were: the Crédit Foncier - specialized in providing long-term credit for agricultural activities, although with some penetration in industrial investment and urban development, - and the Crédit Mobilier, which has concentrated its activities in the infrastructure and in the industrial sectors.

Although it did not last, the Crédit Mobilier has become a model of performance for banks in Germany, Austria and Italy. According to that model, the banks had the task of launching and financing commercial and industrial businesses. For such institutions, deposits were of secondary importance<sup>3</sup>. They maintained close contact with the public investor, both directly and through commercial banks. The banks would endorse loans of the government and industry, which organized new businesses or reorganized long-established ones and their bonds were placed on the market by the commercial banks<sup>4</sup>. Thus, between the end of the nineteenth century and World War I, the development banks created in Europe were mostly for private capital, and concentrated their resources on large companies. It is important to note that the French model of development banks ended up generating a series of specific institutions related to capital markets, for the purpose of stimulating development of the economy. “These financial institutions collected the funds from millions of large and small savers to finance their railroads and industrial activity, unlike the English banks, which had large resources from industry and commerce -

activities established long ago.”(ABDE, *ibid*, p. 50). During that period, a series of development banks were created, in particular the Industrial Bank of Japan (IBJ) in 1902 and the Istituto Mobiliare Italiano in 1931. The IBJ was created in the mold of the Crédit Mobilier, with their actions being underwritten by private investors. The government guaranteed dividends of 5% for ten years. However, unlike the Crédit Mobilier, the IBJ was considered an institution of public service and under the strict control by the Ministry of Finance, which named its directors. IBJ’s main sources of funding were debentures, most of which were bought by the Ministry of Finance.<sup>5</sup>

In the post-World War II period, the main characteristic of the institutions which were created for development (development banks), and even those created in the period between the wars, has been the outstanding role played by the government. (cf. Diamond, *ibid*, p. 29)

Therefore, the institutions created in this period maintained a strong relationship with national plans for the rapid development of industry and agriculture. So, despite the role played by the government, the majority of such institutions followed a basic rule, which was that the allocation of long-term resources should be made through financial institutions directed by the logic of private operation instead of having the government allocate the resources directly. It should be clarified here that the logic of private operation does not mean a quest for profit but the search for efficiency that characterized the granting of credit

by a financial institution in contrast with a direct loan made by the government<sup>6</sup>. This is the case, for example, of the Kredistanstalt für Wiederaufbau (KFW), established in 1948.

It is also worth mentioning the creation of various development banks in developing countries, notably in Asia. Let’s take, for instance, the case of the Korean Development Bank, founded in 1954 with the aim of providing and administering funds for major industrial projects of national interest. As observed in development banks created in the post-war period, the main funding of that institution is governmental (cf. ABDE, p. 61).

The emerging development banks, either public or government controlled, also raised the question of how to mobilize resources and allocate them for development purposes. From the moment the main development banks, created in the twentieth century, turned into institutions dependent greatly on public funding, they have been, in fact, negotiating fiscal resources as agents of the Treasury and not as financial institutions.

From 1980 onwards, one can observe a greater diversification of operations in these institutions, which stopped being mere lenders for the industry. As notes Bruck (2001, p. 131):

*“The common elements in the changing role of development banks on the lending side have been the diversification of operations through: (1) the branching out into investment banking and export financing; (2) the addition and expansion*

<sup>1</sup> Cf. Diamond, W.(1957) *Development Banks*.New Haven.Johns Hopkins Press, 1st. Edition.

<sup>2</sup> Cf. Diamond, *idem* e Gerschenkron, A. (1962). *Economic Backwardness in Historical Perspective*. Cambridge, Mass.: Harvard University Press.

<sup>3</sup> “[They rely] to a considerable extent on their own relatively large share capital and not exclusively on deposits.” (Diamond, *ibid.*, p. 25).

<sup>4</sup> ABDE (1994). *Financiamento do Desenvolvimento*. Brasília: ABDE, p. 49.

<sup>5</sup> Patrick, H. (1967). “Japan”. In Cameron, R. et al. *Banking in the Early Stages of Industrialization*. New York: Oxford University Press.

<sup>6</sup> In this respect see Stiglitz and Uy (1996), *Financial Markets, Public Policy and The East Asian Miracle*. The World Bank Research Observer, 11(2), p. 263. It is important to note that the greater efficiency in the choice of investment projects does not exempt development banks from selecting companies/projects within the priorities defined by the government.





*of specialized advisory and consultancy services; (3) the provision of working capital financing; (4) assistance in the restructuring of enterprises; (5) programs for entrepreneurial development; (6) activities contributing to the development of capital markets; (7) the management of the process of enterprise privatization; and (8) the creation of non-bank financial intermediaries (leasing, insurance, brokerage firms, savings institutions.”<sup>7</sup>*

Chances occurred also in the way banks were financed, although government funding remains extremely important in alluded cases (Bruck. p. 131):

*“[C]hanges involved the reform of resource mobilization policies and processes through: (1) greater emphasis on overall development bank profitability and financial soundness; (2) adoption of asset and liability management techniques and risk reduction programs; (3) the use of financial engineering approaches and instruments; (4) greater reliance on private funds mobilized in financial markets; (5) the use of financial derivatives for protecting financial obligations; (6) conversion of direct lending operation into apex lending mechanisms, providing funds to other financial intermediaries for on-lending to final borrowers; and (7) privatization of public institutions and mergers with private commercial banks.”*

Another aspect to be mentioned is that, in the post-war period, development banks have become important institutions in developing countries, in contrast to the role they play in developed countries. One can also observe a gradual shift of

emphasis from basic industries to technological modernization. Nevertheless, as investments in research and development (R&D) and innovation represent high risks and uncertainties even greater than those associated with investments in infrastructure, the actions of development banks in developing economies will become extremely important.

In this sense, it is important to note that the specialized literature allows you to identify two areas of focus relating to development banks: one, more restricted, which identifies the development banks as mere financial institutions, and the other, with a more comprehensive focus, which sees them as hybrid institutions, with multiple functions associated with the development process.

In the more restricted focus, development banks assume a somewhat passive posture with regard to this process, acting as a bank whose function is to meet the demand for funds generated spontaneously by the investments already in progress which are unanswered in a satisfactory way by the existing financial system. This group is featured mainly by all activities affected by “market failures” – typical of the financial system, associated with the presence of asymmetric information, externalities and returns of difficult forecast - among them, long-term investments of maturation, intensive activities in R&D, and agriculture. The financing of “repressed demand” for long-term credit would be the main function of a development bank in this approach.

In the comprehensive approach, on the other hand, the functions of a development bank go beyond

<sup>7</sup> Bruck, N. (2001). How Development Banks are Changing. In ADFIAP-IDF (Association of Development Financing Institutions in Asia and the Pacific - Institute of Development Finance), Principles and Practices of Development Banking. Manila, Philippines: ADFIAP-IDF, Vol. I, pp. 131-137.



addressing that unmet demand, also involving forms of activity more agile in the development process. In this view, ideally, a development bank should also anticipate demand, identifying new sectors, activities, products and/or strategic productive processes for national development and managing programs (whether drafted by them or not) for investment in these areas. In addition to the typical activities of a financial institution – in other words, the uptake of voluntary or compulsory savings, and its channeling to financing the selected investments -, this type of behavior involves a focus on research activities, technical support, and, possibly, a plan for investment and financing programs.

Considering the wider approach view associated with the role of development banks, it is possible to emphasize the counter-cyclical function that these banks can play in the process of economic development. Thus, in periods of economic expansion, not only the development banks but all financial institutions would be interested in offering credit. Under such circumstances, the biggest feature of the development banks would be clearly stated if the institution also worked, even if indirectly, in their own decision-making process for new investments, signaling their priorities and strategies for development. This could attract investment to important areas not typically covered by the private sector.

During a recessive phase of economic activity, however, the functionality of a development bank responding only passively to demand would be seriously compromised. During these phases,

the effective drop in sales and profits tends to “contaminate” the expectations of business returns, making entrepreneurs more pessimistic. Under such a scenario, the (estimated) risks of new investments increase at the same time that the incentive to take risks becomes low: on the one hand, the probability of errors of prediction is greater because the revenue and future costs (variables) become even more uncertain than they already are in periods of economic growth; on the other hand, even in the event of a hit, the expected benefit (profit) of a new venture tends to be low compared to what it would have been under better economic growth conditions.

Thus, during economic recessions, it is natural that the more innovative enterprises - focused on new products, production processes and/or markets, which are the “flagship” of the economic development process - are proportionally more affected, for they are more difficult to evaluate, leaving (if any) only investments that fit the capital already in existence. Without a doubt, the support of a development bank for such “spontaneous” investments would help to contain the recessionary stimulus. Under such a scenario, however, it would be advantageous if the development institution had at least a counter-cyclical role capable of countering the loss of the investment activity rather than sanctioning it. In addition, as noted Gerschenkron (1962, p. 10) when observing the complementarity between the new sectors and those already established, the maintenance of a reasonable rate of growth of the latter is a necessary condition (although not enough) for the expansion

of the first. This reinforces the recommendation of a counter-cyclic performance from the development bank<sup>8</sup>. To do so, it is necessary that the development bank assume broader functions than those of a ‘common bank’, identifying and stimulating, with investment programs and financial help, sectors capable of controlling the recovery of the economy in times of stagnation or recession.

With respect to the institutional characteristics emphasized here - capital structure and links with government policies for development - it is understood that they are conditioned, and in large part, directly defined, by the tasks assigned to each development bank. Roughly speaking, the more comprehensive and diversified the expected role of the development bank in the process of national development, the narrower its political and financial ties with the government and, probably, the greater its participation in the bank’s capital. In these cases, the development bank operates simultaneously as credit provider bank and as a promoter of development agency, also assuming underlining functions of a macroeconomic nature – such as the planning, formulation and/or implementation of national policies. Such functions are difficult, if not impossible, to execute for financial institutions with entirely private capital, whose interests are, by nature, microeconomic. Thus, the predominance of government capital is virtually imposed in these cases.

In short, it is not only the focus on long-term financing, or on the funding of important sectors for economic development in a given period, that

distinguishes a development bank from other types of financial institutions. After all, institutions of eminently private interest may work in these areas, contributing positively to national economic development. This, however, does not characterize them as development banks if this type of activity is not defined, in their social contract, as being the main purpose of the institution. It is the commitment with financial support to the national process of economic development that differentiates a development bank from other institutions that, possibly or occasionally, exercise this function. This type of commitment is not a characteristic of private financial institutions moved by the overriding motive of profit.

Finally, it is worth noticing that development banks can and must live with the capital market as the locus for the allocation of capital and promotion of financing for development. In such circumstances, the bank itself can operate as an important vehicle of stimulus to the capital market. Especially when it comes to the financing of Innovation (R&D), development banks and the capital market can operate in a complementary way. As the funding for this type of activity is more fraught with uncertainties than the investment activity called “normal”, and considering the limits of these typical instruments of capital markets financing those activities,<sup>9</sup> those development banks may act as institutions promoting and strengthening these instruments.

<sup>8</sup> Besides the counter-cyclic role of development banks, that complementarity between sectors also recommends the financial support, from the institution, to some already established sectors, with close links with those they intend to stimulate within the framework of an economic development program.

<sup>9</sup> Hall, B. H. (2002). *The Financing of Research and Development*. UC Berkeley Working Papers, E01-311.





*article*

# BASIC SANITATION

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## **ABSTRACT**

The Federal Government has been undertaking initiatives to renew concessions stimulating private investment in the infrastructure sector for sanitation. In light of the major sports events, such as the World Cup and the Olympics, which will soon be hosted by Brazil, and the consequent increase in the number of foreign visitors, it becomes even more important to invest in basic sanitation. In this article, Rosane Coelho, provides an overview of the sector in the major cities of the country, describing some of the measures taken for its universalization.



Macroeconomic specialists believe that the Brazilian economy could grow more if new and sizeable private investments in the infrastructure sector were authorized. Due to the realization that the sector can no longer expect enough public investment to develop the country at the desired pace and within the desired timeframe, the Federal Government has been developing various strategies to renew concessions and to stimulate the contracting of a new series of investments.

The proposal of the National Basic Sanitation Plan (Plano Nacional de Saneamento Básico - Plansab), which is coordinated by the Ministry of Cities, suggests an expenditure of over R\$ 400 billion to achieve the universalization of the basic sanitation sector in Brazil by 2030; i.e., the distribution of treated water, the collection and the treatment of sanitary sewers, the collection and final disposal of solid refuse (urban garbage) and the draining of rain water.

The basic sanitation sector in Brazil is increasingly following this trend regarding the expansion of its infrastructure. According to data provided by the National Sanitation Information System (Sistema Nacional de Informações sobre Saneamento – SNIS), operated by the Ministry of Cities, R\$7.8 billion were invested in the sector in 2009, registering a growth of over 40% in comparison with the previous year. In 2010, investments increased by over R\$1.1 billion, reaching a total of almost R\$9 billion.

The entrepreneurs working in this sector believe that the challenge of the quest for universalization, offering quality and sustainability to the different sectors, may pick up its pace with the participation of the private sector. This participation has driven improvements in services such as providing the population with treated water and the collection and treatment of sewers, which went from 6% in 2007 to 12% in 2011.

According to data provided by the Brazilian Association of Private Public Service Concessionaires of Water and Sewage (Associação Brasileira das Concessionárias Privadas de Serviços Públicos de Água e Esgotos – ABCON), 17 new agreements were entered into between 2007 and 2011 with various municipalities and state-controlled companies, reinforcing the concept of public-private partnerships.

Private initiative participation has been growing in the basic sanitation sector in Brazil, filling in gaps in cases where companies/quasi-governmental companies (both State and local) are unable to satisfy the population demand.

According to the Ministry of Cities, the private sector operates through comprehensive concession agreements regarding water distribution and sewage collection, and treatment services. Data provided by ABCON show that at their current level of participation, private companies serve some 20 million people, which represents approximately 8% of Brazil's urban population.

The Plansab, coordinated by the Ministry of Cities and launched in 2008, is an initiative intended to improve the conditions of basic sanitation in Brazil over the next 20 years. Some of its key proposals are: the improvement of the water supply for both the urban and rural areas of the Southern, Midwestern and Southeastern Regions of the country, as well as the elimination of garbage dumps and refuse pits, all of which are to be accomplished by 2014. The goals are for the water supply to cover 98% of the nation, for 88% of the sewers to be treated and 100% of solid refuse to be collected, and all of this by 2030. In order to achieve this, the Ministry of the Cities forecasts a necessary investment of R\$420 billion.

With the intention of being better prepared to cater for the large number of visitors 'for the coming events – World Youth Day (WYD),; the Confederations Cup in 2013, the World Cup in 2014, hosted by the 12 main cities in Brazil, and also the Olympic Games which are to be held in Rio in 2016, some of these cities/states have been making large investments. This represents a leap in quality as well as an opportunity to leave a legacy of medium and long term benefits for the population.

When it comes to supplying water to the cities that will host the 2014 World Cup, seven of them have already achieved (or are very close to achieving) universalization, a challenge still being faced by Salvador, Manaus, Natal, Recife and Fortaleza who in 2010 still showed levels that fell below the average. Cuiabá, Recife and Manaus still need to invest in their water supply systems in order to make their supply less irregular.

The sewage collection and treatment process remains low, and in six of the capital cities the service rate remains below 50%. In terms of their development, Fortaleza, Brasília, Rio de Janeiro, Salvador and São Paulo have presented a better rate of progress since the Sanitation Act was put into effect in 2007.

When it comes to covering up open cesspits, the challenge becomes even greater and one cannot expect that it will become universalized in the majority of the main cities in Brazil. Some of them, such as Belo Horizonte and Brasília are closer to achieving this goal. With the continuation of the investments made so far, Fortaleza, Brasília, Rio de Janeiro, Salvador and São Paulo may get there. Cuiabá has essentially reached its goal of universalization with regards to water supply, but it is covering up its open cesspits at a slow rate. In April 2012, Cuiabá's City Hall executed a water and sewage concession agreement with a private company called CAB - Cuiabá, which should speed up the process, with the objective of achieving the universalization of the water supply by 2015, with estimated investments of R\$315 million over the coming five years.

The situation is critical in Manaus. The population living on the city's East Side suffers from an intermittent water supply 12 hours per day, however, Manaus is expected to improve this supply situation thanks to the recent acquisition of a concession from Companhia Águas Ambiental do Grupo SAAB - Águas do Brasil. The new concessionaire plans to invest R\$85 million in order to universalize the water supply within the city, and it estimates that by 2013 the entire population will have access to 24-hour services.

When it comes to sewage treatment, the city that most stands out from the 12 future host cities for the World Cup, and the one which showed the greatest advance over the three year period, from 40.71% in 2007 to 51.92% by 2010, is Rio de Janeiro. The most critical cases are Natal, Cuiabá, Manaus and Recife, which showed rates that fell below the average of 48.79%.

The problem of sewage is not restricted to its collection alone. If one looks at the treatment levels, the situation becomes even more limited.

In an attempt to reduce the deficit in catering for worldwide events, some of the main cities in Brazil

are trying to increase their investments, especially the state of Pernambuco, which forecasts an investment to the tune of R\$4.5 billion for the execution of works to implement and improve the sewage system in 14 of the cities surrounding the Metropolitan Region of Recife and in the city of Goiania, in the North Forest (Mata Norte) region of the State. This is to be accomplished by way of a Public-Private Partnership (PPP), with 2/3 of the funds being invested by the private partner and 1/3 being invested by the public sector. The work is expected to begin in January 2013, and to take 12 years to complete. It is expected to benefit 3.7 million people, of which only 30% are currently benefitting from sewage collection and treatment services.

As already mentioned, the State of Rio de Janeiro has stood out in regards to its actions. Through the restructuring of the State Water and Sewage Company (Companhia Estadual de Águas e Esgotos - Cedae), and by way of joint efforts with the Environmental Department and the State Environmental Institute (Secretaria do Ambiente e do Instituto Estadual do Ambiente - Inea), the state has been seeking to improve its environmental sustainability conditions by eliminating garbage dumps, installing sanitary landfills and by unifying the systems used in the collection and the treatment of sewage.

The advances made by the Rio Metropolitan Region over the last decade are quite significant. It is estimated that sewage collection benefitted 3.2 million homes in 2010, which represents an increase of 53% over the number of homes recorded during the 2000 Census. This potential growth of 4.3% per year partially made up for the slow expansion observed between 1980 and 2000. There still remains a 19% deficit of homes located within the Metropolitan Region that still have no access to the sewer network. This equates to 750 thousand homes, 250 thousand of which are located within the capital city of Rio de Janeiro.

Driven by this outcome, on June 05 2012, the City Hall of Rio de Janeiro put into operation the Sewage Treatment Station Constantino Arruda Pessoa, in Deodoro, on the City's West Side. This was achieved through entering into the first PPP (AP5) with the private consortium Foz Águas, which is a concessionaire made up of companies Foz do Brasil (from the Odebrecht Group) and SAAB - Saneamento



Ambiental Águas do Brasil. This is the biggest concession ever set up in the country. It is going to treat the sewage of 21 districts located within the region over the next 30 years, and by 2016 it will divert 40% of the sanitary sewage volume from the Sepetiba and Guanabara bays.

According to data provided by Veja Magazine, the city of Rio de Janeiro has surpassed both the state and the capital city of São Paulo, which today has the second largest construction work investment budget in Brazil, second only to the Federal Government. During the first four months of 2012, the City Hall of Rio de Janeiro invested R\$2.7 billion, against R\$11.1 billion invested by the Federal Union.

The Government of the State of São Paulo, through the State of São Paulo Basic Sanitation Company (Companhia de Saneamento Básico do Estado de São Paulo – SABESP), implemented a PPP in order to improve and expand the Alto Tietê Water Generation System, which currently produces 10 thousand liters of water per second, and it is responsible for supplying 15% of the entire population of the São Paulo Metropolitan Region, which equates to over 3 million users. This initiative will enable investments needed to execute various construction works and offer services which will increase the supply of water to São Paulo by 50%, and thus ensure its regular supply throughout the entire greater São Paulo area.

Another significant challenge for the infrastructure sector is the collection and the final disposal of solid refuse. According to the information provided by the Ministry of the Environment, Brazil currently produces 150 thousand tons of garbage daily. Of this total, 59% is dumped into trash landfills and only 13% is reused.

In December 2010, Law 12.305 (The Solid Refuse Act) was created, which brought together a set of principles, objectives, tools, directives, goals and actions – all of which are intended to provide integrated management as well as an, environmental management capable of handling solid refuse. The National Solid Refuse Policy (Política Nacional de Resíduos Sólidos) has set forth directives that associate environmental protection with the creation of jobs and income, as well as the

possibility of generating electrical power from the refuse generated by the population.

All those involved in the production chain (manufacturers, public managers, public and private companies, as well as users) need to contribute by complying with the directives of this National Policy as soon as possible, in order to reduce the volume of refuse that is destined for sanitary landfills, as well as to encourage the reuse and recycling of solid refuse by including trash collectors in the management process.

An overview presented by the Association of Brazilian Public Cleaning and Solid Refuse Companies (Associação Brasileira de Empresas de Limpeza Pública e Resíduos Sólidos – ABRELPE), showed that 89.6% of Brazilian homes benefit from the collection of home-generated garbage. Data provided by a National Survey on Basic Sanitation (Pesquisa Nacional de Saneamento Básico) in 2010, carried out by the IBGE, pointed out that 49% of Brazilian municipalities are burdened with large garbage dumps; that 27% have controlled landfills, and that only 23% have sanitary landfills.

Most States and Municipalities have yet to elaborate their solid refuse management plan, even though the deadline is drawing ever closer. As of this year, those entities that fail to complete their solid refuse management plans shall be blocked from asking for federal funds to clean their cities. According to the Ministry of the Environment, only 47 contingency fund requests for planning were made by the State and local administrations.

Since it is not mandatory to solicit help for planning from the Federal Union, it is not known for sure how many municipalities have done so. A survey carried out last year by the Office of the Environment and Hydric Resources (Secretaria do Meio Ambiente e Recursos Hídricos – SEMA), showed that 47% of the municipalities had already completed their Solid Refuse Management Plans, however, 31% were still in the process of elaboration and 22% had not even begun the process. The National Confederation of Municipalities (Confederação Nacional dos Municípios – CNM), estimates that over 50% of Brazilian cities did not set up any plans for handling solid refuse, claiming that they did not have the

necessary technical knowledge or training and that their public management teams were unaware of the need to do so, or did not have the necessary financial support to accomplish the determinations defined by Law 12.305/2010. According to estimates made by the CNM, only 334 (9%) of these municipalities had finalized their plans, and R\$70 billion will be needed by 2014 in order to transform garbage dumps into sanitary landfills. Once the legal timeframe for achieving these goals has run out, any mayors who may have failed to do so will be subject to the intervention of the Public Ministry.

The Ministry of the Environment has stated that the timeframe for presenting solid refuse management plans will not be extended, which will make some municipalities ineligible to access federal resources. During the 2007 to 2011 period, the number of cities that adopted proper disposal techniques for solid refuse grew by 1.67%, representing an average of 0.33% per year. In the event that this average growth remains at its current rate, then the goal will not be reached within the specified timeframe.

Information provided by the Brazilian Public Cleanliness and Special Refuse Disposal Association (Associação Brasileira de Empresas de Limpeza Pública e Resíduos Especiais – ABRELPE), show that 56% of the 61.9 million tons of refuse that were generated in 2011, found their way into sanitary landfills, while 41.9% were dumped in



inadequate disposal areas. On the other hand, with the deadline coming to a close, a more intensive movement is being seen among some of the states and municipalities in order to eliminate all areas used for the improper disposal of refuse as well as to come up with management plans for the collection of urban and industrial refuse. A widely publicized example was the closing down of the Gramacho garbage dump in Rio de Janeiro. It is important to mention the cities with population that exceeds 500 thousand inhabitants, such as Uberlândia (MG), Ribeirão Preto (SP), João Pessoa (PB), Maceió (AL) and São Paulo (SP), which as well as adequately disposing of their solid residues also presented the best averages (of refuse) per inhabitant.

According to the Ministry of the Environment, the Northeastern portion of the country is the poorest in regards to sanitary landfills in proportion to its population density, lacking 137 additional medium and large-sized sanitary landfills which are needed to handle the 33 thousand tons of garbage generated per year. The Northeastern region of the country is followed by the Northern Region, which predicts the need for 135 new landfills in order to handle the 9.9 thousand tons of garbage generated daily. This region is also finding great difficulty in correctly disposing solid refuse, since the municipalities are made up of areas that cover large territories and are far removed from one another, which prevents them from setting up consortiums. The Southeastern region, which



is the most densely populated region in Brazil, produces 63.4 thousand tons of garbage per day, however, it is also one of the more advanced regions in terms of having the necessary licenses to properly handle its refuse, and according to the Brazilian Association of Solid Refuse and Public Cleanliness (Associação Brasileira de Resíduos Sólidos e Limpeza Pública - ABPL), this region requires 42 new landfills of varying sizes. The Midwest, on the other hand, needs 90 new landfills for the receipt of 10.6 thousand tons of garbage per day. While the Southern region, which produces 19.7 thousand tons of garbage per day, will need to build 44 additional sanitary landfills.

Data provided by the ABPL show that 3,371 Brazilian municipalities do not adequately dispose of their solid refuse. Cities such as Mogi das Cruzes, Suzano and Bauru, in the State of São Paulo; as well as Macapá (AP), Campo Grande, Duque de Caxias (RJ), Teresina (PI) and Brasília (DF), have been ranked the worst because they still use garbage dumps as the final destination for their solid refuse, and they also present the largest averages of refuse produced per inhabitant.

With the intention of finding a solution for inadequate garbage disposal, the Federal District recently announced that all future solid refuse will be treated at a new sanitary landfill: Aterro Oeste (the West Side Landfill) which will be built in Samambaia. An architectural project has also been proposed, to build the Jockey Landfill Sorting Center (Centro de Triagem do Aterro do Jôquei) which is intended to be used by the trash collecting cooperatives who work within the Vila Estrutural district landfills. This initiative represents one of the initial stages for the implementation of a selective garbage collection system, integrating the solid refuse policy operated by the Government of the Federal District.

The Sorting Center will be installed in Special Area 1 (Área Especial 1) inside an area which will measure 1,618.20 m<sup>2</sup>, an area large enough to process 20,400 kg of refuse daily, that will require 166 workers working in two shifts. Of these workers, 102 will be used to carry out a manual sorting of the materials collected, incentivizing the introduction of new trash collectors into this activity, as formal cleaning agents for the city.

Plans have been announced to free up eight areas where seven refuse transferral, sorting and recycling venues are to be installed, including the recycling of refuse left over from civil construction produced by the administrative regions of Brasília, Estrutural, Gama, Paranoá, Planaltina, São Sebastião and Samambaia, as well as a landfill for inert matter which is to be installed in São Sebastião in partnership with private initiative.

Small municipalities whose collective volume of solid refuse does not justify isolated action, or municipalities without a sanitary landfill within a radius of 60 km, will be able to join together in a consortium in order to be able to comply with legal directives, such as is the case in many Northeastern municipalities. The Consortiums Act offers adequate tools to incentivize cooperation between the Municipalities, the different States and the Federal Union.

The operations of garbage collection and final disposal of solid refuse are activities that have expanded throughout Brazil. Some municipalities are already experimenting with the approach of granting concessions for the provision of these services for longer periods of time so as to make heavier investments more viable. The Public and Private Partnerships Act (PPP), is also taking advantage of contractual arrangements among private entrepreneurs, which will be inspected by a regulatory agency and controlled by a public agency.

The universalization of basic sanitation in Brazil involves large amounts of money, which may not be able to be raised solely by collecting tariffs from users. Although there are financial resources, credit and legal tools, a unified political will between the public entities, society and private initiative is still missing, and it is essential to accelerate the expansion of the sector's operations in order to attain the established goals. Any investments made will return in the form of environmental sustainability, human and social development as well as the preservation of human health, which is a momentous step towards encouraging growth and towards the infrastructural improvement of the country.