

# BRAZILIAN INFRASTRUCTURE INVESTMENT OPPORTUNITIES: BEYOND THE ELECTIONS

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ANA CARLA ABRAO

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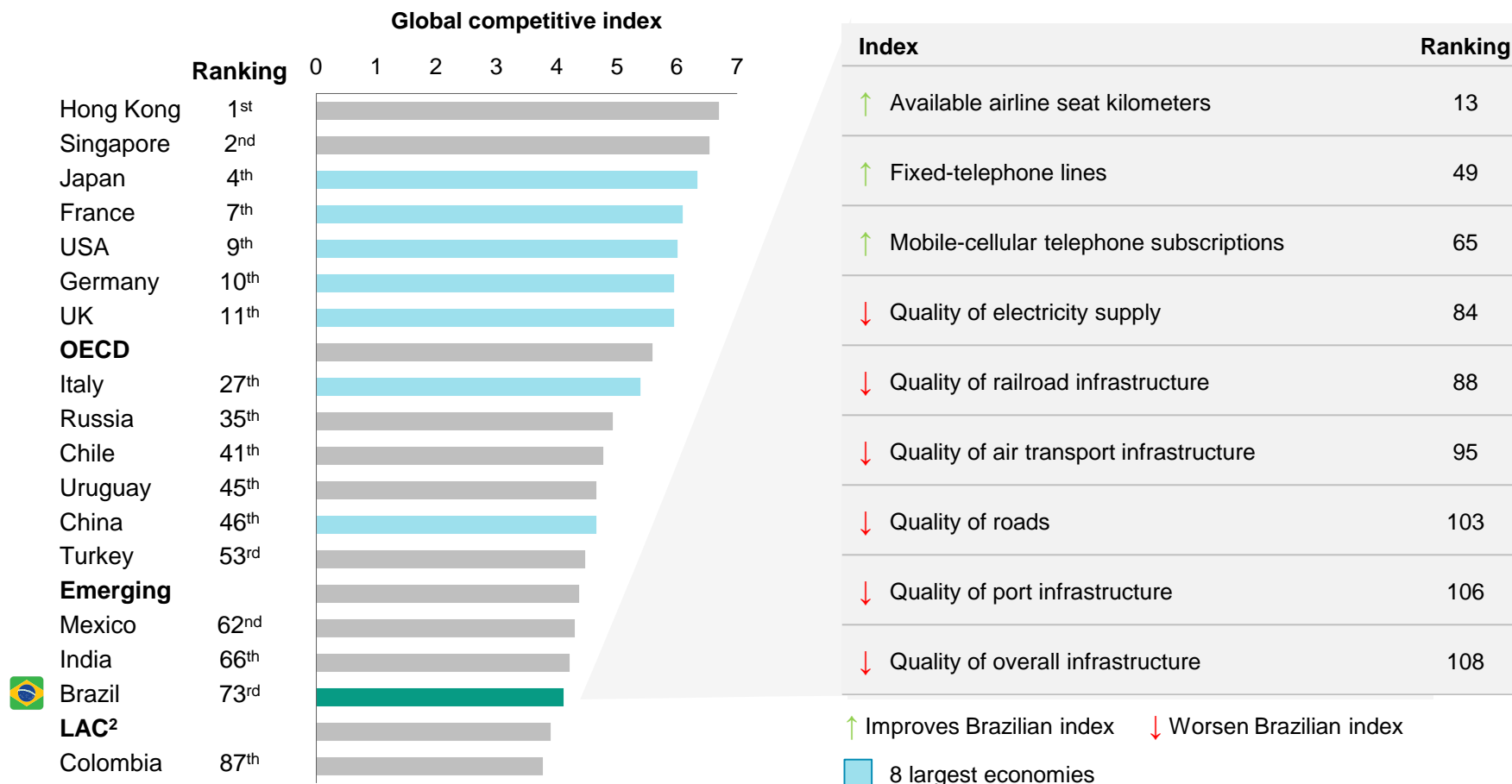
## Section 1 | Infrastructure gap in Brazil

# Infrastructure gap in Brazil

Despite being the 9<sup>th</sup> largest economy in the world, Brazil ranks 73<sup>rd</sup> in general infrastructure, close to LAC and below other emerging countries

## General Infrastructure ranking<sup>1</sup>

Rank/137, 2017

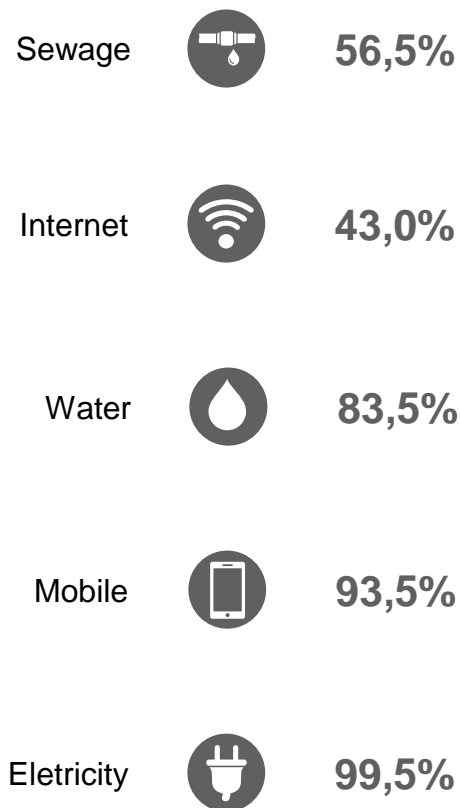


Source: (1) Global Competitiveness Index (GCI) 2017-18, World Economic Forum; (2) Latin America and the Caribbean countries; 2nd pillar: Infrastructure; Oliver Wyman Analysis;

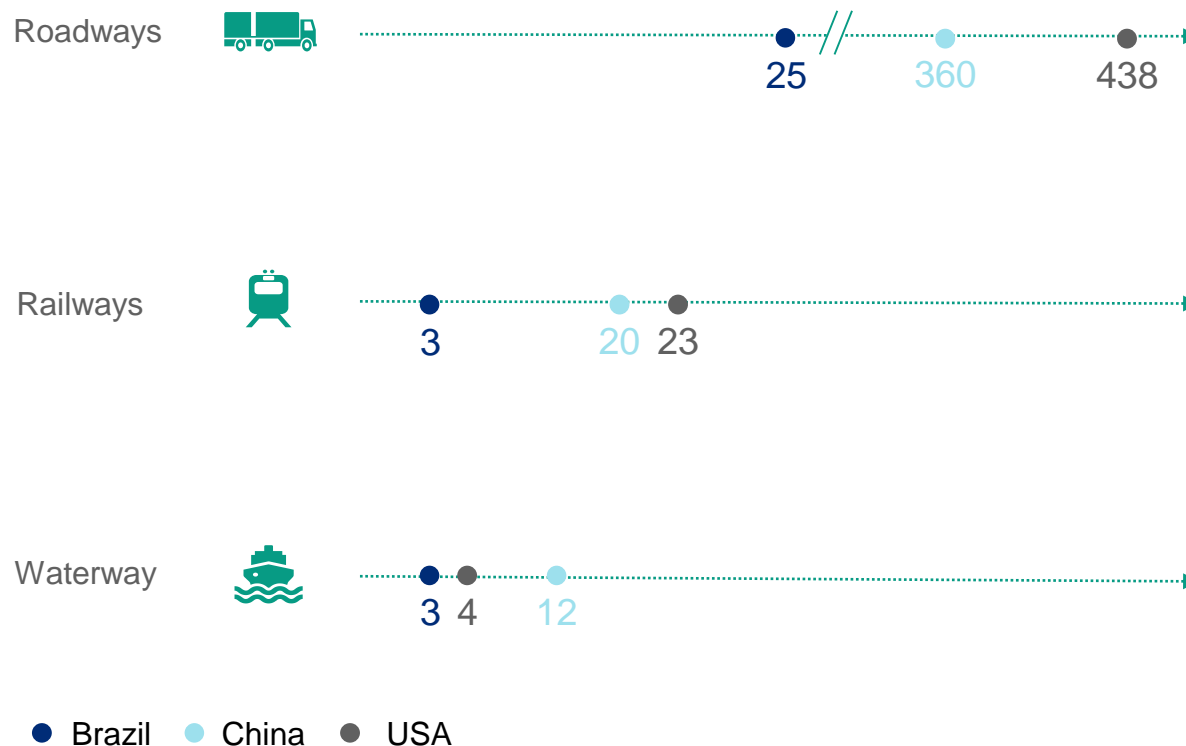
# Infrastructure gap in Brazil

The inadequate infrastructure is reflected in poor indicators across key sectors, demonstrating that basic infrastructure is not yet universalized

## Infrastructure services access % of households, 2015



## Transportation network density KM network/1,000 km<sup>2</sup> area, 2014

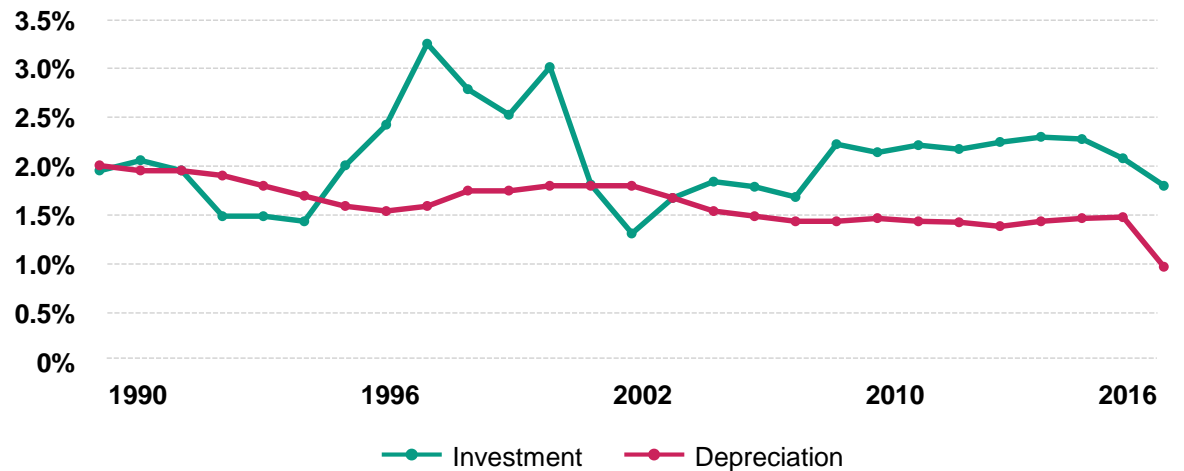


Source: PNAD – Pesquisa Nacional por Amostragem de Domicílios, IBGE; Confederação Nacional dos Transportes; World FactBook; Antaq; ANTF; Oliver Wyman Analysis

# Infrastructure gap in Brazil

Brazil invests ~2% of GDP in infrastructure, which is not always enough to cover depreciation

## Investment and depreciation of Brazilian infrastructure % of GDP, 1990–2016



- While **Brazilian** infrastructure investments are ~2% of GDP, **China** invests ~7% and **India** ~5,5%

- In a few years, **investments were not sufficient** to cover depreciation

### Understanding the investment volume

- Privatizations cycle (eg. Telecom) and creation of regulatory agencies
- Economic crisis across emerging markets (Mexico, Russia, Asia...)
- Public-private partnership law (2004)
- Efforts to resume growth path via multiple government infrastructure programs (e.g., PAC)
- New program (PPI) with focus on a new governance

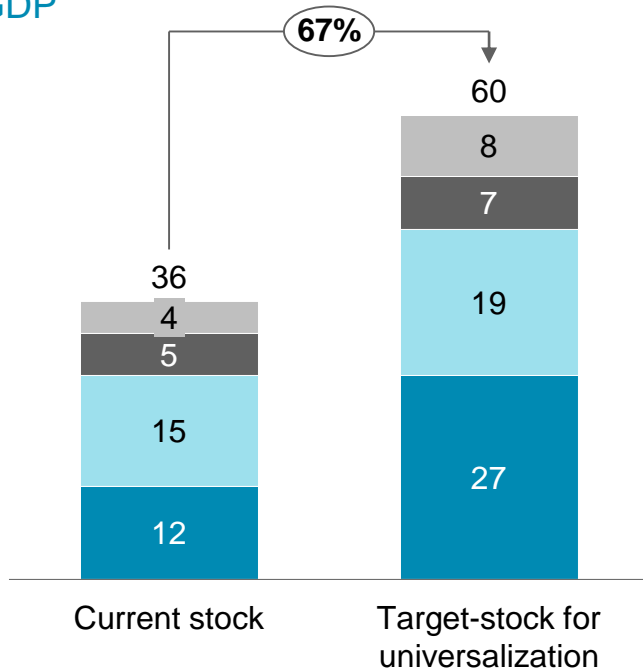
- **Singapore** invests around 2,5% of GDP, and **USA** investments **only** in **water** and **transportation** are more than that

Source: Frischtak e Mourão; Oliver Wyman Analysis.

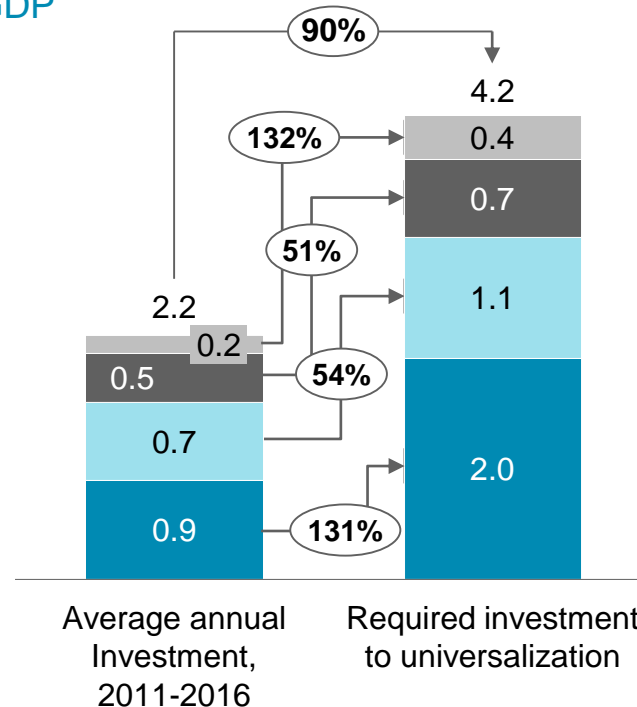
# Infrastructure gap in Brazil

To achieve the universalization it is required a 67% increase in the infrastructure stock

Infrastructure stock by sector  
% of GDP



Infrastructure investment by sector  
% of GDP



Sanitation Telecommunication Energy Transportation



**Drill-down on gaps by sector in the next pages**

Infrastructure project overprice and poor investment allocation, as in the past, will result in longer time for universalization

Source: Frischtak e Mourão (2017)



# Infrastructure gap in Brazil: Sanitation

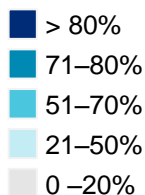
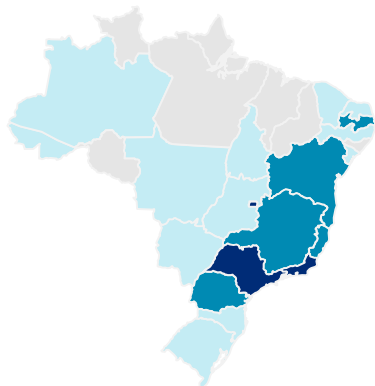
Basic sanitation shows the greatest gap with 56.5% of the population with access to the sewage network

## Access to water and sewage network % population, 2014

### Water network



### Sewage network



- In the modern world, **sanitation is perhaps the most basic service** to be provided by the government
- Unfortunately, **Brazil is lagged** in this fundamental area **mainly in North and Northeast regions**
- Brazilian **sewage treatment situation is even worse**
- Only the **South and Southeast have acceptable levels** of access to the sewage network
- Research shows complementary information on Brazilian lack of basic sanitation
  - World Bank indicates that **only 39% of households** in Brazil have access to **improved sanitation**
  - IBGE points that **almost 20% of households do not have** access to the **collection network or septic tank**

Sources: (1) PNAD 2014

# Infrastructure gap in Brazil: Telecommunication

Brazil has one of the highest penetration rate of mobile phone in the world, but lags in broadband internet, fixed-voice and Pay-TV

## Penetration of telecom services by region/country

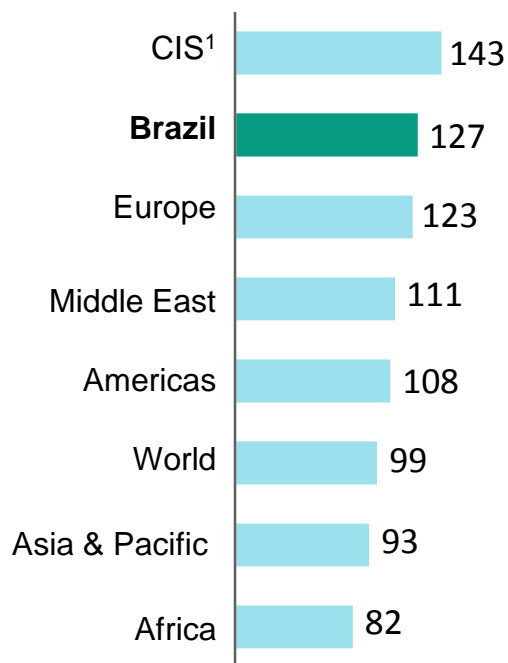
2015 figures

*Main global direction*



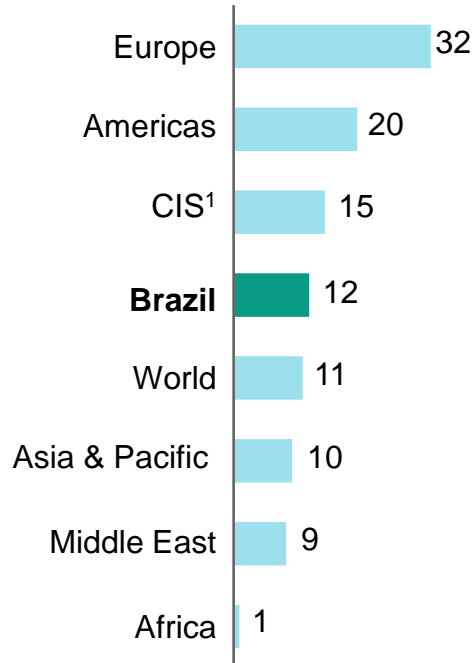
### Mobile telephony

Subs/100 inhab.



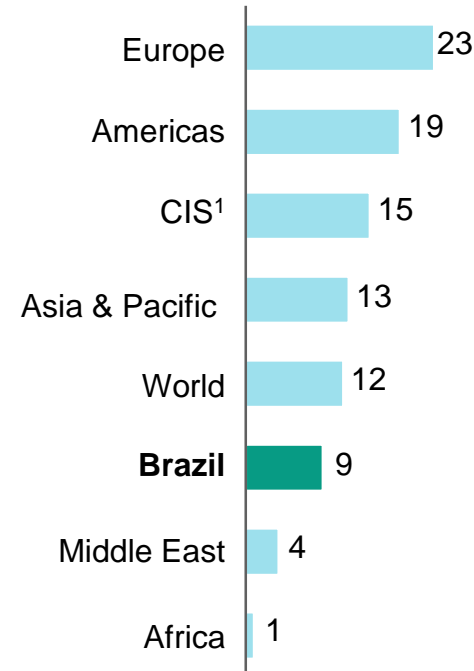
### Fixed broadband

Subs/100 inhab.



### Pay-TV

Subs/100 inhab.



Notes: (1) CIS means Commonwealth of Independent States (Belarus, Russia, Kazakhstan, Moldova, Azerbaijan, Ukraine, Armenia, Georgia, Kurdistan, Uzbekistan, Turkmenistan)

Source: International Telecommunication Union; OVUM; Oliver Wyman analysis

# Infrastructure gap in Brazil: Energy

One of the highest price worldwide, mainly due to inefficiency of the generation, distribution and to transmission costs

## Blackouts frequency per region in 2015

EFC ANEEL



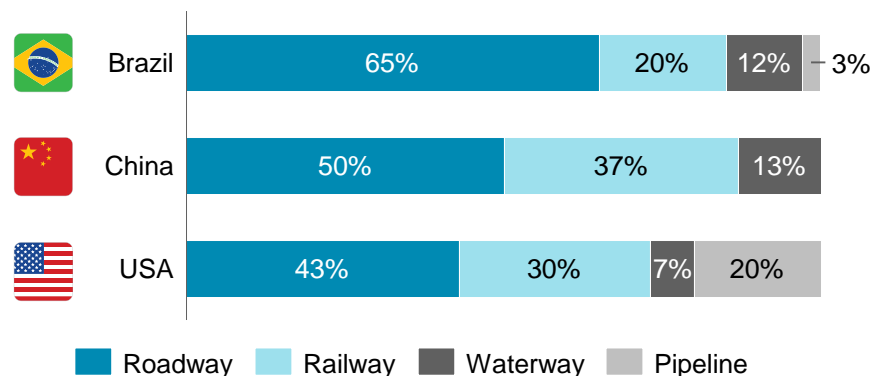
- Currently, **almost 70% of the country's energy is hydroelectric** - electricity reaches almost 100% of households in the country
- However, the system is still vulnerable to oscillations having **frequent blackouts**
- The system relies mainly on **expensive thermal energy** to compensate for the water deficit
- Adjustments are required to build a more **balanced matrix** that provides greater **safety** to the system at a **competitive cost** and maximizes the country's energy potential

# Infrastructure gap in Brazil: Transportation

Transportation matrix relies mainly on roadways, despite the low density of the network, affecting the cost of freight and the logistics efficiency

## Freight transportation matrix<sup>1</sup>

% de TKU, 2015



- Today, the **logistics network of Brazil is inefficient** compared to developed and even other developing countries such as China, Chile, India and South Africa

- **Logistics costs** in Brazil represented **12,3% of GDP** in 2015 vs **8% in the USA**

## Logistics efficiency of freight transportation<sup>2</sup>

Logistics Performance Index (0–5), Rank/160, 2016



- This is mainly due to the **excessive use of roads** instead of other modes of transport that are cheaper and more efficient, such as railroads or waterways

- Despite of prioritizing roadways, when **compared with US and China** – countries of similar size – **Brazil has ~200x less roadways**

- Besides, Brazil's rail network is only 10% the US or China

Note: Air freight excluded from analysis as represents less than 1% of total transportation

Source: (1) Logistics Costs in Brazil, Ilos, 2017; (2) World Bank, Logistics Performance Index (LPI), 2016

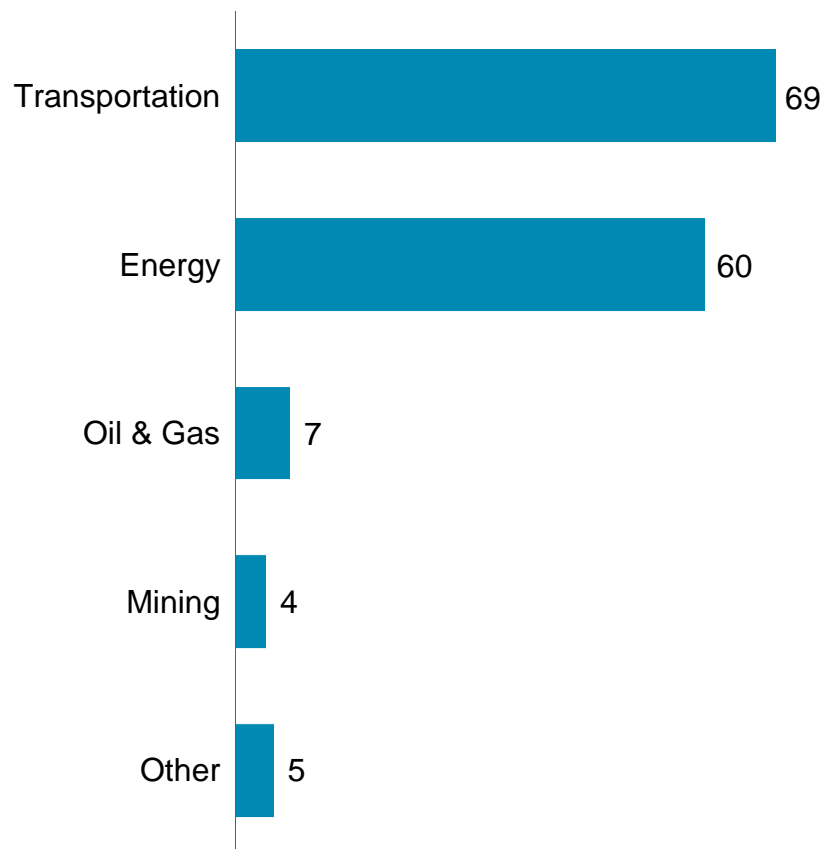
## Section 2 | Investment opportunities

# Investment opportunities

Currently, there are 145 projects on the pipeline under the Brazilian Investment Partnership Program (PPI)

## Projects pipeline by sector

# of projects, 145 projects of main sectors



## Comments

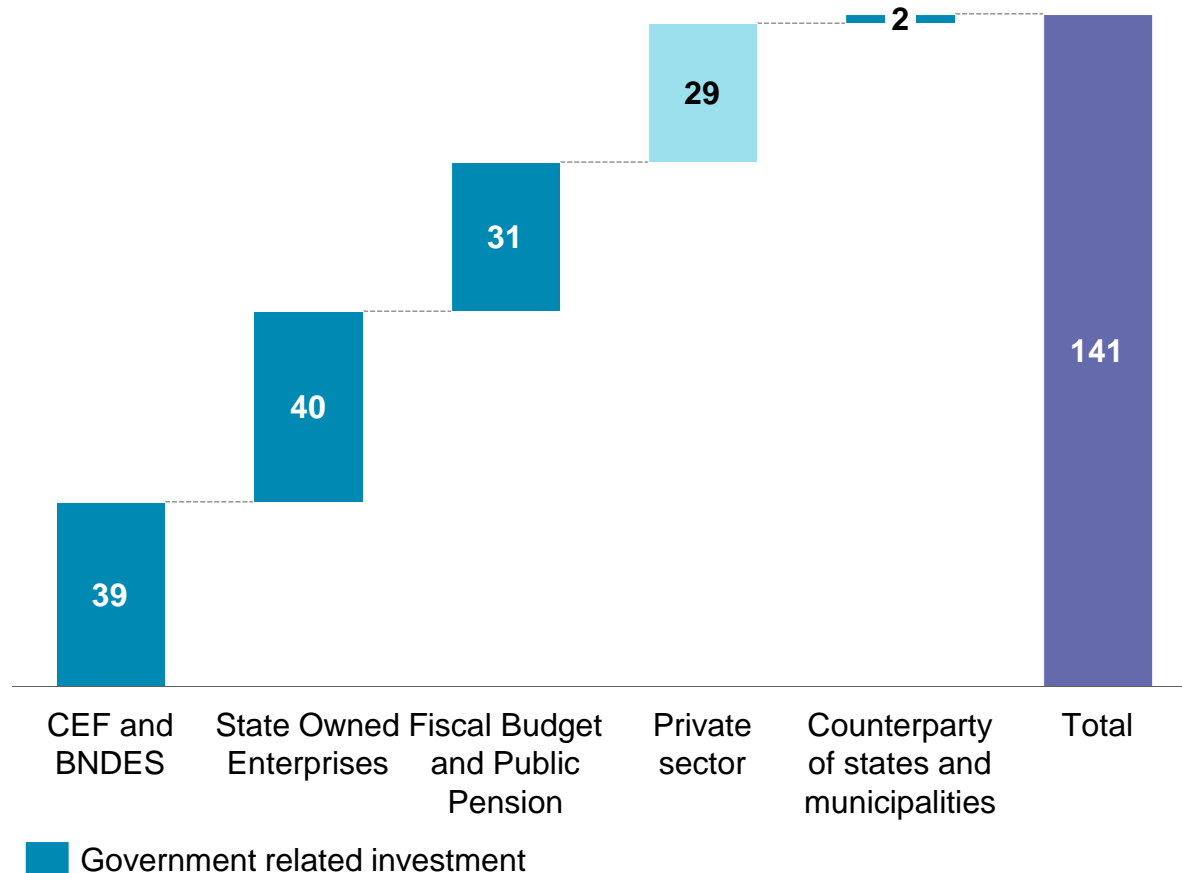
- **34 projects** were qualified as **national priority** in September 2016
- In 2017, further **111 projects** were approved, mainly on the transportation and energy sectors, **totaling ~R\$ 275 billion** in investments
- It is estimated that 45% will be auctioned as concessions, 23% as PPP, and 8% will be privatization

Source: Brazilian Investment Partnership Program (PPI); Selected media.

# Investment opportunities

Traditionally, infrastructure projects have been mainly funded by the government through state banks and direct investments

## Investment source split 2015 to 2017 H1, USD BN



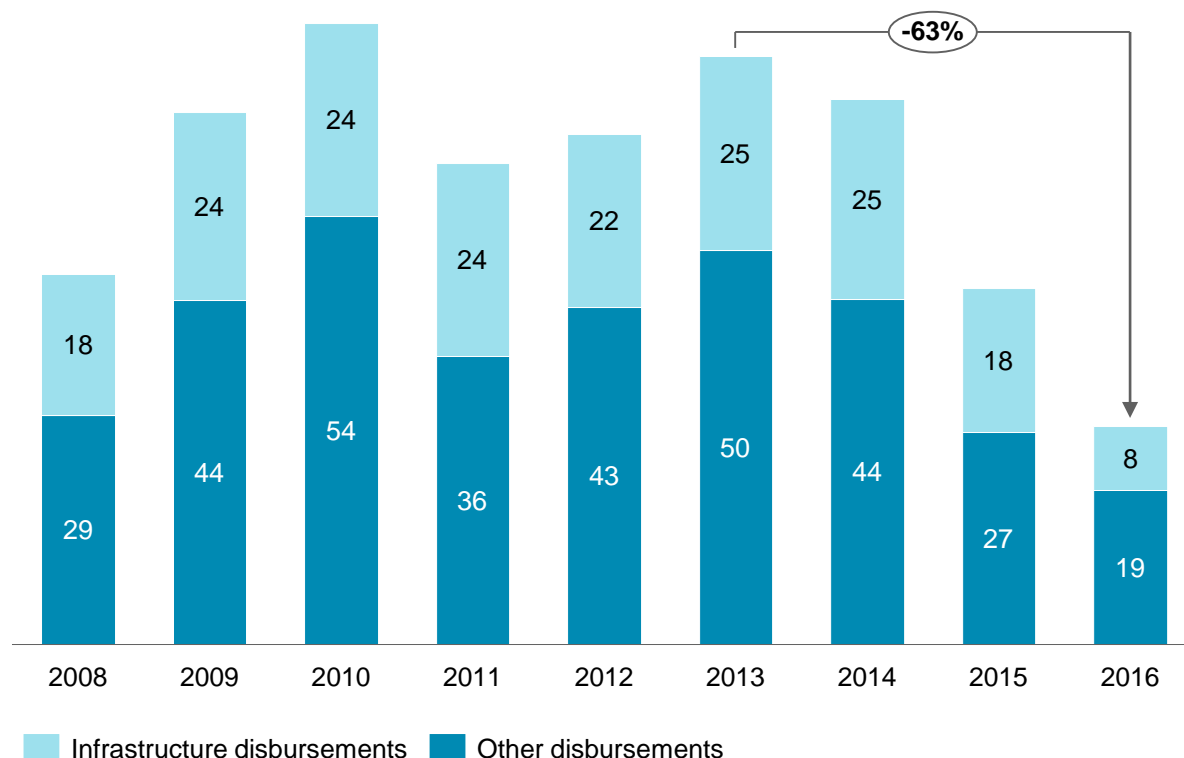
- The **government and its entities** (e.g. BNDES, Caixa Econômica Federal (CEF), Banco do Brasil) have provided **~80% of total funding** for infrastructure between 2015 and 2017 (H1)
- Public funding was provided via **subsidized loans, crowding-out other funding alternatives** – for example, infrastructure-focused (or other long-term) capital markets instruments

Source: BNDES (Perspectivas de Investimento from February 2016), Programa de Aceleração do Crescimento (PAC), Oliver Wyman analysis

# Investment opportunities

The usual infrastructure investments funding model has, however, become unfeasible due to the recent economic and fiscal crises

## BNDES infrastructure disbursements USD BN



- More recently, the government has been focusing on a fiscal consolidation agenda
- It is, hence, starting to decrease participation in infrastructure projects and incentivize further private investments
- As a consequence, BNDES disbursements already have decreased by 63% since 2013

1. Exchange rate – as of each year end, from Ipea data (Institute of Applied Economic Research)

Source: BNDES (Perspectivas de Investimento from February 2016), Programa de Aceleração do Crescimento (PAC), Oliver Wyman analysis

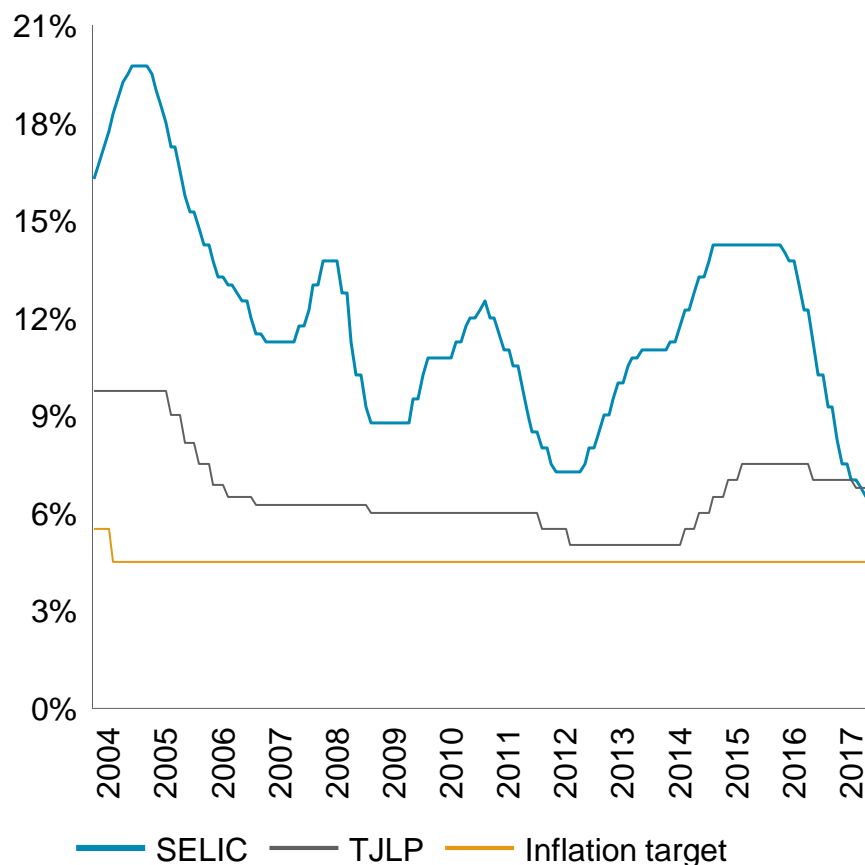


# Investment opportunities: Long-term interest rate

The Brazilian government introduced the a new long-term interest rate (TLP) in order to incentivize the private investment by reducing gap in interest rates

## Basic interest rate (Selic), long-term interest rate (TJLP) and inflation target

% on year basis



- There was a considerable gap between previous long-term interest rate (TJLP), used by BNDES to finance infrastructure projects, and the basic interest rate (Selic)
- BNDES had a clear advantage over private sector to provide funding for infrastructure
- With the introduction of the new long-term interest rate (TLP), the difference between BNDES interest rates and the base rate will be gradually eliminated
- This decreases the advantage BNDES traditionally had of a much lower funding cost
- The measure should reduce the crowding-out effect and allow more private investment as a funding source for infrastructure
- The rates convergence also creates incentives for the development of other long-term financial instruments that channels resources to infrastructure

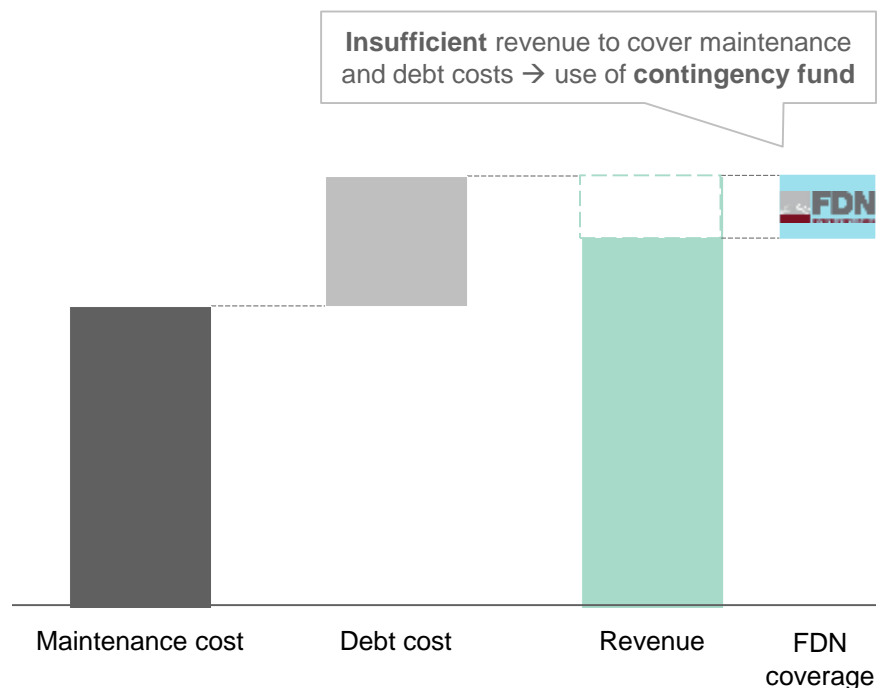
1. Includes Loans, Bonds, Investment Funds, Private Capital and others, 2. Includes: Federal Union, States, CEF, FI-FGTS.

Source: National Confederation of Industries (CNI), O Financiamento Do Investimento Em Infraestrutura No Brasil: Uma Agenda Para Sua Expansão Sustentada; Brazilian Central Bank.

# Investment opportunities: government role

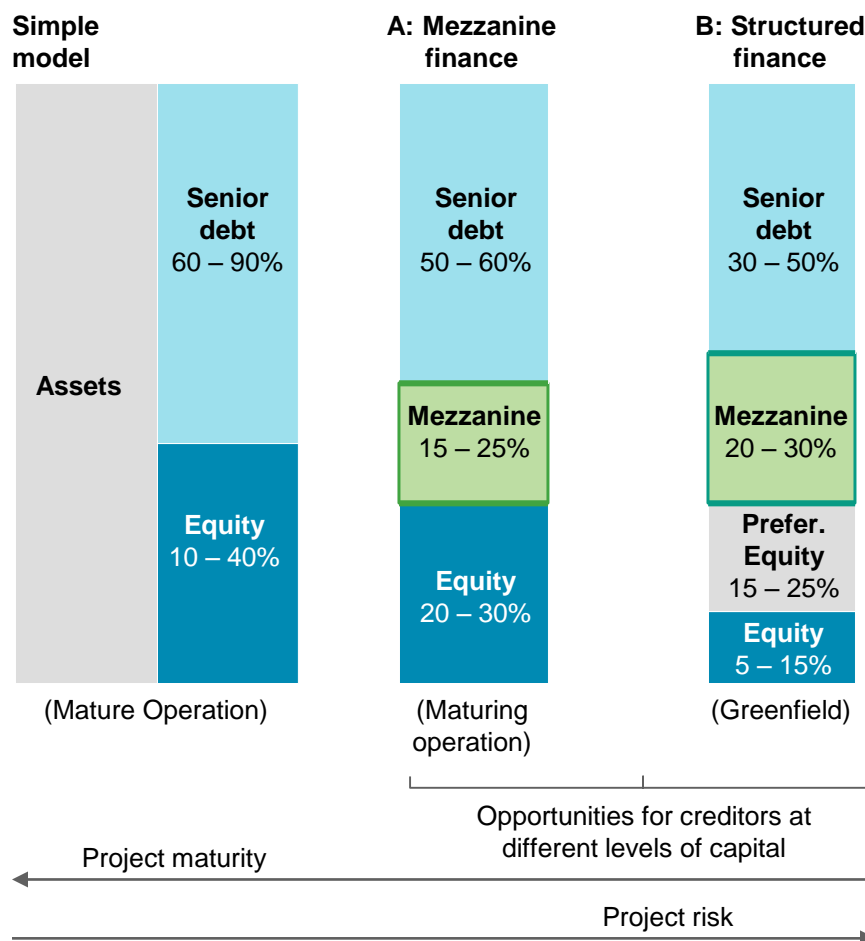
The government and, particularly, the BNDES have enough expertise to have a role that is value-adding and not distortive

## Example: The FDN in Colombia



- The FDN has a **contingency fund** for problems that arise during the construction or operation of projects
- If also supports the formation of the infrastructure funds via **securitization** and initial capital injections, attracting additional investors

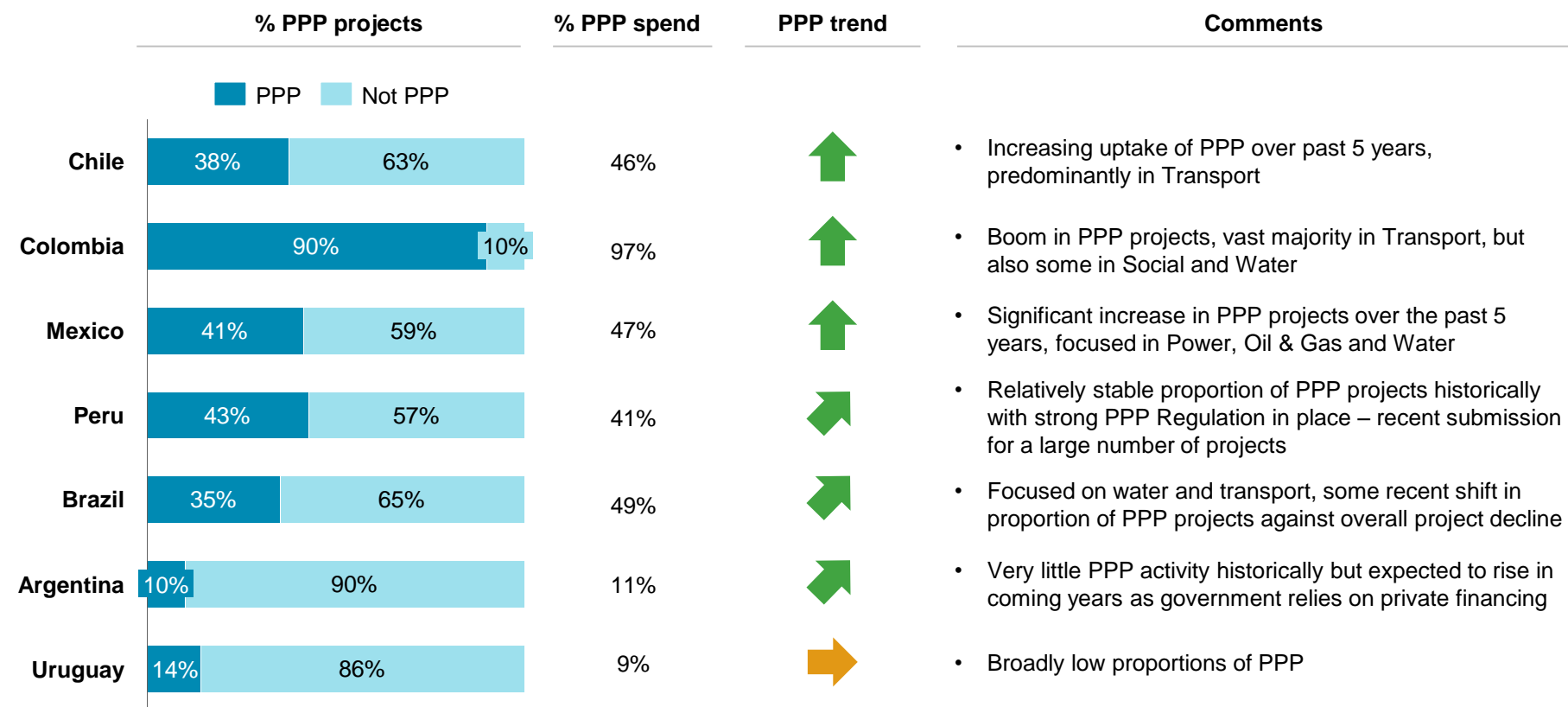
## Example: BNDES as investor in mezzanine debt



# Investment opportunities

Brazil is following the movement across Latin America, where a strong PPP activity is on the rise as an alternative to government funding

























## Privately financed projects – PPP activity<sup>1</sup>



1. % of all privately financed projects that are PPP, 2015-16, for Renewables, Transport, Social, Power, Oil and Gas, Water, Telecomms for projects costing \$50 MM to \$1.5 BN  
Source: IJ Global, InfraPPP, Public reports, Oliver Wyman analysis

# Investment opportunities

Considering the balance between the risk-return profile vs the pipeline size, Brazil is still the most attractive option in Latin America

Opportunity	Pipeline	Returns	Risk profile
1  Brazil Projects	 Large pipeline of opportunities in social and urban, energy and logistics	 <b>10–15%</b> (premium for construction risk)	 <b>Complexity on construction</b> <b>No/limited merchant risk</b> with government revenue mechanisms. Still an element of <b>political risk</b>
2  Argentina Projects	 Sizeable pipeline for tram extensions and considerable rolling-stock demand	 <b>8–12%</b> (could be 13–15% for unsolicited proposals)	 <b>No merchant risk.</b> May be some <b>residual risk</b> on rolling stock partnerships
3  Chile Projects	 Pipeline currently limited, particularly for 12–18month time frame; more projects to enter pipeline to meet government offshore targets	 <b>9–15%</b> (potentially lower because market is more mature)	 <b>Complex construction</b> , limited expertise in new markets. <b>Merchant risk limited</b> by revenue mechanisms. <b>Risk of minority equity stakes</b>
4  Colombia Projects	 Large pipeline, primarily in Colombia but also adjacent countries	 <b>11–14%</b> (large merchant element)	 Necessity to take on <b>merchant risk</b> , with large exposure to wholesale market prices, but favourable fundamentals should make this relatively predictable
5  Mexico Projects	 Strong pipeline for PV solar and wind – expected to be largest renewables market in LatAm in next 5 years	 <b>6–9%</b> (very competitive projects being bid at US returns)	 Auction contracts offer long-term returns (15–20 years), limited <b>merchant risk</b> Some <b>country risk</b>
6  Peru Projects	 Lots of activity in a fast moving market; various initiatives and models to play in	 <b>12–17%</b> (large degree of merchant/regulatory uncertainty)	 Necessity to take on <b>merchant/operation risk</b> Fast moving market, <b>difficult to judge competitiveness</b>

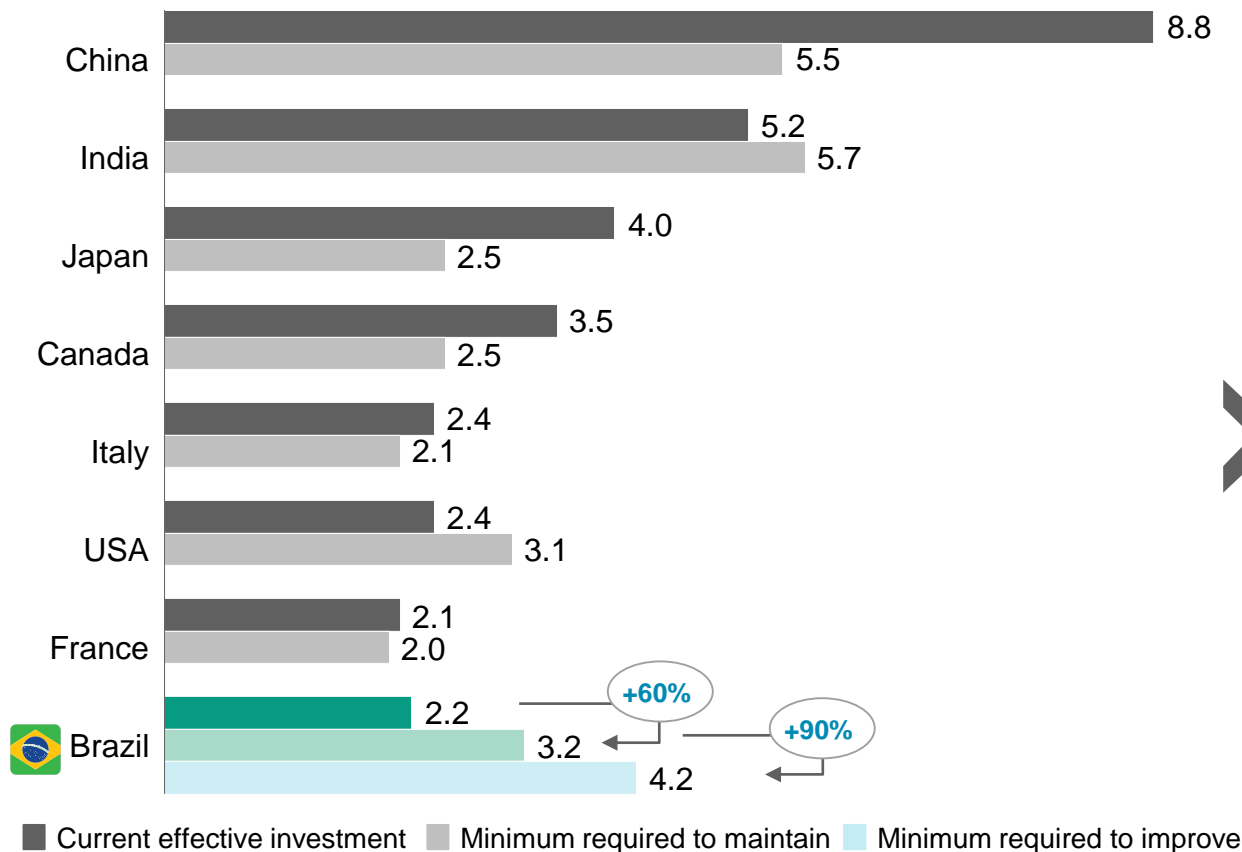
Key:  Favourable conditions  Neutral conditions  Headwinds

Source: Oliver Wyman analysis

# Investment opportunities

Brazil has the largest investment gap compared to other countries and hence the greater upside for investors

## Average annual investment in infrastructure<sup>12</sup> % GDP



- Brazil's has the largest gap of required investment to current investment
- As a consequence there is a high demand for infrastructure across sectors and across the country
- The large expected pipeline as well as the high demand for infrastructure presents a significant opportunity for investors

Note: Values to 2016 level

Source: (1) Infrastructure Yearbook Exame 2016-2017; Oliver Wyman; (2) Average 2008-13 to other countries and 2011-16 to Brazil, to be aligned with previous pages

## Section 3 | Challenges ahead

## Challenges ahead

There are four main risk areas to be managed to increase efficiency in the sector and attractiveness to investors



**Procurement model** unable to ensure legal stability



**Environmental licensing** excessively bureaucratic



**Regulatory agencies** with no autonomy to act

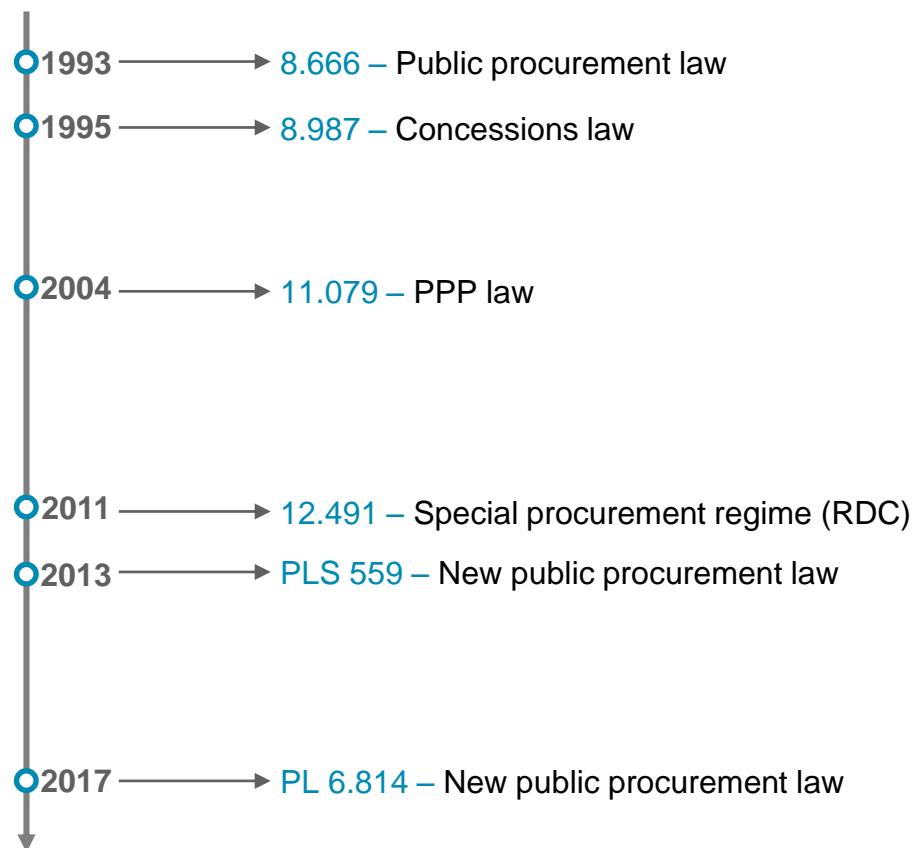


**Delays on processes** and decision making

## Challenges ahead

Procurement model is unable to ensure legal stability and, despite having been amended several times still carries inefficiencies

### Evolution of the legal framework of the procurement model



Source: ANEEL – National Agency of Electrical Energy

### Proposed initiatives to improve the contractual relationship between public and private sectors

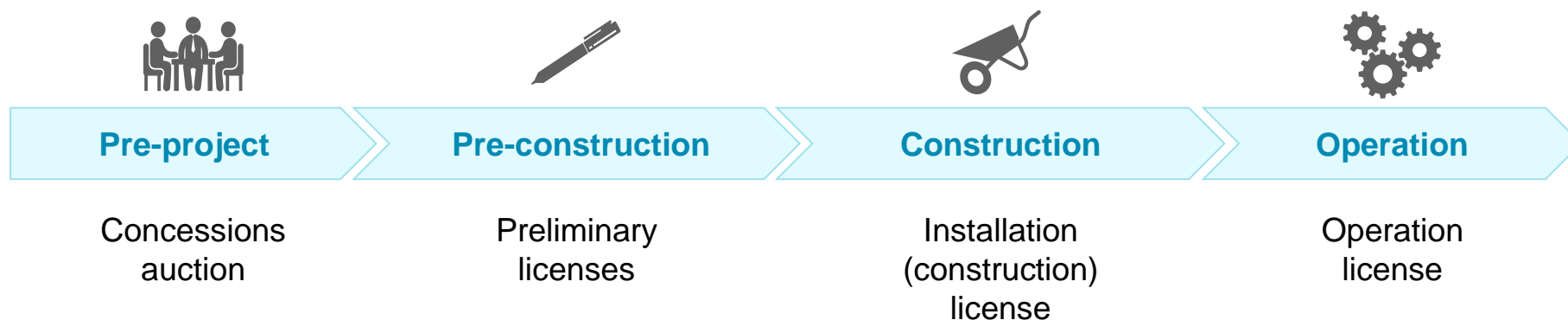
- Improve the **design of bidding auctions** to ensure appropriate risk and revenue sharing and to curb opportunistic renegotiation
- Create **companies** classification entries with **quality assessments** of their services
- Elaborate contractual provisions to **reduce requests for rebalancing**
- Include in the contracts **clear rules on compensation** over the life of the project
- Stimulate the contracting of **performance bonds** and **other alternative instruments** for all infrastructure projects



## Challenges ahead

Environmental licensing is extremely bureaucratic and is a source of risk for investors and fund providers

### Environmental licensing



**Government, agencies and concessionaires plays a role in the reduction of these risks**

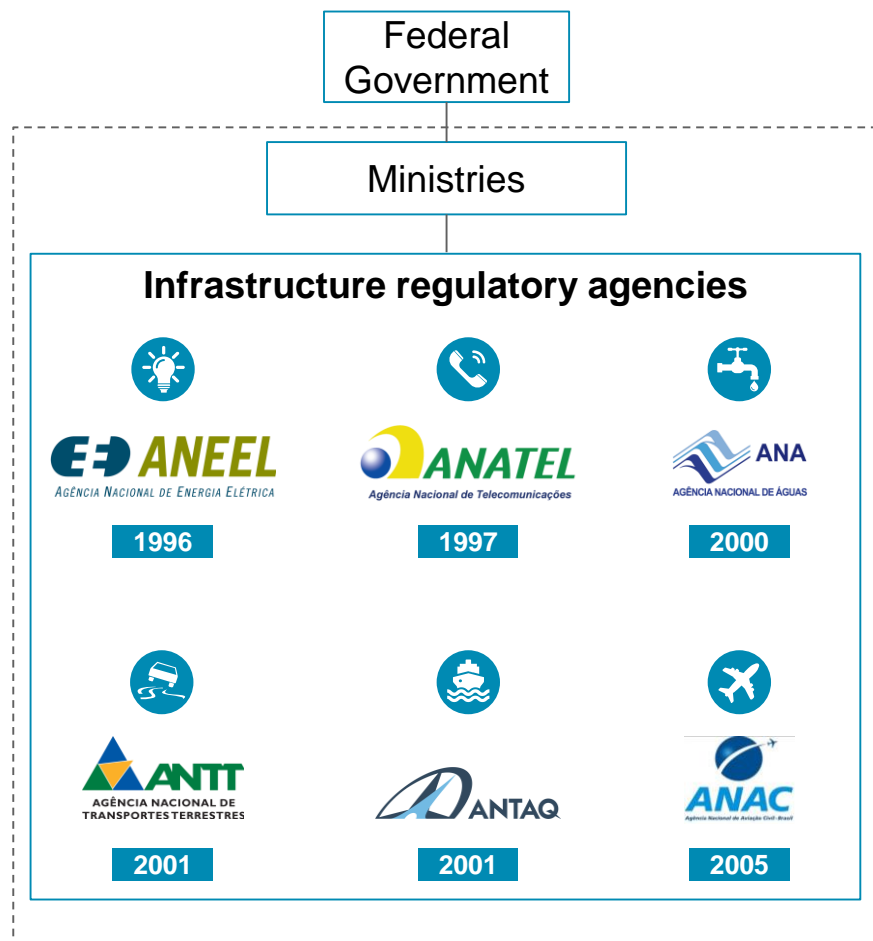
Government	Regulatory agencies	Concessionaires
<ul style="list-style-type: none"><li>• Define rules and competencies of each body involved</li><li>• Review joint liability for environmental damage</li></ul>	<ul style="list-style-type: none"><li>• Increase transparency in processes</li><li>• Simplify and streamline processes</li></ul>	<ul style="list-style-type: none"><li>• Improve the structuring of projects</li></ul>

- Changes to licensing rules have been discussed in Congress, but suggestions were deemed too polemic
- Some projects are being auctioned with preliminary/ construction licences to cut red-tape

## Challenges ahead

Regulatory agencies have inefficiencies and are unable to ensure a stable legal environment

Regulatory agencies were set up in 1990 to ensure the quality of services



To improve legal environment, it is necessary to

- Provide budgetary **autonomy** to regulatory agencies to ensure independent decision-making
- Review the **eligibility criteria** of board members
- Fix the problem of executive **high vacancy** level
- Some proposals are already being discussed in the Congress and they aim at providing
  - **More objective rules** for the appointment of key decision-makers of regulatory agencies – example: ten years experience in the field of activity of the regulatory agency or related area
  - **More autonomy** for agencies, improving decision-making capacity and technical robustness of choices
  - **More transparency**

## Challenges ahead

Excessive liability of civil servers delays decision processes. New law enacted last April aims at minimizing this problem

### What issues civil servers face regarding excessive liability?



- Public officials are **personally responsible** for any decision taken and, if this is considered undue, **may face administrative/legal action**
- The risk makes them **excessively cautious**, and the situation is exacerbated by increased **scrutiny of oversight bodies**
- This results in **delays in processes** and **insecurity** for investors

### What is expected with the new law?



- Greater **clarity in public decisions** as it requires clarification on the motivations behind decision
- Transparency **and evaluation of the impacts** of decisions taken by public agents
- **Sharing of responsibility** and defense of the public interest among administrators, judges and controllers
- **Punishment** of public officials who commit **intentional illegality, negligence, malpractice, recklessness or gross errors**

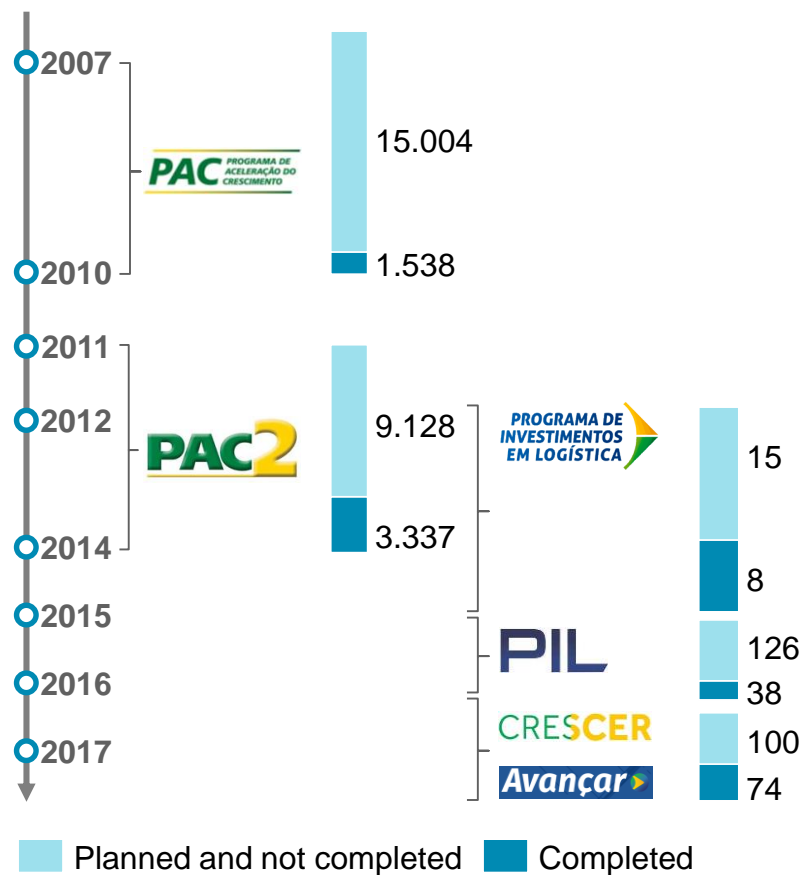


This will impact problems mentioned previously as civil servers try to always “check the box”, in a confuse regulatory environment, instead of providing the best solution

# Challenges ahead

Lack of structured prioritization process makes it difficult for infrastructure projects to be carried out

## Evolution of government infrastructure programs in Brazil



Source: Infrastructure Yearbook 2016–2017 Exame. Avançar Parcerias.

## To ensure continuity and proper prioritization, it is necessary to

- **Improve coordination among** multiple ministries, agencies and government bodies
  - Have effective **sector planning** with long horizons, but periodically revised
  - Improve the **prioritization** of investments
  - Enhance **technical capability** of the public sector
  - Provide further flexibility for **hiring specialized consultants**
  - **Collect data** concerning construction and bidding companies
- The PPI (Brazilian Investment Partnership Program) has been created in 2016 to fulfill some of these roles. It, however, has not been able yet to fully fulfill it

# Brazil is paving the way to attract further private investment for infrastructure

- Brazil will have to double investment in infrastructure for the next 25 years to reach universalization of basic services and transportation and there is a large appetite for private investment in the sector
- We expect a regular pipeline of projects to close the gap
- The distortive subsidy policy with crowding-out effect on capital markets was the main barrier to private investment has currently been lifted
- Discussions are ongoing on how the development bank (BNDES) can best support infrastructure investment
- Some bottlenecks for infrastructure investment are being lifted:
  - Distorting subsidy system
  - Lack of internal coordination and prioritization
  - Excessive accountability of civil servants
- Other bottlenecks are under discussion:
  - Insufficient autonomy of regulatory agencies
  - Environmental licensing

## Challenges ahead: How can Oliver Wyman help?

We can assist infrastructure investors and lenders throughout the life of a project, including helping owners improve underperforming assets

Identify  
opportunities

- We have a **deep understanding of key levers in infrastructure projects**, including their cash and profits drivers, allowing us to **provide insightful opportunity scans**

Support  
competitive  
bids

- We **often support competitive bids**, including analytics and industry knowledge, transparent revenue forecasts and counsel on commercial deal structures

Restructure  
and improve  
performance

- Our **extensive operational restructuring and performance improvement capabilities** have enabled top and bottom-line growth for infrastructure clients by **helping them to realize value and lower risk**

Support exit  
negotiations

- We can **provide independent valuation** based on industry insight and reputation as well as **expert support during exit negotiations**

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We also have deep understanding of the Brazilian environment and public sector given our experienced and specialized local Public Sector practice

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Appendix1

Selected recent track record

# Some of Oliver Wyman experience assessing infrastructure instruments initiative to implement recommendations for long-term (1/2)

Driver	Instruments and initiatives	Comments
<b>1</b> Optimize financial structure	Debt tranching/Mezzanine financing	Structuring of debt into distinct risk tranches can be an important credit-enhancing initiative and has the potential to unlock significant capital
	Bond Insurance	Attach insurance to infrastructure bonds as a credit-enhancing option
<b>2</b> Optimize structure of subsidies	Private Finance Initiative (PFI)	Enhancing Brazilian PPP model by importing some PPP practices such as the PFI / PF2 model
	Minimum Revenue Guarantee	In Chile, contracts are such that the government guarantees minimum revenue for the project. If subsidy payments exceed a certain threshold, the government receives equity participation
<b>3</b> Optimize risk management	Cash flow securitization of automated projects	Automated projects can more easily have its cash flow securitized as it can provide a more precise revenue stream estimation
	Cash flow simulation models	Produce granular insight into risk mitigation and dynamic risks, which can replicate profit and loss statements and balance sheets across a project's lifetime



## Some of Oliver Wyman experience assessing infrastructure instruments and initiative to implement recommendations for long-term (2/2)

Driver	Instruments and initiatives	Comments
<b>4</b> Mitigate non-manageable risks	Standardized licensing process across agencies	Initiative to reduce the regulatory approval time, it can be done by a lead agency to coordinate efforts between stakeholders
	Infrastructure project performance indicator	A performance indicators can provide key benchmarks to the market and lead to more precise risk pricing
	Regulatory guarantees	It can decrease this perceived lack of stability, thereby reducing funding costs
	Redesign of Surety Bonds	Protects a company in a contract against the risk of the counterparty fails to meet the obligations
<b>5</b> Further develop capital markets	Rating system for infrastructure projects	There is now a general perception in the market that ratings do not provide an accurate valuation of risks, hence requiring a review of underlying methodology
	Education around infrastructure bonds	There is a lack of information regarding infrastructure bonds and the high level of perceived risk

# Recent projects cover a wide range of issues in the diverse infrastructure sectors and with financial institutions (1/2)

## Sample projects

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**Supported a multinational corporation in its due diligence of a renewable energy company** in the form of market trend and key player overview, validation and challenge of sell-side advisor assumptions and identification of the perception of the target among competitors, customers and analysts

---

**Developed a risk-adjusted financial forecasts for a mid-sized European utility** to support its strategic decision-making in general, and the evaluation of the upsides and downsides of a potential acquisition target and of the re-opening of a major power plant

---

**Performed a quantitative measurement of all risks for a European integrated oil company.** Developed a framework for risk-adjusted metrics in strategic decision making and risk-return based corporate portfolio optimization. Evaluated strategic options for upstream and downstream business units

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**Identified key risks and critical path dependencies during upgrade of a hydroelectric dam.** Total investment required approximately USD \$15 BN over 5 years, with a 20 year operating horizon considered in the risk analysis

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**Developed an investment-grade demand forecast for the Panama Canal Authority** as well as an associated marketing/pricing plan to support a \$8 BN upcoming investment decision

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**Conducted a comprehensive assessment of the financial projections and operating plans in Santos** for the recently privatized Tecon 1 Container Terminal in support of a major debt re-structuring program

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**Developed an independent opinion on the financial structure and market value of a proposed liquid bulk terminal transaction** between Van Ommeren and TMM, for Vopak Marine Terminals

---

**Planned the necessary capex investments in infrastructure and rolling stock for a Brazilian mining company** to meet projected 8% annual demand growth over the following 5 years

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# Recent projects cover a wide range of issues in the diverse infrastructure sectors and with financial institutions (2/2)

## Sample projects

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**Provided details for the development of a 5-year capital investment plan for a mining rail operator.** We also provided “reasonableness opinion” as the basis for negotiating a 5-year commercial contract between the client and its customers, and an operational improvement methodology and development of a new operating model

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**Advised the State of Rio de Janeiro on a 25-year commuter rail concession contract** covering the operation, management, maintenance, and commercial development of the Flumitrens network, and involving managing a major capital investment program to rehabilitate rolling stock and infrastructure

---

**Evaluated financial outlook, risks, and opportunities for the Regional Transportation Authority (RTA) of Chicago** and its three Service Boards (commuter rail, suburban bus, and subway). Project involved construction of 20-year projections of income statements, balance sheets, and cash flow under a variety of economic and operational scenarios

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**Estimated future demand for a new commuter rail line in Mexico City**

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**Assessed, along with NERA, the benefits and feasibility of a merger** between a major partially-privatized urban mass transit system and the government-owned commuter railroad in the same country

---

**Analyzed the future economic potential for all three Berlin region airports (Tegel, Tempelhof, Schönefeld) and the feasibility of building a new airport** to meet expected future demand, in preparation for privatization. The work was commissioned by the Federal Republic of Germany and the states of Berlin and Brandenburg

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**Assessed a potential acquisition target in the wireless towers sector for a private equity firm**

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**Conducted strategic due diligence of a telecom infrastructure service provider for a private equity firm**

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**Advised on the acquisition, transformation, and sale of a 1.5 BN Euros Water services and Sanitation European company**

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# Nationwide privatization strategy development

## GCC privatization agency

### Oliver Wyman approach

- As part of its economic reform, a GCC gov't wanted to enhance the private sector's role in the economy
- The government agency tasked with the design and execution of the country's privatization strategy, our client, requested from Oliver Wyman to
  - Design a long-term nationwide privatization strategy
  - Prepare preliminary studies on the assets that were included in the first five years of the plan
  - Provide tools for the set-up of the agency

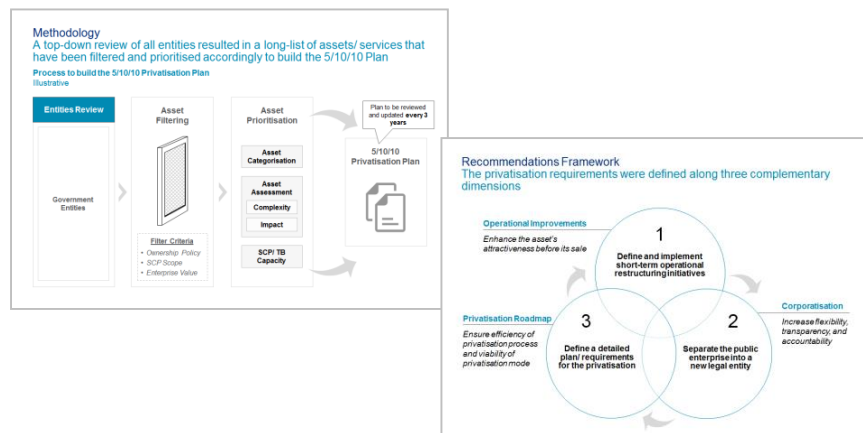
### Client situation

- In the first phase of the project, Oliver Wyman
  - Defined privatization objectives, KSF and guidelines
  - Conducted a comprehensive data collection/ entity review
  - Filtered and prioritized long-list of assets to be privatized
  - Prepared a 25-year privatization plan and estimated its economic, social and fiscal impact
- In the second phase of the project, Oliver Wyman
  - Conducted a more in-depth assessment of twelve priority assets, highlighting their potential privatization mode
  - Supported the set-up of the privatization agency's administration and operations, including legal and org review, communication strategy, process manual

### Key impacts achieved

- National privatization plan was presented to and approved by a ministerial council
- Preliminary recommendations on priority assets were approved by respective ministers and two privatization processes were launched
- Privatization agency approved process manual and began its recruitment efforts

### Approach illustration



# Airport operational performance improvement

## GCC international airport

### Oliver Wyman approach

- Over the preceding five years, traffic at a GCC International airport increased by 50%, and it was expected to continue to grow over the following ten years
- Under its set-up, our client was unable to handle peak periods of traffic, which had resulted in unacceptable waiting times on peak days of up to 3h30 for departures and 1h30 for arrivals
- To confirm the root causes of congestion and identify potential solutions, Oliver Wyman was asked to conduct a focused diagnosis

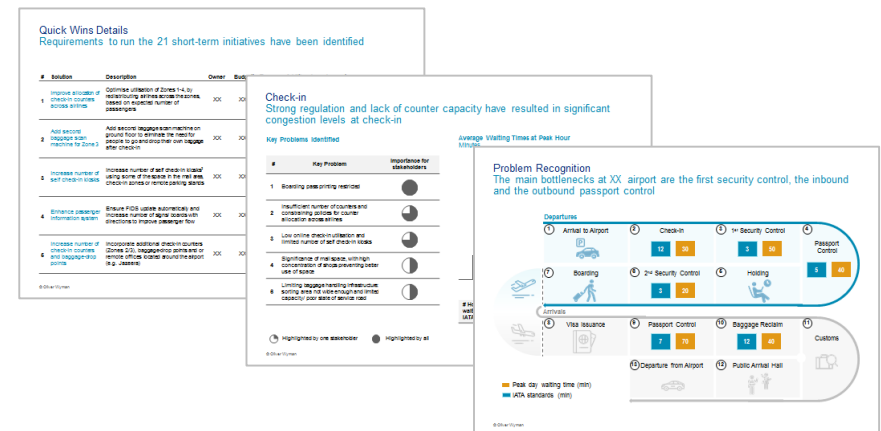
### Client situation

- Oliver Wyman followed a three-step approach to identify bottlenecks and their root causes across the passenger journey
  - Conducted 20+ meetings with key airport stakeholders
  - Ran observations to measure waiting times
  - Developed a simulation model to recreate the traffic conditions on a peak day to identify bottlenecks and quantify impact of potential improvement actions
- Based on the gathered insights, Oliver Wyman then defined improvement actions and the corresponding execution plan

### Key impacts achieved

- 34 operational improvement measures and structural recommendations were identified and detailed to reduce congestion by more than 60% on peak days
- Most of the short-term recommendations were executed within the year

### Sample outputs



# Seaport performance diagnosis

## GCC government port agency

### Oliver Wyman approach

- The two commercial ports of a GCC nation suffered self-imposed congestion in their container operations due to poor resource management and ineffective procedures
- This poor performance led to increased port charges, putting the country at risk of a price inflation in consumer goods, harming both the economy and local consumers
- To counter the inflation risk and turnaround the performance of the ports, a ministerial council requested from Oliver Wyman to prepare an initial port diagnostic that would serve of basis for a more extensive assessment

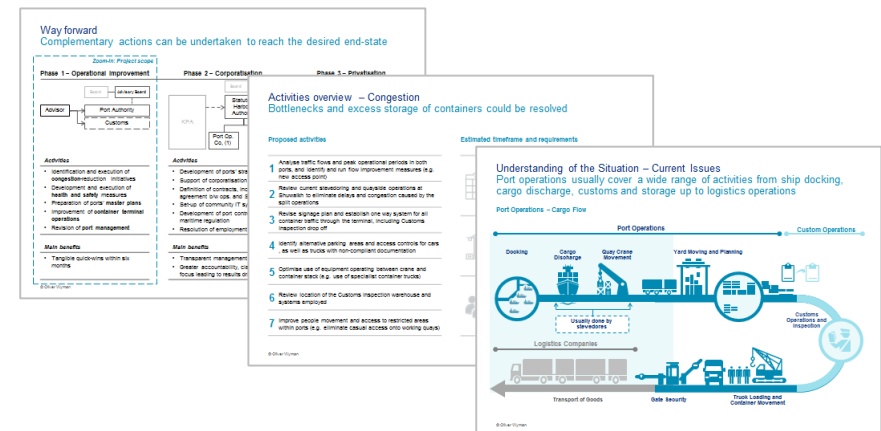
### Client situation

- Oliver Wyman reviewed the performance of the ports, based on
  - Insights from interviews held with industry representatives and derived from international benchmarks
  - Observations gathered during site visits
  - Findings from data on the ports, including their financials, organization structure, governance and assets
- Oliver Wyman then delivered its views on the optimal end-state of the ports sector, and defined the corresponding way forward, providing a list of potential improvement actions

### Key impacts achieved

- The recommendations were presented to the head of the ports authority and to the ministerial council which had asked for the report
- The ministerial council approved Oliver Wyman's recommendations and agreed to launch a detailed assessment of the port operations to define their strategy and bring them up to current international standards of operation and throughput

### Sample outputs



# Performance review and privatization plan GCC state-owned catering company

## Oliver Wyman approach

- As part of its economic reform, a GCC government wanted to enhance the private sector's role in the economy.
- One of the entities considered for privatization was the catering company of the state-owned national airline
- Oliver Wyman was hired to look into the potential and attractiveness of the privatization of the catering company

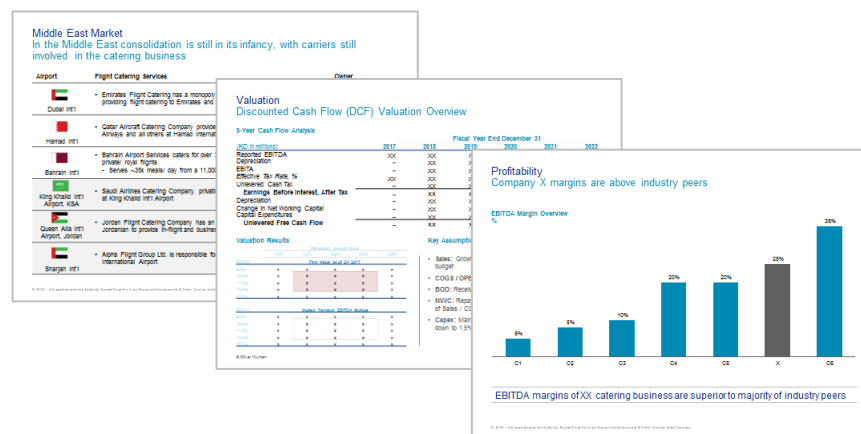
## Client situation

- Oliver Wyman assessed the performance and potential of the company, considering
  - The company's financials, organization structure, service offering, governance model, and assets/equipment
  - The performance of industry peers and the state of the catering market in the Middle East and globally
- Given the positive results of the study, Oliver Wyman then developed a preliminary valuation for the company and detailed privatization considerations and requirements

## Key impacts achieved

- The recommendations were presented to the national privatization agency that approved Oliver Wyman's findings and set the catering company as a priority asset to be privatized
- The sales process was meant to be launched shortly after, pending approval from the national airline's board of directors

## Sample outputs



# Performance review and privatization plan GCC fixed-line and broadband infrastructure

## Oliver Wyman approach

- As part of its economic reform, a GCC government wanted to enhance the private sector's role in the economy
- One of the entities considered for privatization was the fixed line and broadband infrastructure, which fell under the Ministry of Communications and appeared to be under-performing (e.g. limited broadband penetration, operational inefficiencies)
- Oliver Wyman was hired to look into the potential and attractiveness of the privatization of this asset

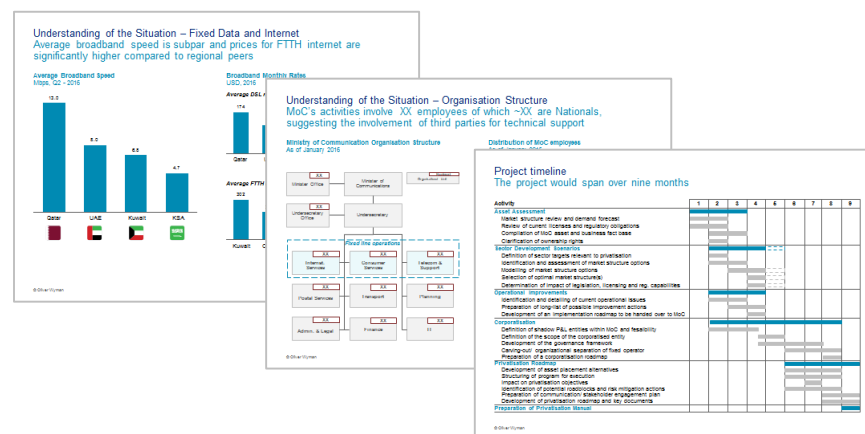
## Client situation

- Oliver Wyman conducted a detailed market assessment to better understand the state of the telecommunications industry in the client country, including the regulatory set-up
- Oliver Wyman then assessed the performance and potential of the entity, considering:
  - The entity's financials, organization structure, service offering, governance model, and assets/ equipment
  - Benchmarks and best practices of regional/ int'l peers
- Oliver Wyman delivered a preliminary recommendation on the asset's privatization and potential operational improvements

## Key impacts achieved

- The recommendations were presented to the national privatization agency that approved Oliver Wyman's findings and set the telecom infrastructure as a priority asset to be privatized
- Oliver Wyman was asked to conduct the detailed privatization study, including the definition of the target telecommunications market structure

## Sample outputs





# Performance review and privatization plan

## GCC state-owned facilities and public transport operators

### Oliver Wyman approach

- As part of its economic reform, a GCC government wanted to enhance the private sector's role in the economy
- Three state-owned companies – operators of government facilities, properties and public transportation – were considered for privatization. The government wanted to understand whether they were being run effectively and if greater private sector involvement could benefit them
- Oliver Wyman was hired to look into the potential of the privatization of the three state-owned companies

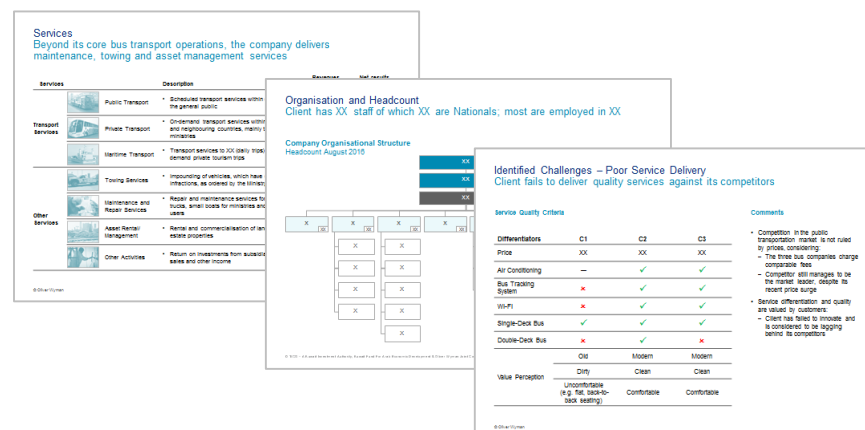
### Client situation

- Oliver Wyman assessed the performance and potential of the three companies, considering
- Their financials, organization structure, service offering, governance model, and assets/equipment
- Relevant regulations and policies
- The performance and practices of industry peers
- Oliver Wyman delivered a preliminary recommendation on the assets' privatization and potential operational improvements

### Key impacts achieved

- The recommendations were presented to the national privatization agency that approved Oliver Wyman's findings and included the assets in the 5-year privatization plan

### Sample outputs



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## Appendix 2 | How can Oliver Wyman help

# Oliver Wyman assists infrastructure investors and lenders throughout the life of a project, including helping owners improve underperforming assets

## The Oliver Wyman Proposition

- Allow infrastructure investors to realize greater value when acquiring, operating or selling the asset
  - Insightful opportunity scans based on deep knowledge of industries
  - Commercial due diligence including strong analytics and industry knowledge, transparent revenue forecasts and counsel on commercial deal structures
  - Help in realizing value and lowering risk through performance improvement and asset restructuring
  - Independent valuation based on industry insight and reputation as well as expert support during exit negotiations

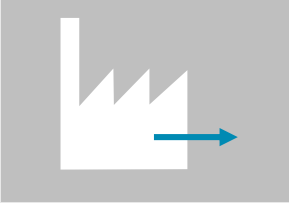
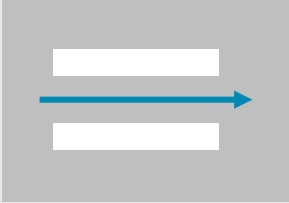

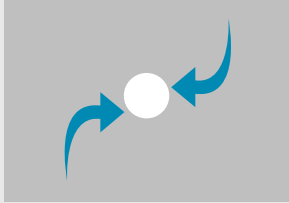


## The Oliver Wyman Difference

- Teams that combine deep industry expertise and investment insights
  - Experts with experience in operations and restructuring of infrastructure assets
  - Decades of experience helping corporate and financial sector clients globally
- An ability to provide relevant insights at an overview and/or at a detailed level
- Proven methodologies that allow our global teams to be cost-effective from day one
- A track record of providing valued, objective advice, with a collaborative work style

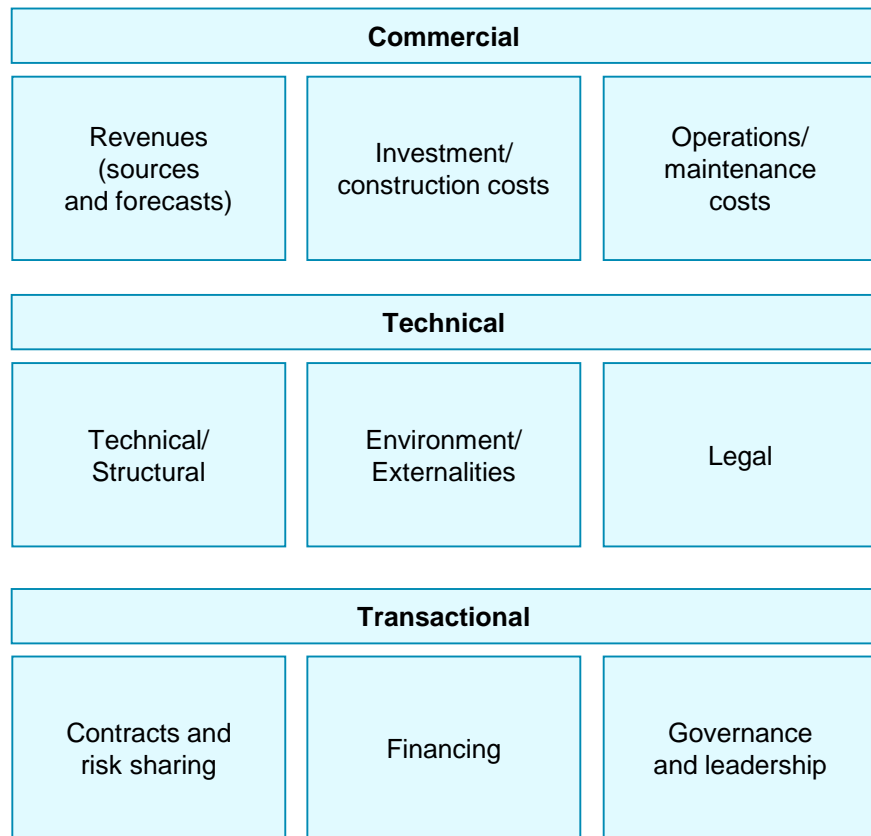
We have a deep understanding of key levers in infrastructure projects, including their cash and profits drivers

## Infrastructure businesses archetypes

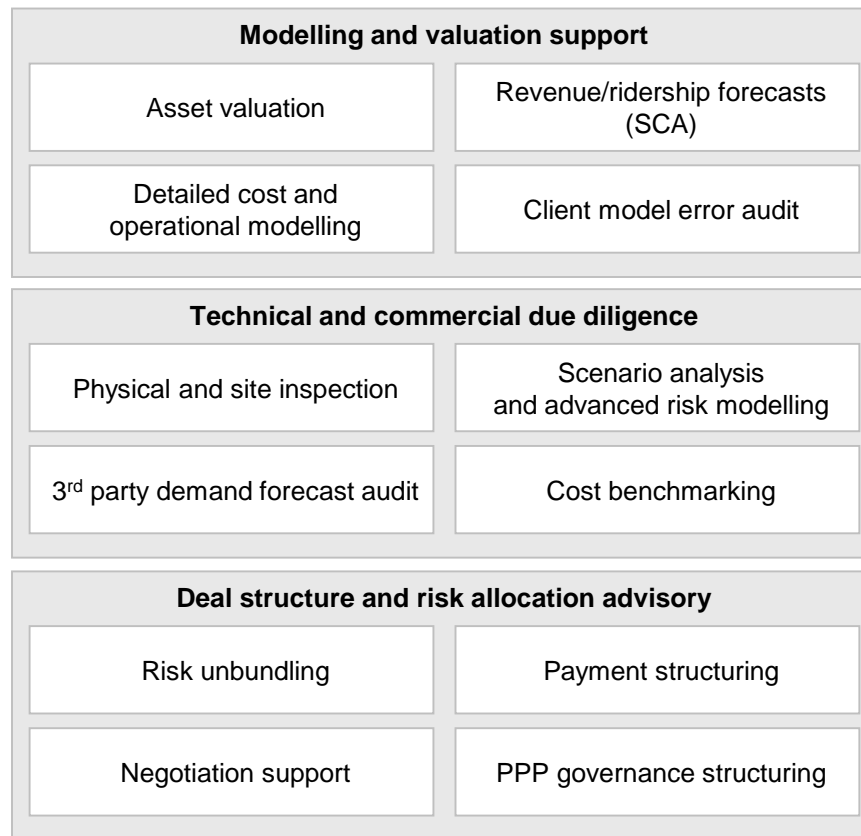
Production/Transformation	Capacity Provider	Distributor/Service Provider	Service Hub
			
Examples			
<ul style="list-style-type: none"> <li>• Power plants</li> <li>• Oil and gas gathering and processing</li> </ul>	<ul style="list-style-type: none"> <li>• Pipeline owners</li> <li>• Rail network owners</li> <li>• Electric grid</li> <li>• Telecom network owners</li> </ul>	<ul style="list-style-type: none"> <li>• Water supply/wastewater</li> <li>• Gas/electricity distribution, metering</li> <li>• Transit system operators</li> </ul>	<ul style="list-style-type: none"> <li>• Airports</li> <li>• Ports</li> </ul>
Profit drivers			
<ul style="list-style-type: none"> <li>• Marketing capability and/or contracts to dampen demand swings</li> <li>• Hedging or trading to dampen price swings</li> <li>• Low cost producer position</li> </ul>	<ul style="list-style-type: none"> <li>• Optimized use of fixed network, subject to long term revenue maximization</li> <li>• High reliability market position</li> <li>• Leveraging back office and other synergies in portfolio companies</li> </ul>	<ul style="list-style-type: none"> <li>• Provide customer satisfaction to meet regulatory or contractual expectations</li> <li>• Continually improve efficiency and costs</li> <li>• Minimize revenue leakage</li> </ul>	<ul style="list-style-type: none"> <li>• Understand and satisfy carriers' strategic requirements</li> <li>• Provide competitive rates to carriers</li> <li>• Maximize revenue from services to landside customers</li> <li>• Manage costs and capex</li> </ul>

# We often support competitive bids and help de-risk investments

## Investment Risks



## Oliver Wyman service offering



# We also have tools for analysing risk and return for the whole infrastructure portfolio, providing further transparency to the investment

Not comprehensive

## Selected drivers for return on infrastructure portfolio

<b>Geography/ country</b>	<ul style="list-style-type: none"> <li>Regulatory environment</li> <li>Political/country risks</li> <li>Forex volatility</li> </ul>	<ul style="list-style-type: none"> <li>Labour wage development</li> <li>Market price/ GDP development</li> <li>Seasonal volatility</li> </ul>
<b>Asset class</b>	<ul style="list-style-type: none"> <li>Technology developments</li> <li>Raw material prices, e.g. steel</li> </ul>	
<b>Green-field/ brown-field status</b>	<ul style="list-style-type: none"> <li>Project execution to cost/budget</li> <li>Project delivery on time (revenue delay)</li> <li>Delivered versus planned maximum capacity</li> <li>Quality/reliability of asset</li> </ul>	
<b>Individual asset</b>	<ul style="list-style-type: none"> <li>Actual versus planned volume</li> <li>Operational performance</li> <li>Business disruptions</li> <li>Maintenance regime</li> <li>Stakeholder situation</li> </ul>	

## Selected set of analysis

- **Identification of key drivers**  
for downside risk and upside potential for each asset
- **Determination of interdependencies**  
between key risk/opportunity drivers for each asset
- **Quantification of potential impact**  
and likelihood of occurrence using same set of assumptions where possible
- **Stochastic modelling** of individual asset and overall portfolio performance based on interdependent risk drivers

# Our extensive operational restructuring and performance improvement capabilities have enabled top and bottom-line growth for infrastructure clients

## Business Performance Improvement

## Distressed restructuring

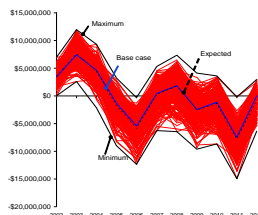
<b>Corporate strategy redesign</b> <ul style="list-style-type: none"> <li>Value driven business design</li> <li>Strategy realignment</li> </ul>	<b>Revenue enhancement</b> <ul style="list-style-type: none"> <li>Pricing</li> <li>Segment-specific strategies</li> <li>Marketing/advertising optimization</li> <li>Partner marketing</li> </ul>	<b>Bottom-line improvement</b> <ul style="list-style-type: none"> <li>Customer experience management</li> <li>Sourcing optimization</li> <li>Lean operations</li> <li>PMI</li> </ul>	<b>Financial &amp; asset performance optimization</b> <ul style="list-style-type: none"> <li>Working capital management</li> <li>Capex planning alignment and improvement</li> </ul>	<b>Corporate strategy redesign</b> <ul style="list-style-type: none"> <li>Value driven business design</li> <li>Strategy realignment</li> </ul>	<b>Revenue enhancement</b> <ul style="list-style-type: none"> <li>Pricing</li> <li>Segment-specific strategies</li> <li>Marketing/advertising optimization</li> <li>Partner marketing</li> </ul>
Select industry examples					
<b>Utilities and Telecoms</b> <ul style="list-style-type: none"> <li>Infrastructure sharing strategies: partnerships, leasing, franchise,... (e.g. towers, ROW, fibre)</li> <li>Innovative alliance-based business models: service retailer (reselling service or owning infrastructure)</li> </ul>	<b>Tollroads</b> <ul style="list-style-type: none"> <li>"Glass box" analysis matching pricing and offers to granular user segments</li> <li>"Moving advertising" which matches local advertisers to their target segments based on detailed user data</li> </ul>	<b>Airports</b> <ul style="list-style-type: none"> <li>Commercial revenue growth through improved concession performance</li> <li>Labour and scheduling optimization</li> <li>Lean airport baggage handling</li> </ul>	<b>Railroads</b> <ul style="list-style-type: none"> <li>Infrastructure MOW performance improvement and outsourcing</li> <li>Asset unbundling and monetization (e.g. air and development rights...)</li> </ul>	<b>Ports</b> <ul style="list-style-type: none"> <li>Port strategy and operations restructuring driving business to material profitability from you losses</li> </ul>	<b>Aviation</b> <ul style="list-style-type: none"> <li>Commercial negotiation and litigation support to reduce risk and remediate multi-billion exposure</li> </ul>



# Oliver Wyman has a unique and sophisticated set of risk management tools and approaches to minimize risks and increase returns

## Revenue and cost risks

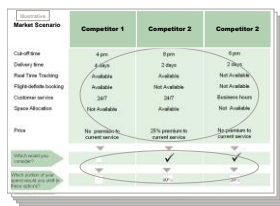
Stochastic, probabilistic modelling



- Stochastic “probabilistic” models such as Monte Carlo simulations (versus deterministic single-answer models)
  - Model the range of outcomes and the probability of certain outcomes
  - Provide the probability of an unacceptable outcome and the likelihood of generating above average returns

## Demand risks

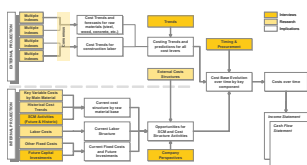
Strategic Choice Analysis™



- Proprietary choice-driven statistical approach for forecasting and maximizing ridership/revenue
  - Choice set approach mirrors real-life tradeoffs and increases forecasting accuracy
  - Provides customer price elasticities relative to competitive options, service levels, time of day, etc.

## Operational risks

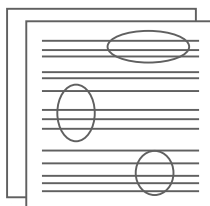
Valuation and business modelling



- Detailed driver-based operational and financial models underpinning valuations
  - Statistically driven assumptions and expert opinion
  - Tied to operational measures for performance management
  - Can be used to review and revise existing plans to fit current economic realities

## Deal structure risks

PPP structuring and contract evaluation



- Analysis of risk-sharing arrangements and dispute resolution mechanisms and the quantification of contract risks
  - Assessment of governance arrangements
  - Database of previously used risk-sharing arrangements
  - Technical term evaluation based on industry experience (e.g. trackage rights agreements)