

Challenges and Prospects for Water and Sanitation in Brazil

Friday, December 5th, 2014

12:00 – 1:00 pm Eastern

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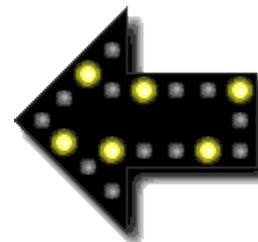
Gold Key Service

- Contacting potential business partners (commercial representatives, importers, agents, end-users) in Brazil to introduce U.S. technologies and to schedule one-on-one appointments with interested parties.
- 4 – 5 appointments will be scheduled over one or two days. A 6-week lead time is required for these services.
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- Contact for the US Commercial Service at the US Consulate in Sao Paulo: Teresa Wagner at teresa.wagner@trade.gov. Teresa will be with us in our WEF Pavilion at FENASAN Brazil to assist our exhibitors.





Webcast Special Offer



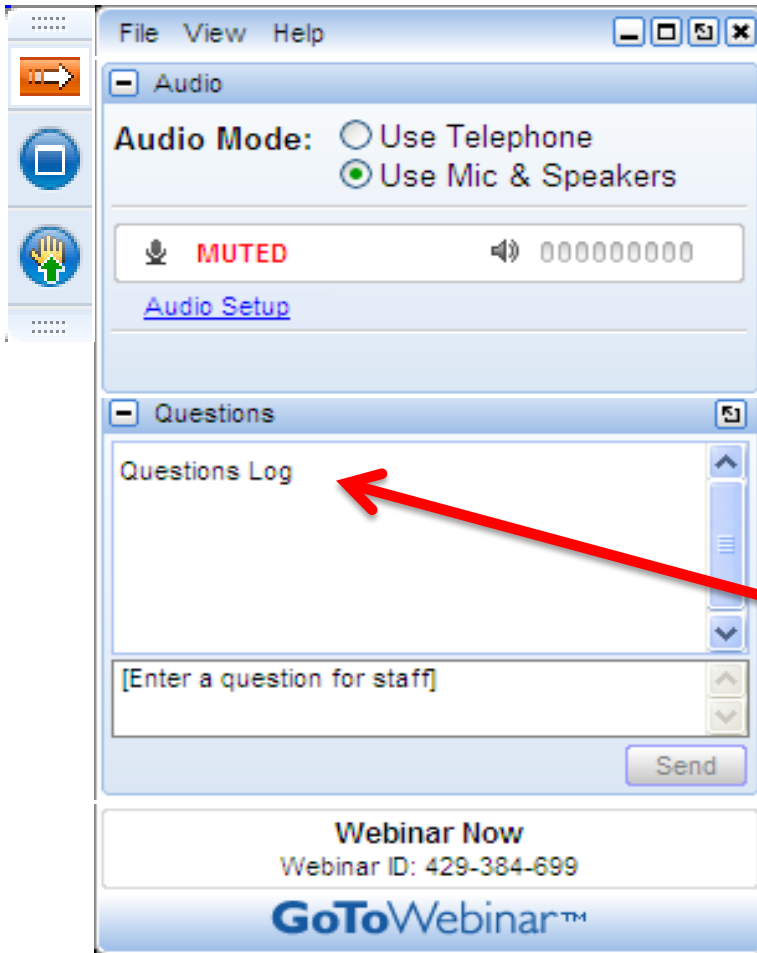
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- Audio Modes

- Listen using Mic & Speakers
- Or, select “Use Telephone” and dial the conference (please remember long distance phone charges apply).

- Submit your questions using the Questions pane.
- A recording will be available for replay shortly after this webcast on www.wef.org/internationalpavilion.





Mr. Gesner Oliveira

- Managing Partner at GO Associates
- Former Chairman of SABESP, one of the largest water companies in the world
- Consulted for major public and private groups in sanitation in Brazil.
- Visiting scholar at Columbia University (2006)
- President of CADE, the federal antitrust authority (1996-2000);
- Acting Secretary for Economic Monitoring of the Ministry of Finance of Brazil (1995).
- Deputy Secretary of Economic Policy of the Ministry of Finance of Brazil (1993-1995)

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Challenges and Prospects for Water & Sanitation in Brazil

São Paulo, 5th of December 2014

Gesner Oliveira

@gesner_oliveira

Three points...

- Given its GDP per capita, Brazil should have higher water & sanitation coverage
- Private Brazilian groups have been growing since the creation of the new regulatory framework of the W&S sector
- The tragic situation of the Brazilian water & sanitation sector is also a major business opportunity

1. Given its GDP per capita, Brazil should have higher water & sanitation coverage...



Sanitation challenges in Brazil are huge...

Valleys



Impossibility to implement sewer pipes.
Need to perform partnerships with local governments to solve those problems. Intense work with the population

Irregular areas



Legal obstacles to provide services.
High apparent and real losses high

Increasing number of Peripheries

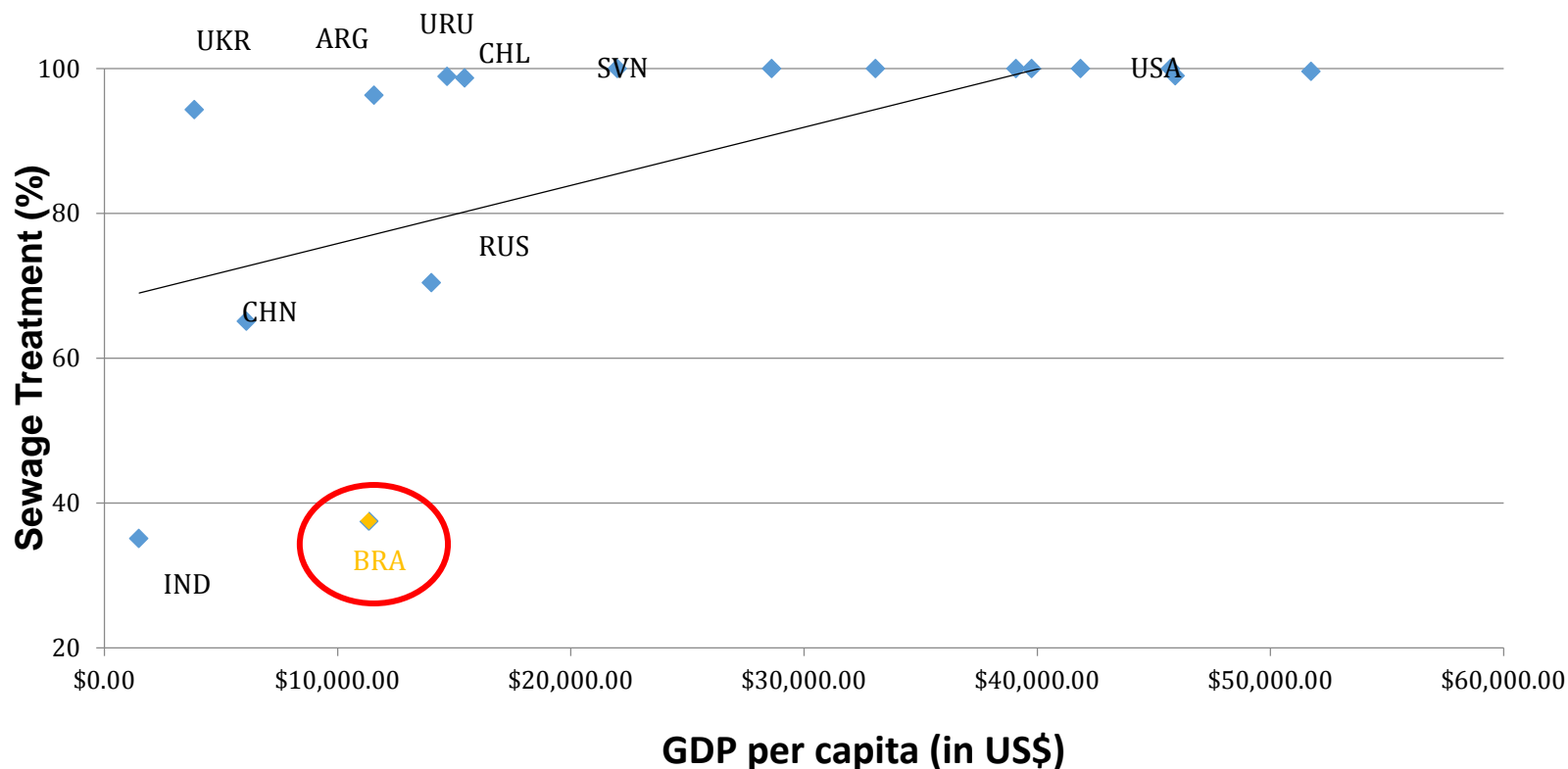


Low adherence.
Rising costs.
Decreasing revenues.
Difficulty of connection

The irregular occupation contributed to the decreased availability of water ...



Given its GDP per capita, Brazil should have more water & sanitation...



Sanitation is one of least developed segments of the Brazilian infrastructure...



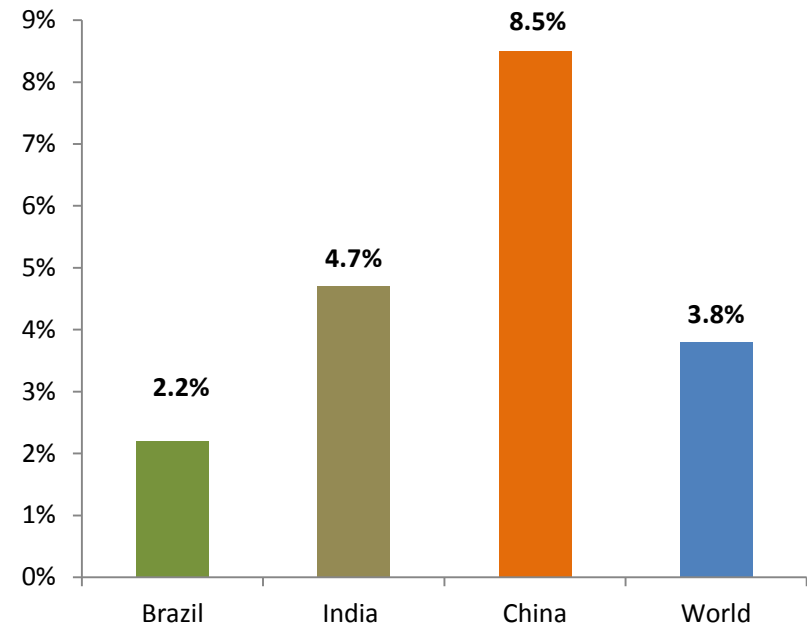
Brazil has to increase investment in infrastructure...

Investment in infrastructure as a share of GDP by sector

Period	1971/1980	1981/1989	1990/2000	2001/2010
(% GDP)	5,42	3,62	2,29	2,13
Electricity	2,13	1,47	0,76	0,61
Telecommunication	0,8	0,43	0,73	0,7
Transport	2,03	1,48	0,63	0,64
Water & Sanitation	0,46	0,24	0,15	0,18

Source: Castelar Pinheiro (2012) and Frischtak (2011)

Average investment in infrastructure as a share of GDP in the past two decades



Source: McKinsey (study for Anuário EXAME de Infraestrutura 2013-2014)

Creation of the regulatory framework is more recent than in other infrastructure sectors...

1996

Law 9.427
The
Electricity
Sector
Reform

1997

Law 9.472
General
Telecommunications
Law

Lei 9.478/97
Oil Law
(EC 9/95)

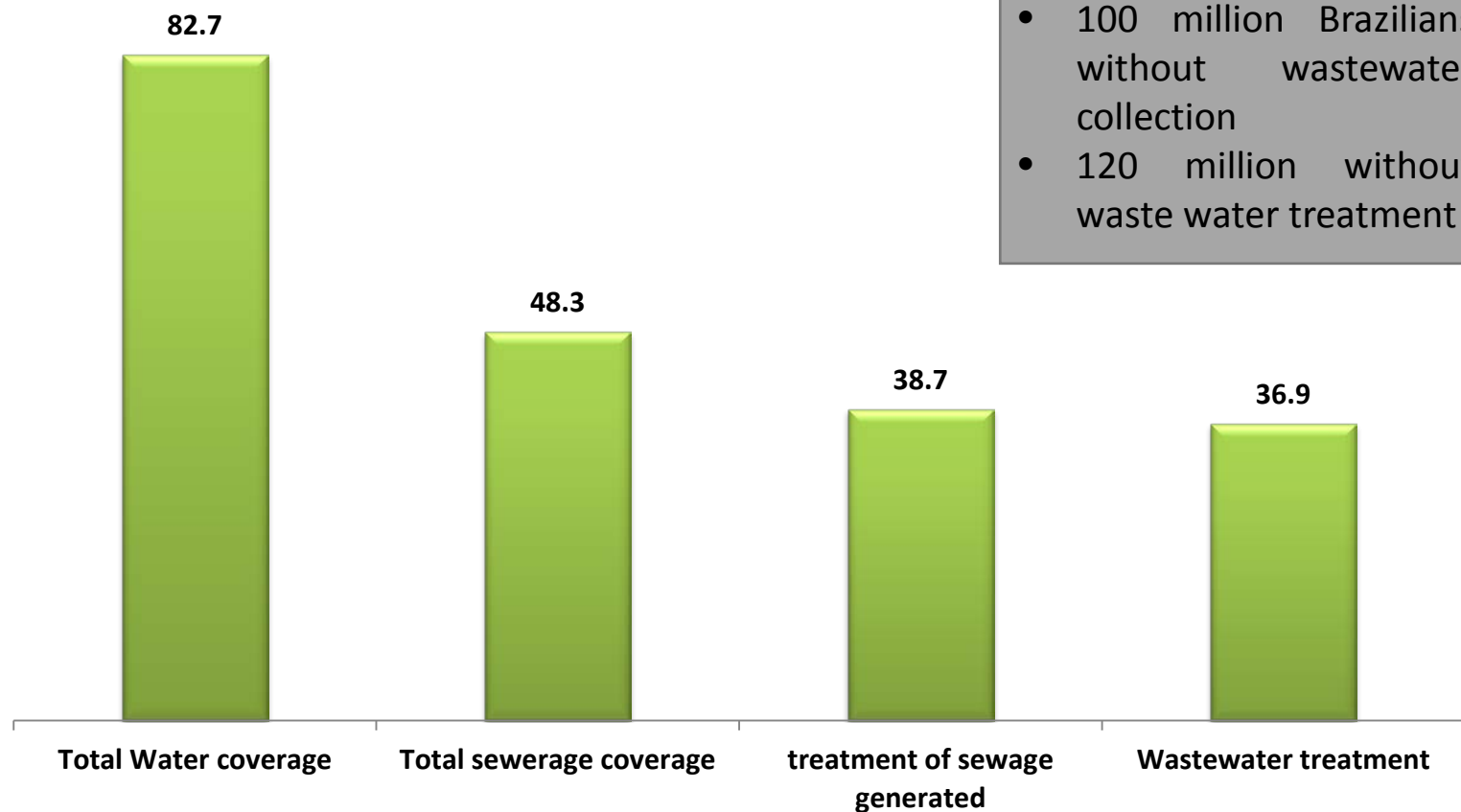
2007

Law 11.445
Sanitation Law

2013

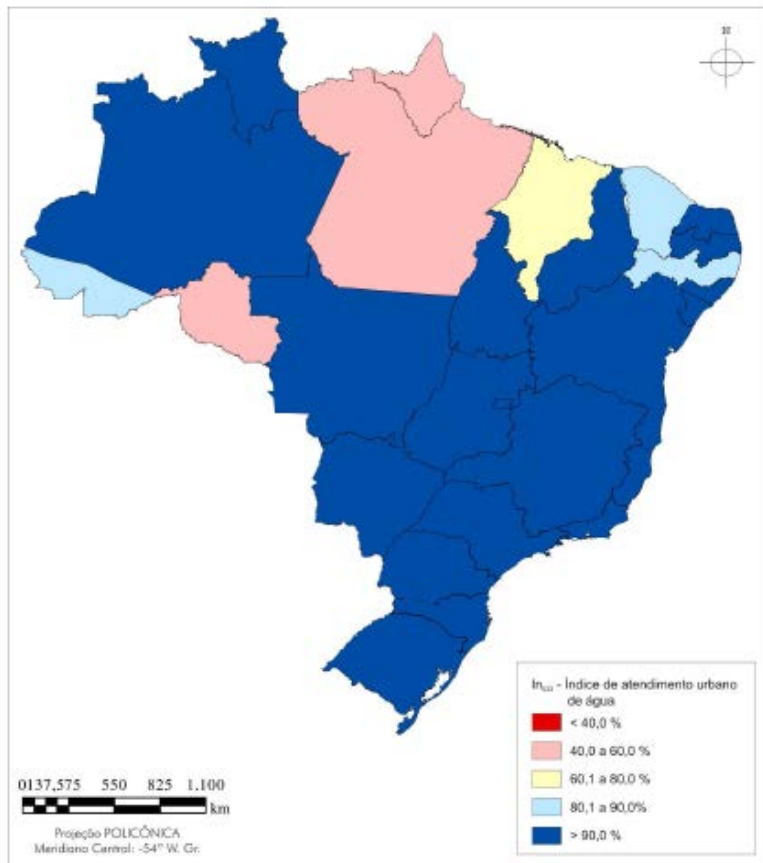
Lei 12.815
New Ports Law

Indicators of water and sewage in Brazil need to improve ...

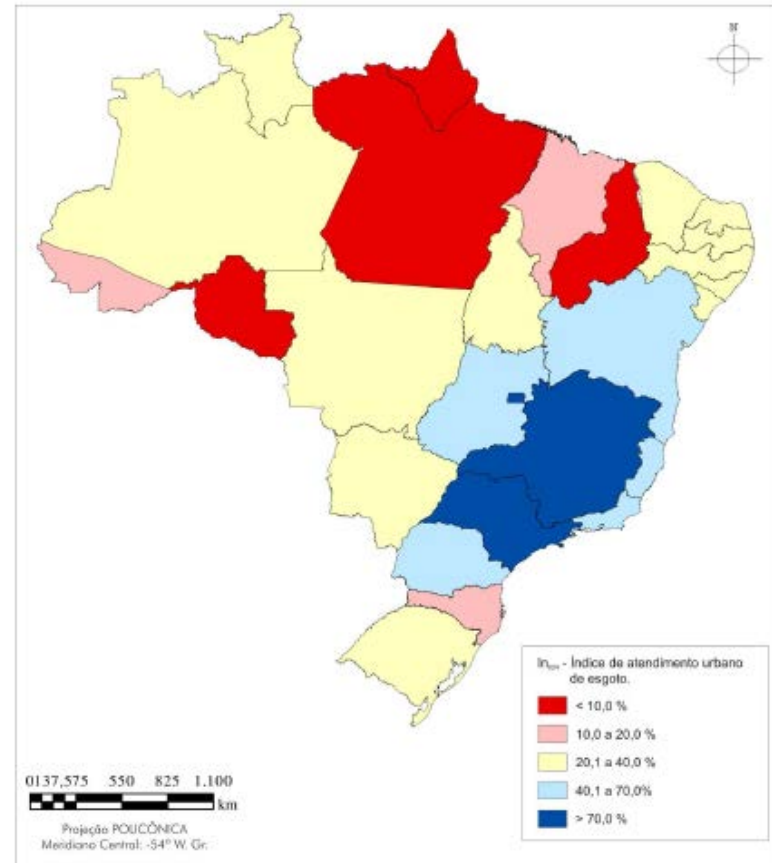


Coverages in water & sanitation are low in Brazil...

Water service rate

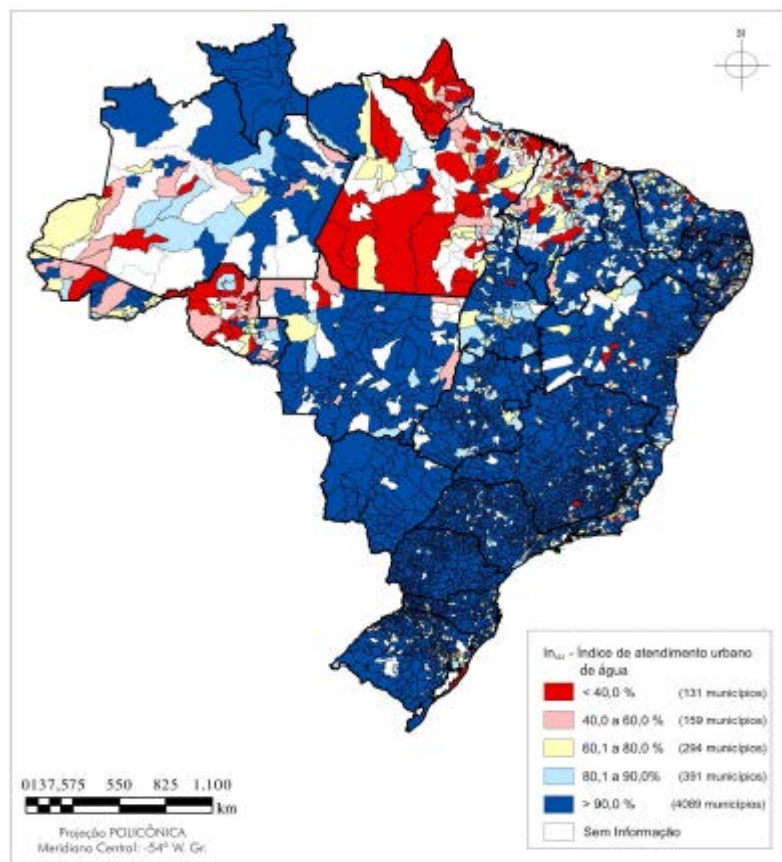


Sewage service rate

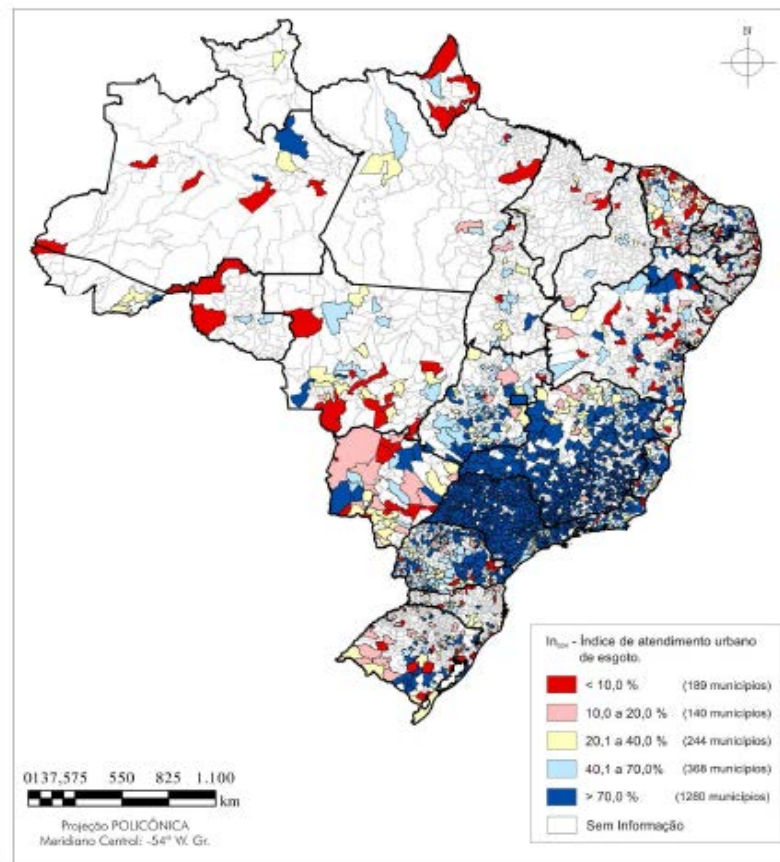


Information system on water and sewage has serious gaps...

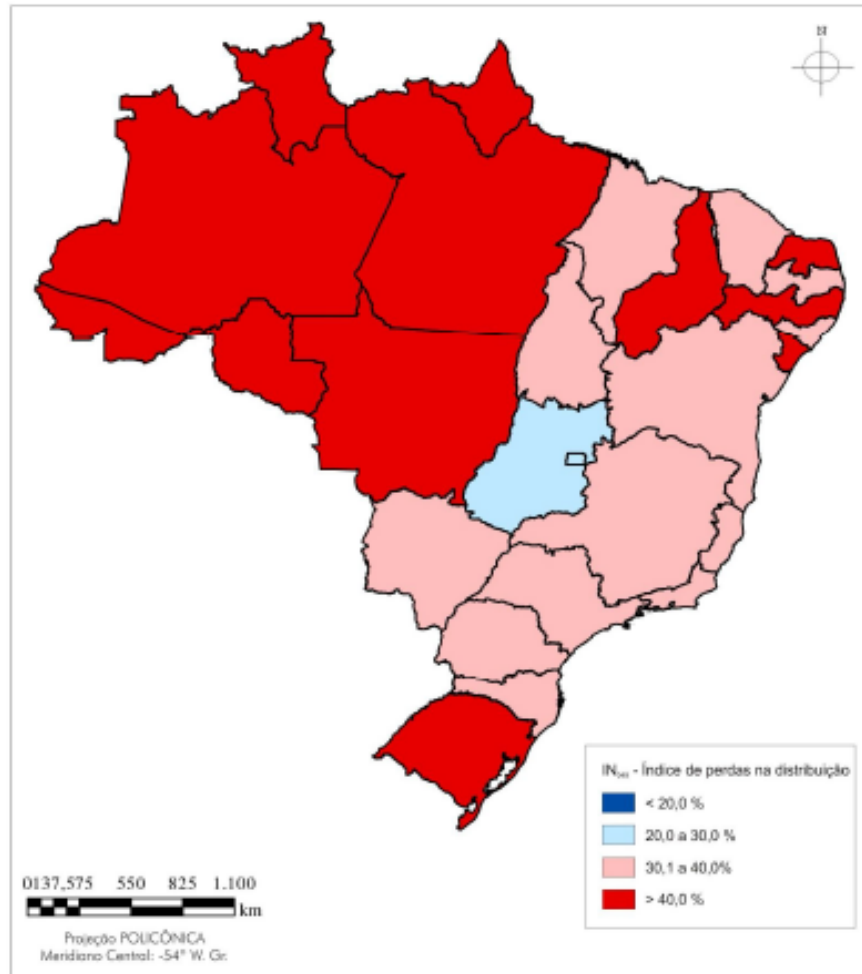
Water service rate



Sewage service rate



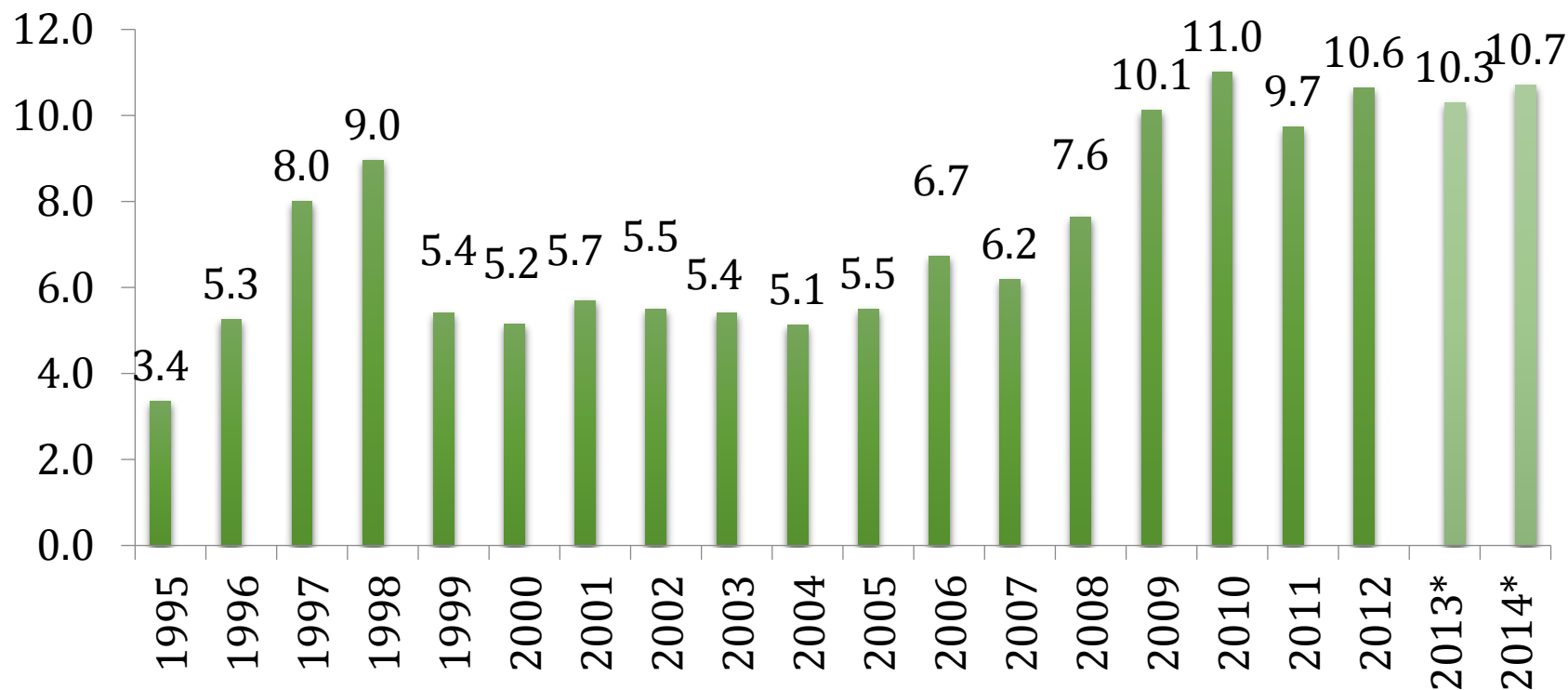
Map of NRW in Brazil is tragic...



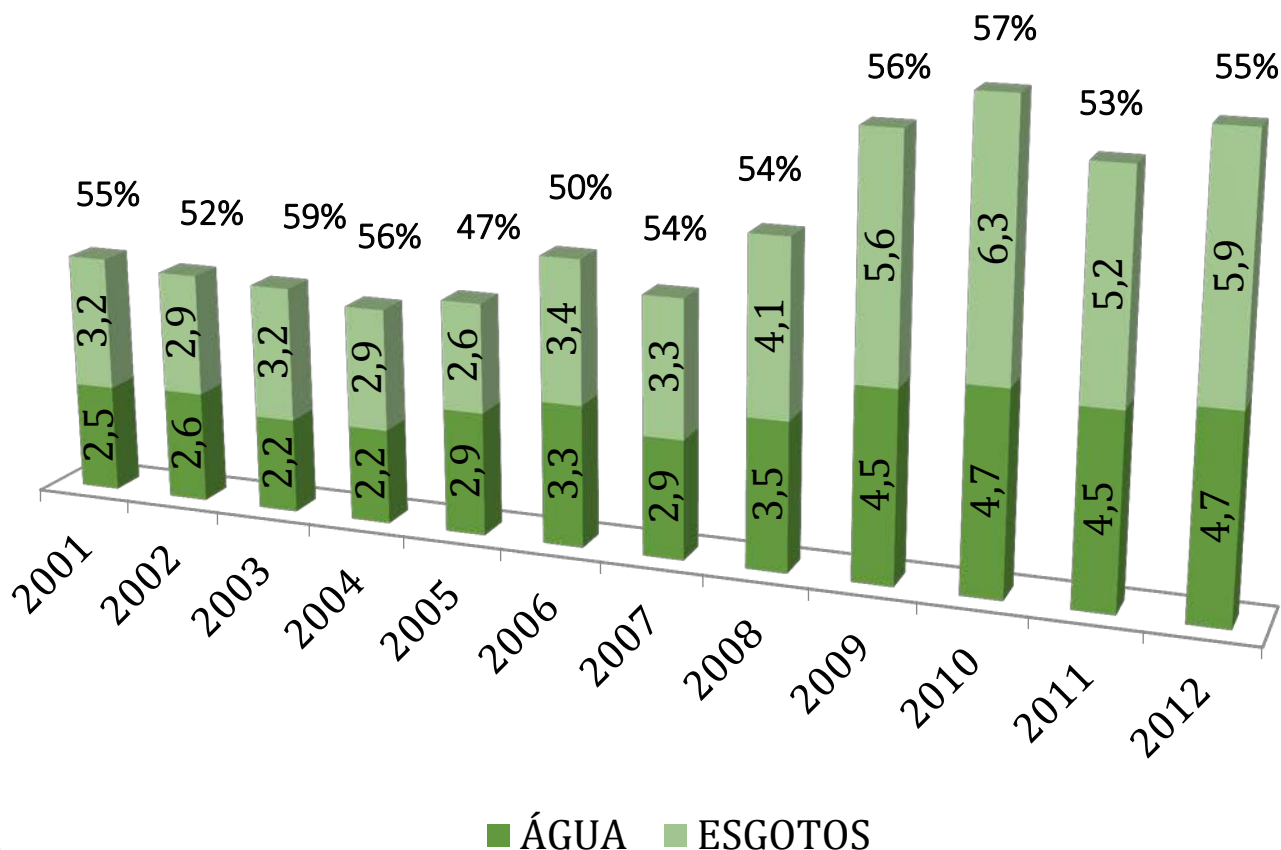
Estado / Região	Distribution Water Losses Index (%)
Acre	60,00
Amapá	48,24
Amazonas	71,87
Pará	45,24
Rondônia	52,29
Roraima	57,02
Tocantins	34,23
Norte	49,28
Alagoas	36,06
Bahia	37,72
Ceará	38,72
Maranhão	39,53
Paraíba	38,62
Pernambuco	54,69
Piauí	53,47
Rio Grande do Norte	55,50
Sergipe	59,77
Nordeste	44,58
Espírito Santo	35,25
Minas Geras	33,06
Rio de Janeiro	31,76
São Paulo	34,22
Sudeste	33,48
Paraná	33,00
Rio Grande do Sul	40,33
Santa Catarina	34,76
Sul	36,35
Distrito Federal	23,92
Goiás	29,66
Mato Grosso	31,89
Mato Grosso do Sul	45,94
Centro-Oeste	32,43
Brasil	36,94

Current annual investment stagnated since 2009...

R\$ billions in December 2013



Share of investments* in sewage has grown in recent years...

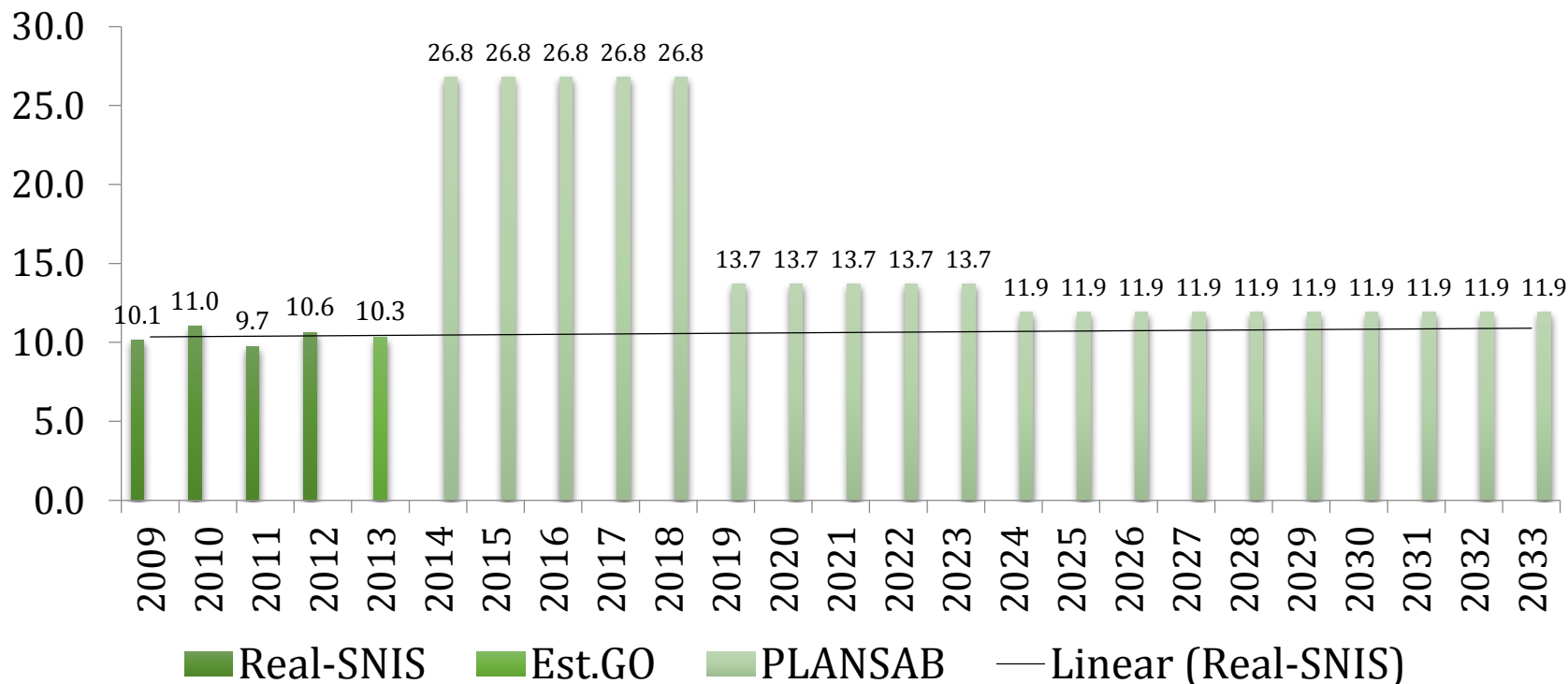


Source: SNIS

* Bi R\$ Dez 2013 - IPCA

PLANSAB is too optimistic for the period 2014-18...

R\$ billions of December 2013



At the current rate of investments, Brazil will achieve universal in about half a century...

Scenarios	Year of universalization		Investments	
	Water	Wastewater	Universal	Until 2060
1 – Maintenance of current investment levels	2039	2060	R\$ 255 bi	R\$ 255 bi
2 – Double of the current investment levels	2021	2031	R\$ 220 bi	R\$ 255 bi
3 – Maintenance of current investment levels with a 30% increase in productivity	2028	2042	R\$ 165 bi	R\$ 186 bi
4 – Double of the current investment levels with a 30% increase in productivity	2017	2024	R\$ 150 bi	R\$ 186 bi

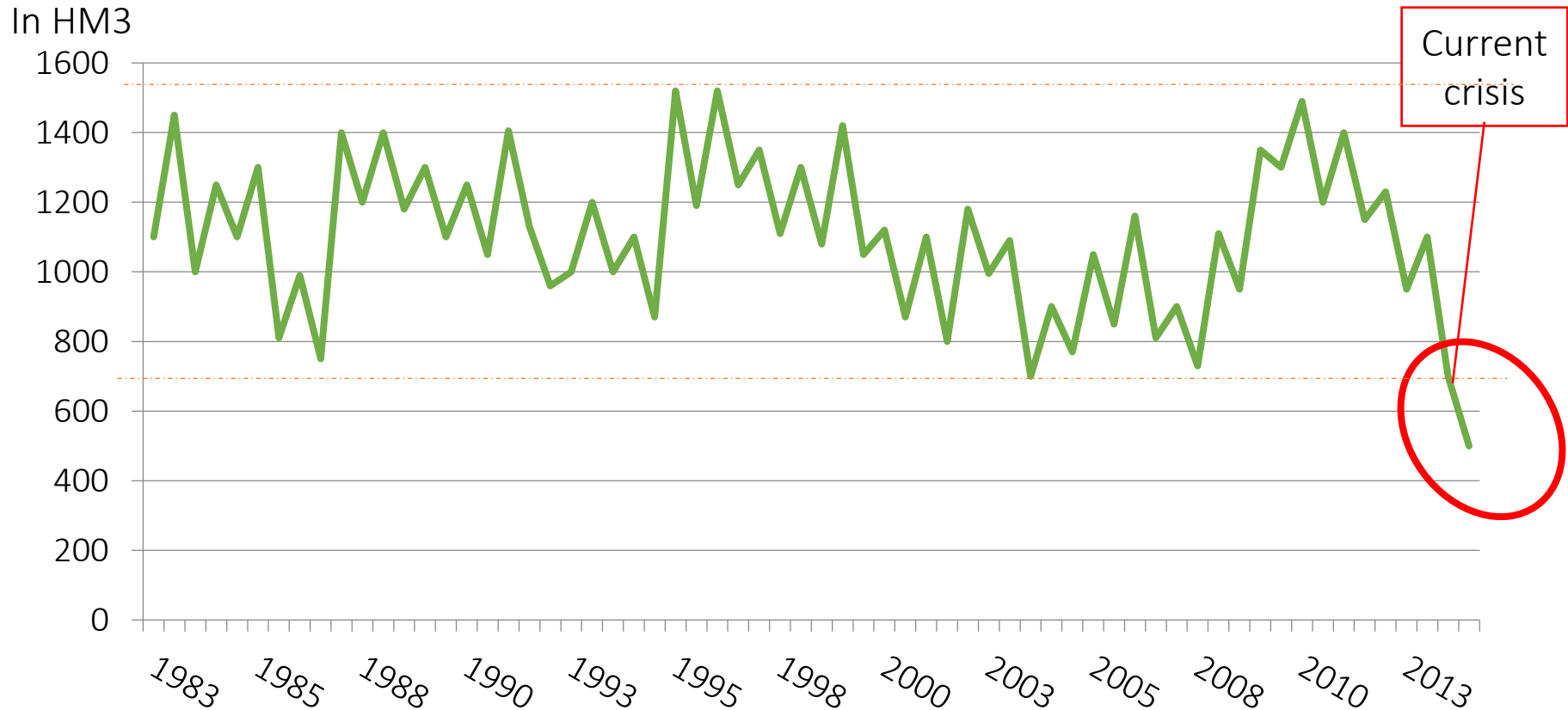
Water shortage in São Paulo shows that innovative policies have to be introduced...



Cantareira system

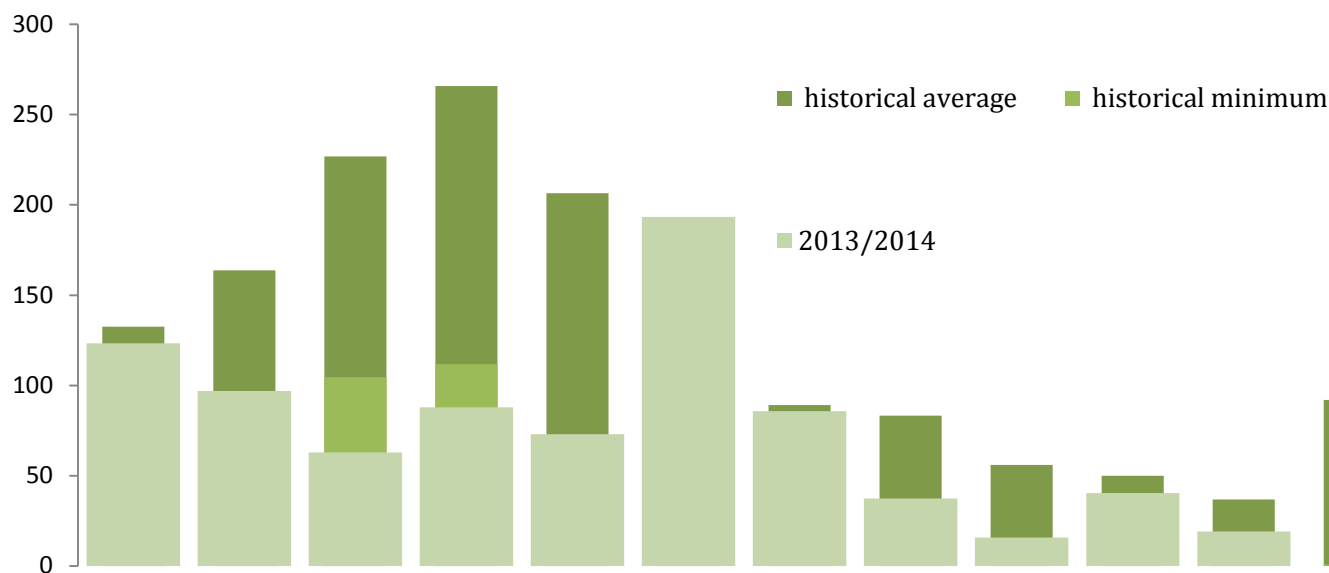


Sistema Cantareira drought could not be forecasted...



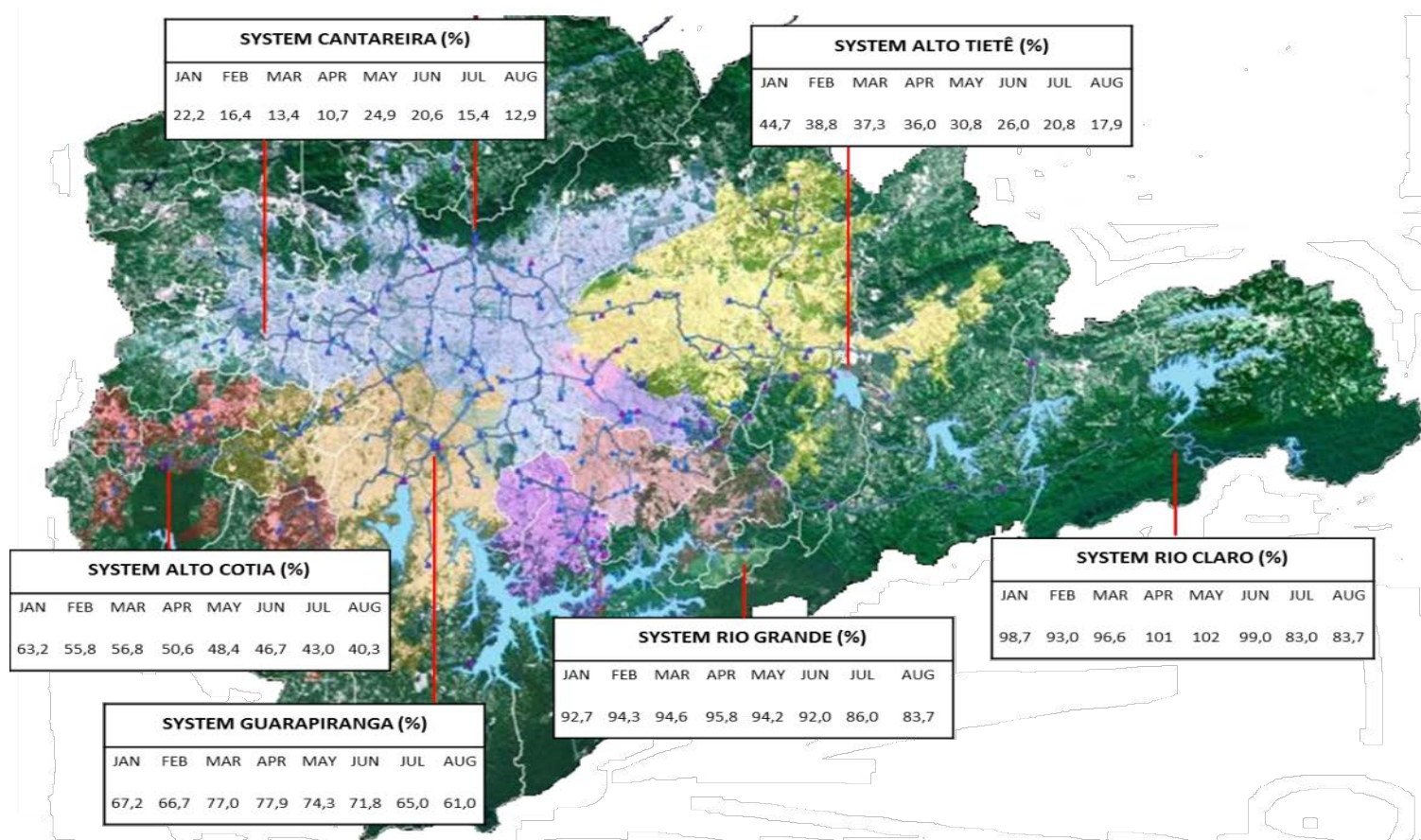
Predictions made by USP and FCTH (Fund. Centro Tecnológico de Hidráulica)

The State of São Paulo is currently going through the worst drought in its history...



	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14
historical average	132.6	163.8	226.8	265.9	206.5	184.1	89.2	83.2	56	49.9	36.9	91.9
historical minimum	21.4	52.4	104.5	111.8	40.2	55.8	7.6	8.8	0	0	0.1	0.9
2013/2014	123.4	97	62.9	87.8	73	193.3	85.7	37.3	15.8	40.4	19.2	

Several municipalities have declared a state of emergency and adopted rationing...



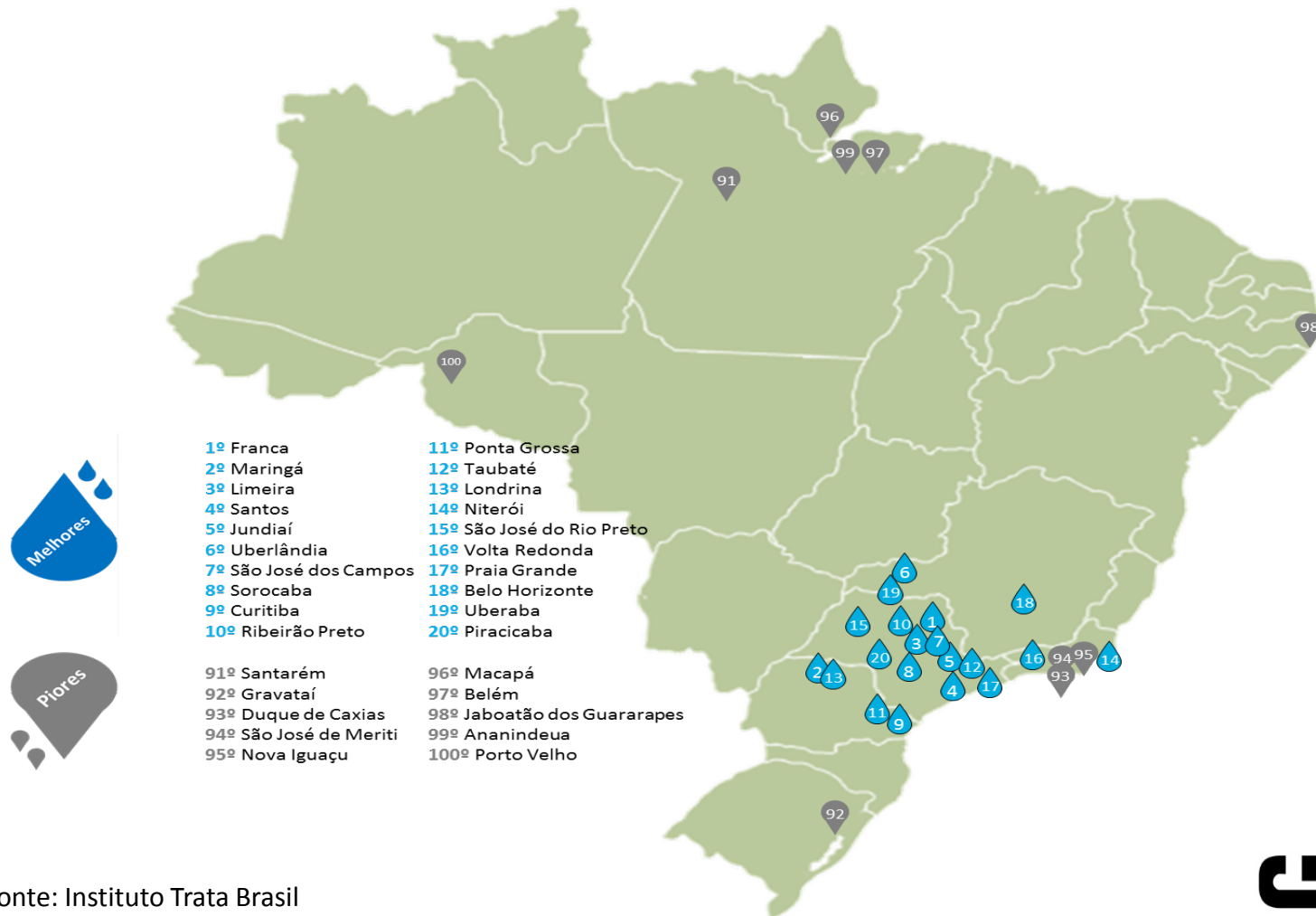
2. Private groups have been growing in the water & sanitation market...



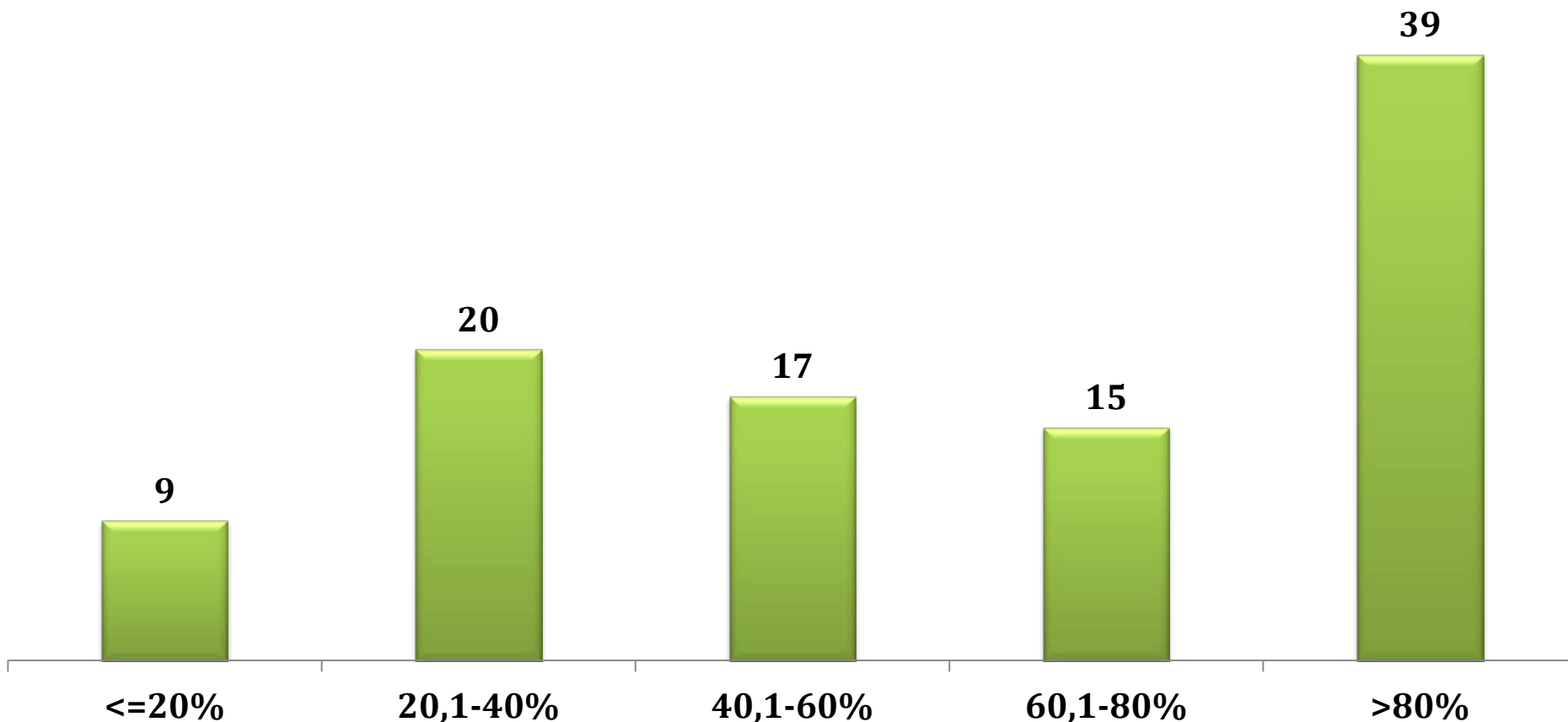
A few examples of public and private water companies in Brazil...



Best ranked cities concentrated in the southeast...

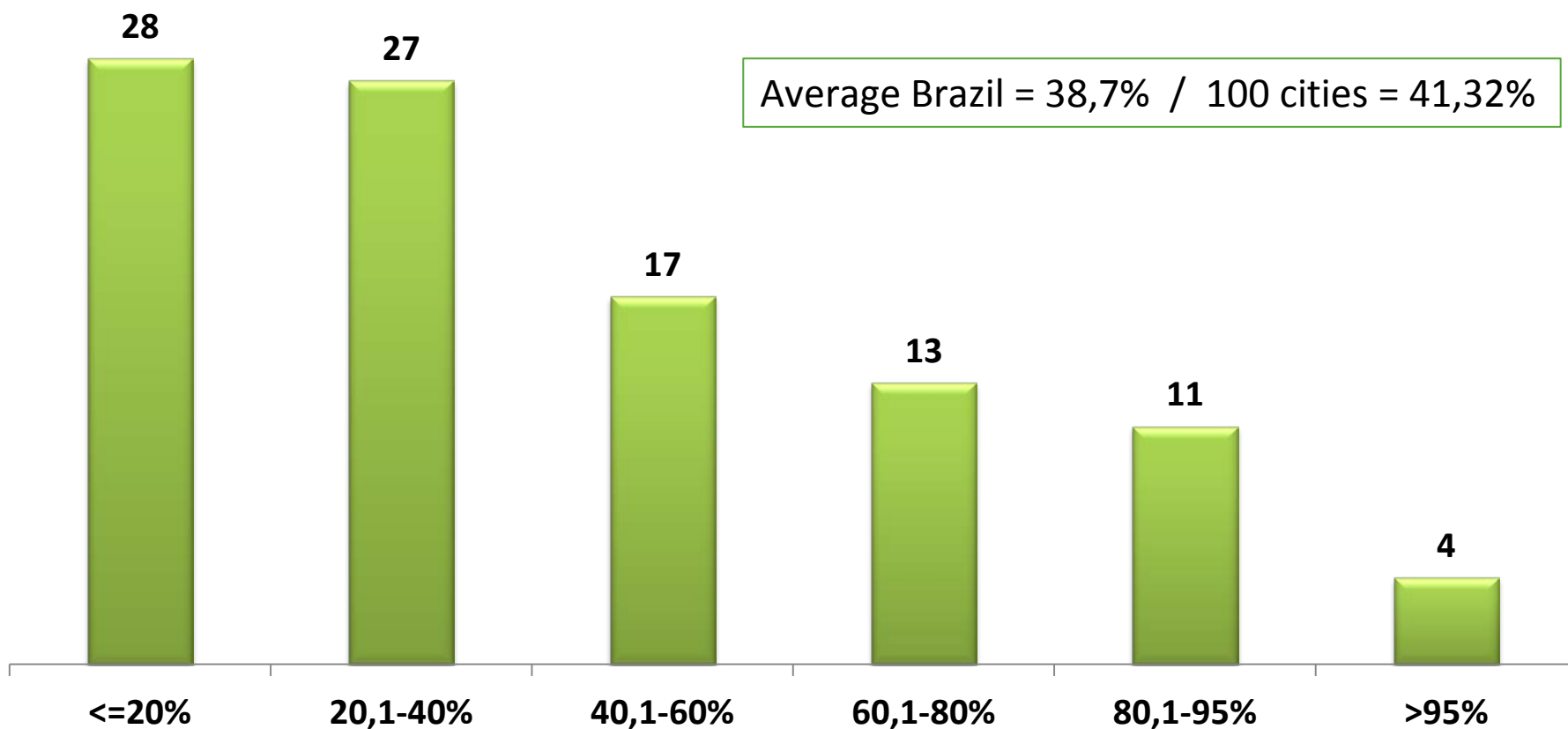


46 of the 100 largest municipalities collect less than 60% of the sewage generated ...



Average Brazil= 48,3% / 100 cities= 62,46%

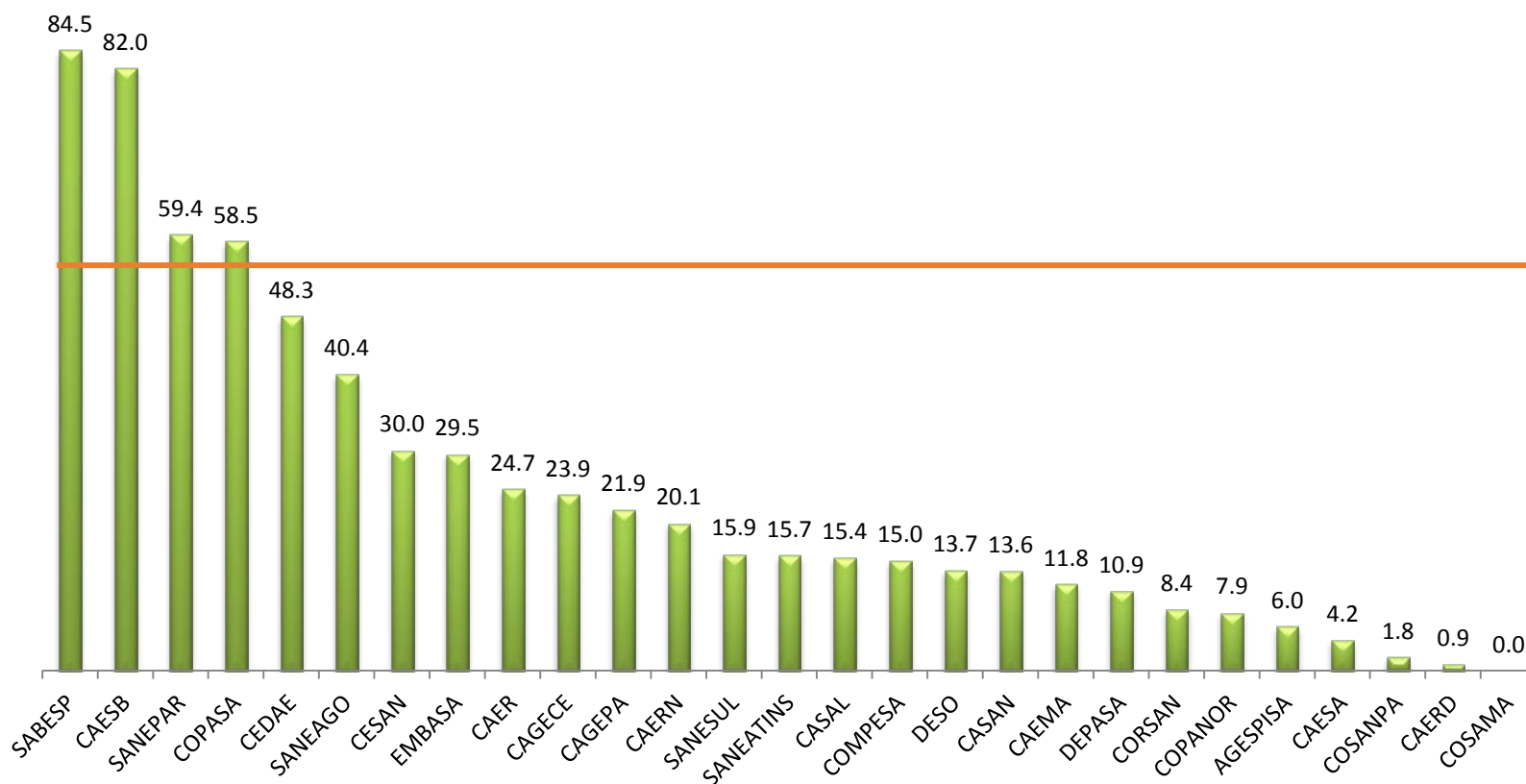
72 of the 100 largest municipalities treat less than 60% of sewage collected ...



- Were considered universalized those counties with 95% or more of treatment.

Only 4 state companies serve sewage for more than half of the population ...

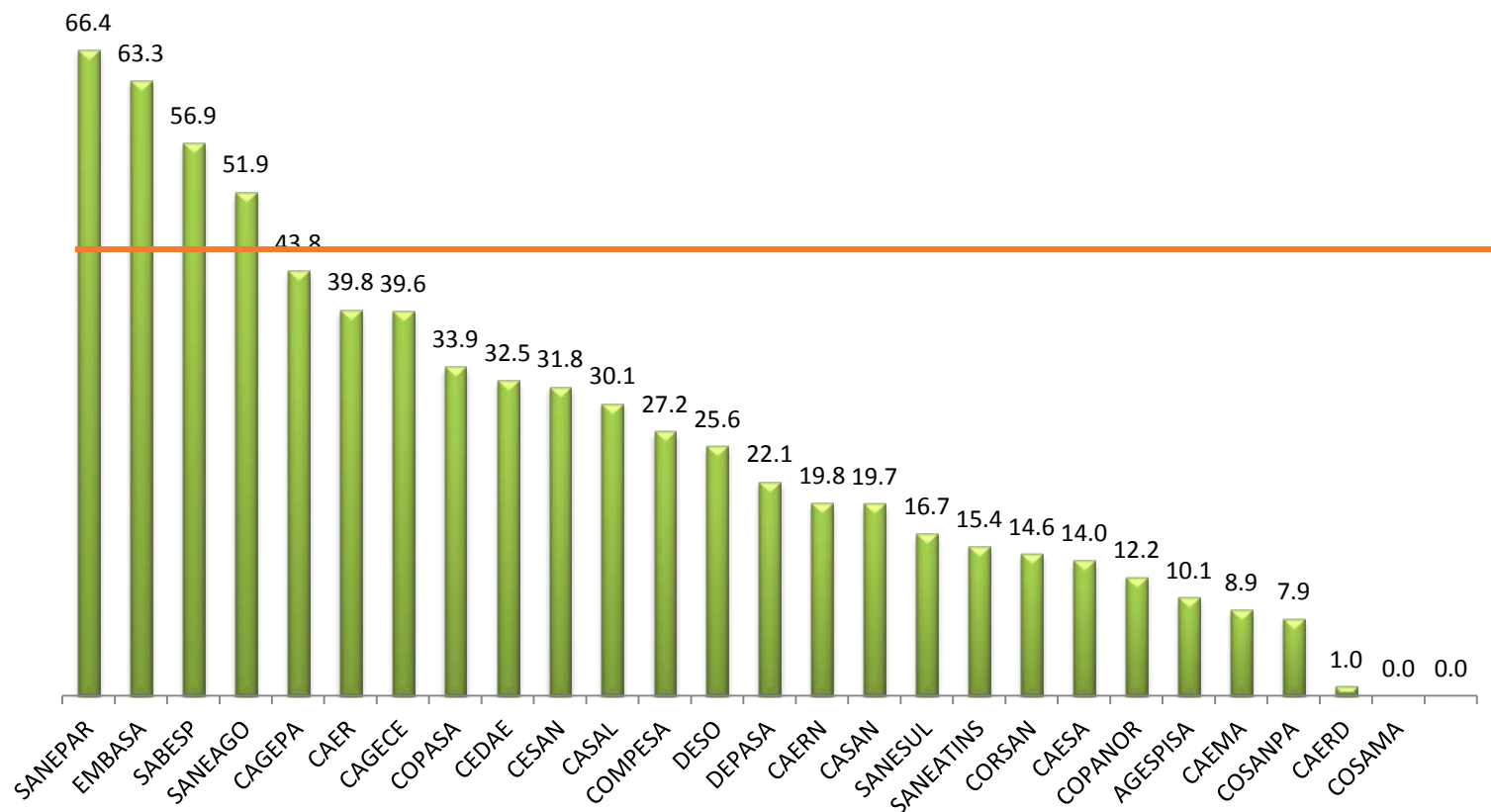
Total provision of sewage (%)



Source: SNIS 2012

Only 4 state companies treat more than 50% of the sewage generated...

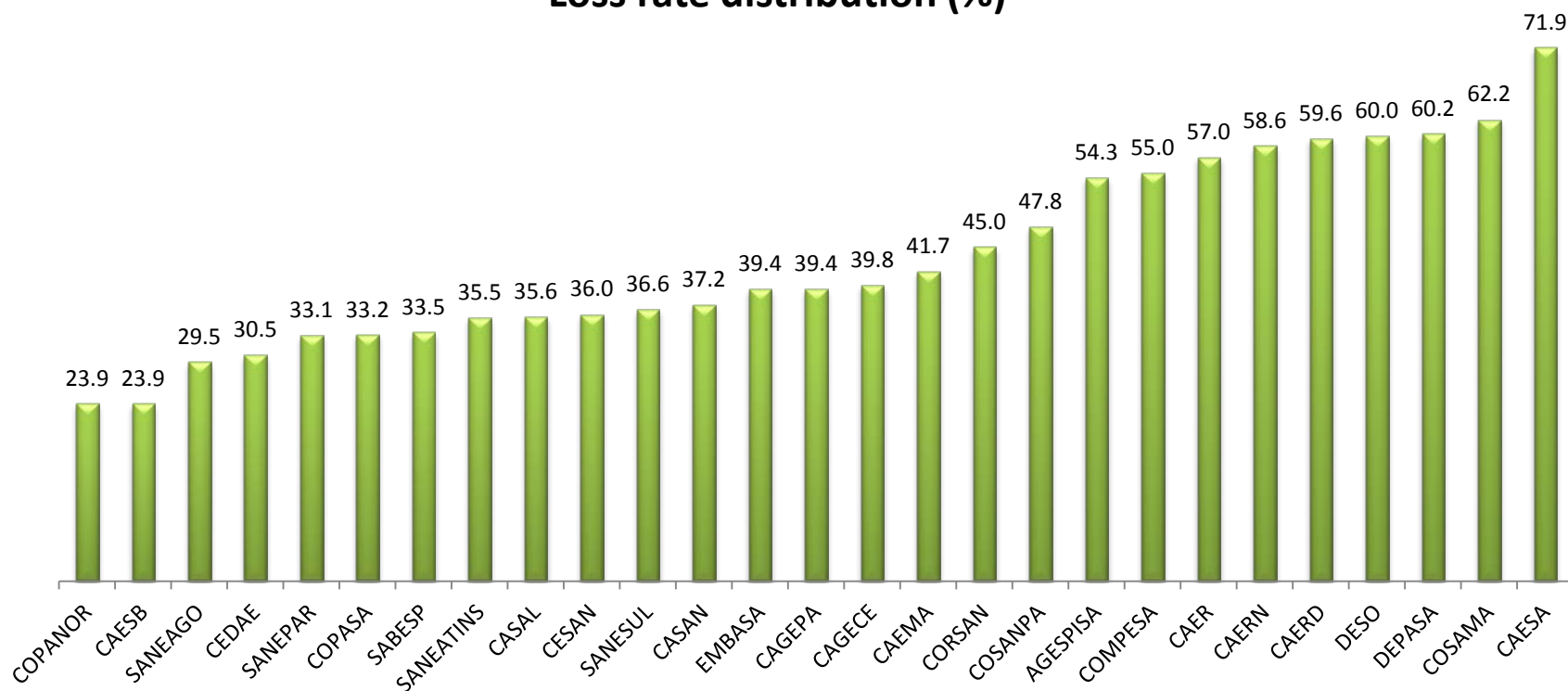
Generated sewage treatment (%)



Source: SNIS 2012

Only 3 state companies lose less than 30% of produced water...

Loss rate distribution (%)



Subnational companies provide 74% of water services and 59% of waste water services...



The majority of state companies present a fragile financial situation...

Financial Performance	Companies
Good	COPASA (MG), SABESP (SP) e SANEPAR (PR)
Average	SANEAGO(GO), CORSAN (RS), EMBASA (BA) e CESAN (ES), CAESB (DF), CEDAE (RJ)
Low	CAGECE (CE), SANESUL (MS), CAERN (RN), CASAL (AL), CASAN (SC), COMPESA (PE), DESO (SE), CAGEPA (PB)
Insufficient	COSANPA (PA), CAEMA (MA), CAERD (RO), CAER (RR), CAESA (AP), COSAMA (AM), AGEPIISA (PI), DEPASA (AC)



Indicators considered: profitability, productivity, cash flow and debt capacity of firms

Source: ABCON - SNIS

The private sector already represents a relevant part of the water & sanitation market...

	Private Sector Share
% Population	12,50%
% Industry	4,75%
% Investments (2003-2011)	5,90%

Source: Own Elaboration/ABCON, 2011

Private groups have grown since the enactment of Law 11.445/07...

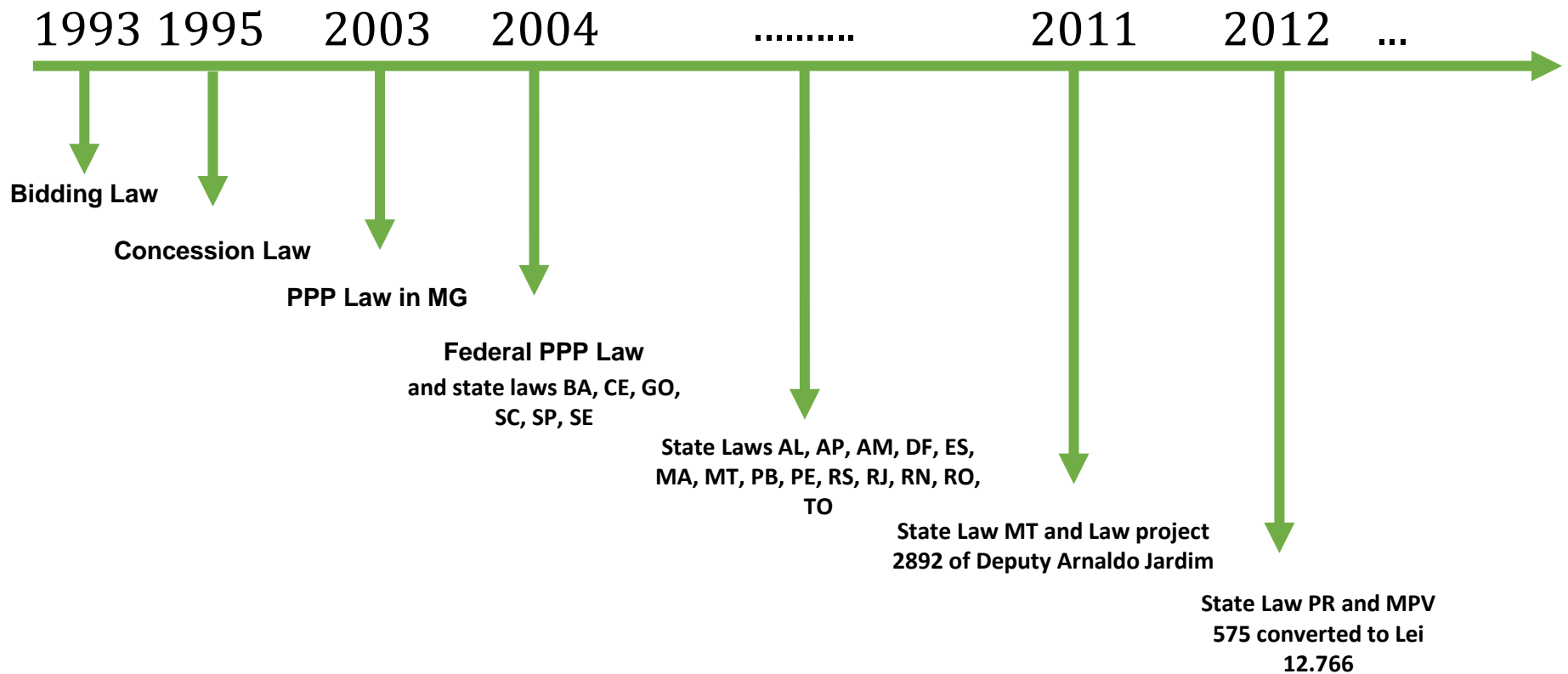


Five states have more than one private concession

3. The tragic situation of the Brazilian water & sanitation sector is also a major business opportunity ...



Public procurement legislation...



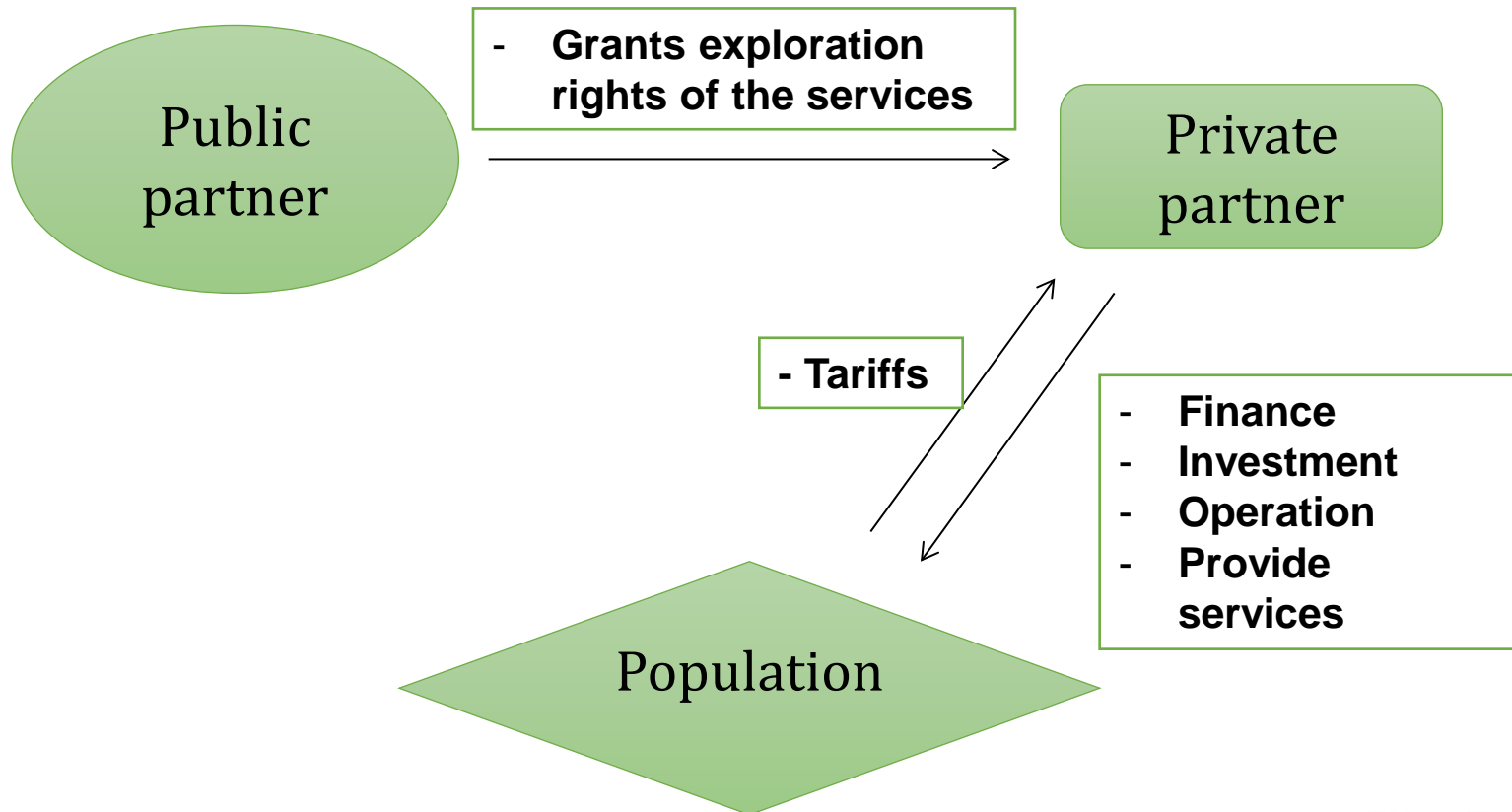
Large investments are being made through PPPs....

PPP/Concession	Company	Investment
Compesa – PPP RMR	Lidermarc/Foz	R\$ 4,5 billion
Rio de Janeiro municipality – Area of planning 5 (AP5)	Odebrecht Ambiental e Águas do Brasil	R\$ 2,4 billion
Saneago – Sewage Divison	Odebrecht Ambiental	R\$ 1 billion
Sabesp - PPP Sistema Produtor São Lourenço	Camargo Corrêa/Andrade Gutierrez	R\$ 1,68 billion
Copasa - PPP Rio Manso	Odebrecht Ambiental	R\$ 519 million
Sabesp - PPP Alto Tiête	CAB Ambiental	R\$ 300 million
Casal - PPP Agreste	CAB Ambiental	R\$ 175 million

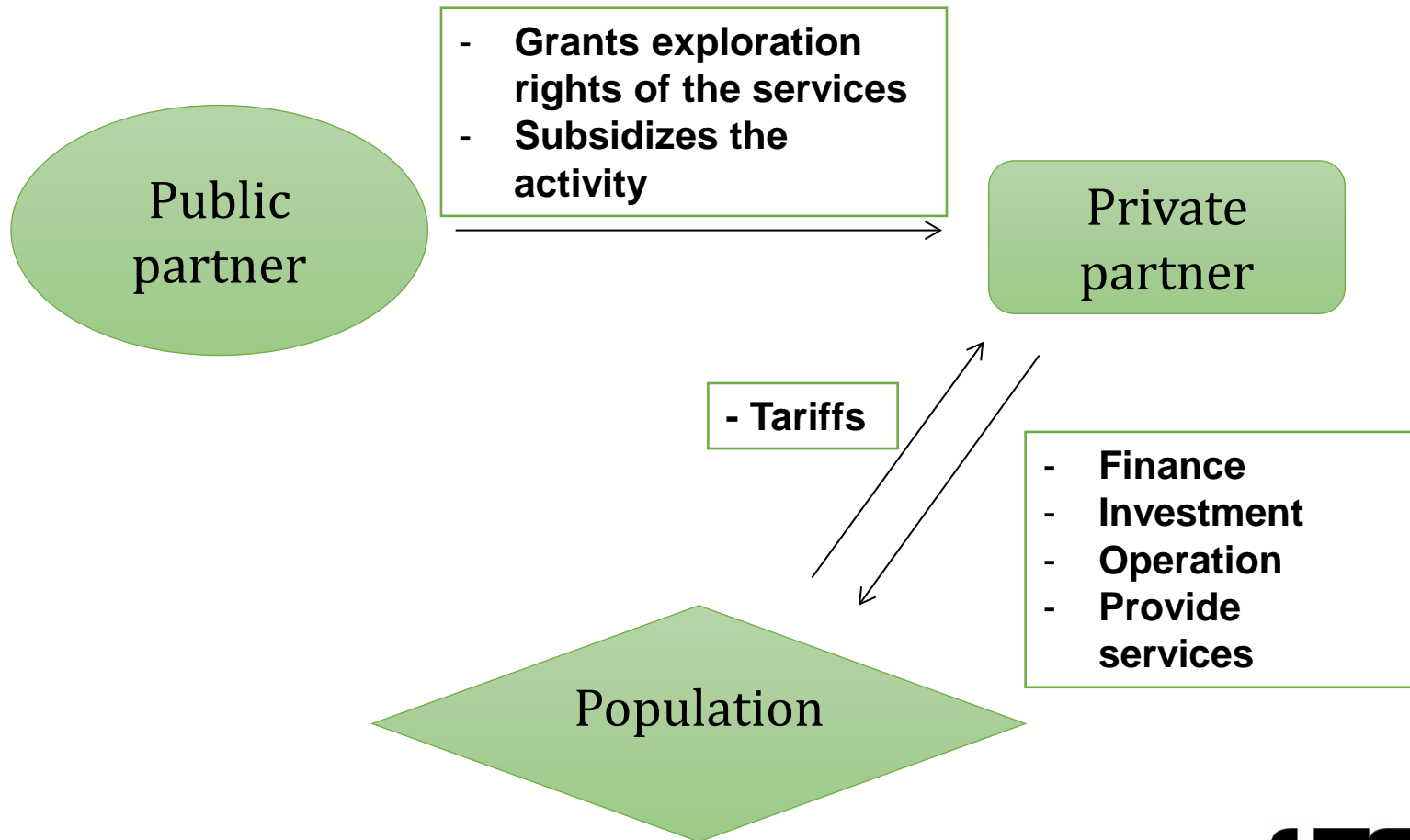
There are several types of partnerships...

- Common concession;
- Sponsored concession;
- Administrative concession;
- And others like SPC (Special Purpose Company)
and assets rental

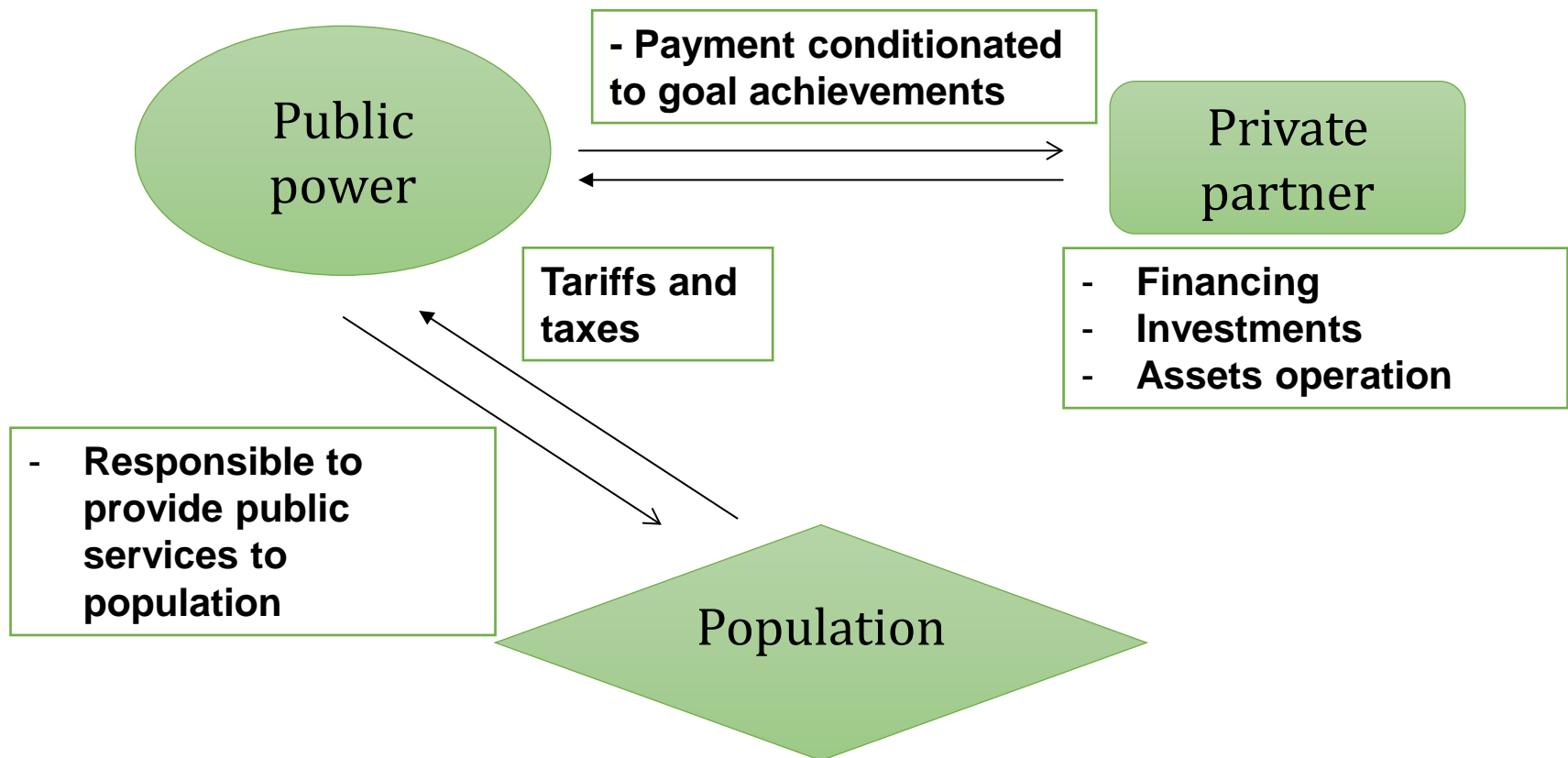
Common concession...



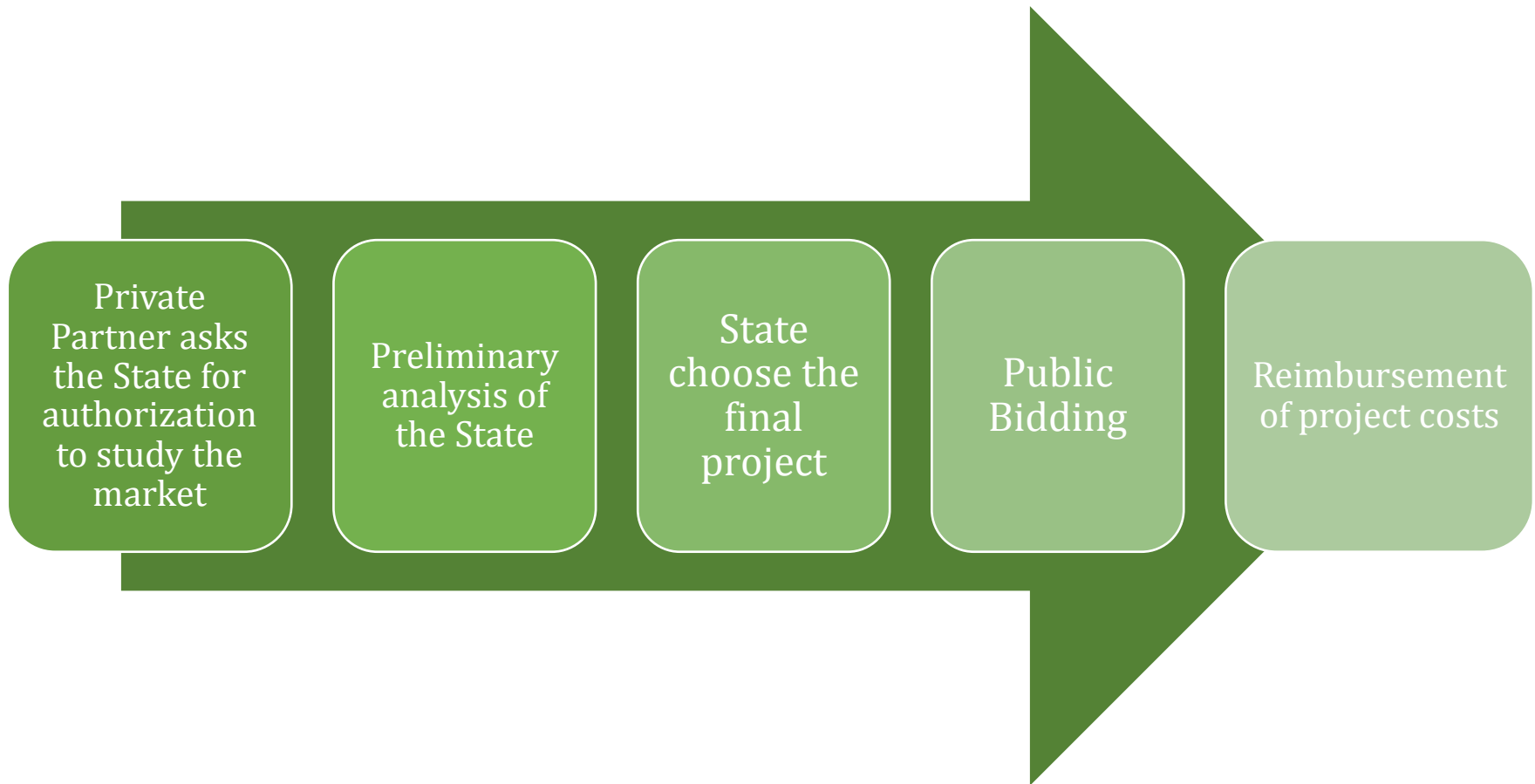
Sponsored concession...



Administrative concession...



PMI – Steps in the State of São Paulo...



Models for public contracts...

HIGHER PARTICIPATION OF PRIVATE SECTOR

	Direct services	Assets rental	Administrative PPP	Sponsored PPP	Concession
Who pays	Public	Public	Public	Public and final user	Final user
Financing	Public	Public	Private	Private	Private
Construction	Public	Public	Private	Private	Private
Operation	Public	Public	Private	Private	Private
Relation with final user	Public	Public	Public	Private	Private
Regulation	No	No	No	Yes	Yes

Advantages of PPPs...

PPPs advantages:

- Shared risk: the private partner takes on the investment risk and is also responsible for the project financing
- Operating cost reduction: the contractor usually reduces costs with labor, chemical products and electric energy
- Technology: in the project, the private partner introduces innovative technological solutions that can be incorporated by the contractor

Examples of PPPs in W&S in Brazil...

2007

1ª PPP Jaguaribe (Embasa / Odebrecht Ambiental)
PPP Alto Tietê (Sabesp/CAB)
PPP Capivari (Sanasa/Odebrecht Ambiental)
PPP Rio das Ostras (Prefeitura do RJ / Odebrecht Ambiental)
PPP Rio Claro (Prefeitura de Rio Claro / Odebrecht Ambiental)

2010

SPE Mairinque (Sabesp/Odebrecht Ambiental)
PPP Castilho (Sabesp/Odebrecht Ambiental)

2012

PPP Piracicaba (SEMAE/ Água dos Mirantes)
PPP Agreste (Casal/CAB)

2009

SPE Mogi Mirim (Sabesp-Grupo GS);
PPP Guaratinguetá (SAEG/CAB)

2011

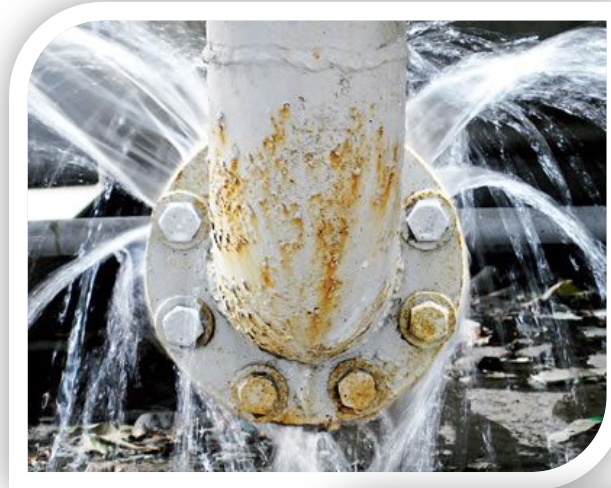
Concessão Parcial AP5 (Prefeitura do RJ/Odebrecht Ambiental)

2013

PPP da Compesa/Odebrecht Ambiental)
PPP São Lourenço (Sabesp/AG e CC)

Innovative solutions are necessary...

- Water for reuse
- Reduction of NRW
- Desalinization
- Protection of the water reservoirs
- Collection and treatment of wastewater



It is urgent to increase the reuse of water in Brazil...

- Cleaning streets, floor and large vehicles
- Irrigation of gardens, soccer fields, green areas
- Industrial processes
- Irrigations
- Fire systems



Brazil needs to follow the global trend of water reuse...

Location	Begin	Flow (m3/s)	Application
Los Angeles – Estados Unidos	1962	2,2 m3/s	Aquifer recharge
Las Vegas – Estados Unidos	-	0,8 m3/s	Recharge source
Big Springs – Estados Unidos	2012	0,69 m3/s	Direct reuse
Orange County – Estados Unidos	2008	3,07 m3/s	Aquifer recharge
Singapura	2003	2,64 m3/s	Direct reuse
Namíbia-Windhoek	1968	0,61 m3/s	Direct reuse
Torreele Water Plant – Bélgica	2002	0,1 m3/s	Aquifer recharge
Aquapolo Ambiental	2012	1,0m3/s	Direct reuse



International experience: the case of Israel...

- Water reuse has become a national public policy since 1955.
- Water is reused mainly for agricultural irrigation.
- The country reuses about 80% of treated effluent.



Source: Sabesp

International experience : Project *Western Corridor* in Australia...

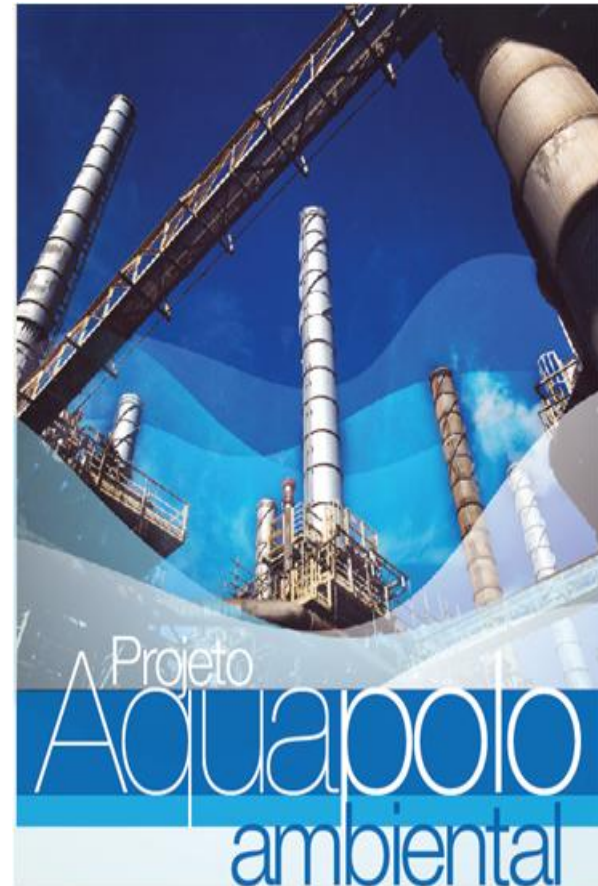


- Beginning in 2006 and completed in 2008.
- Provides recycled water for industry.
- Water is transported through a network of 200 km of pipes.
- Provides recycled water for agriculture, when it is not used for industrial and urban activities.

Important Brazilian initiative: public-private partnership of Aquapolo...

Aquapolo Ambiental:

- Investment of R\$ 364 millions;
- Extends the use of recycled water in industry;
- Enables the supply of water required to expand the production capacity of Petrochemical's Capuava;
- **Supplying capacity of 1.000 l/s**
- **Able to supply a city like Santos(aprox. 400 mil inhabitants)**



Reducing water losses may create gains of R\$ 37,27 billions until 2025...

Earning potential with reducing water losses	losses (2009)	Losses (2025)	Reduction	Earning potential* (R\$ billions)
Scenario 1 – Optimistic	37,4%	18,7%	50%	37,27
Scenario 2 – basis	37,4%	23,2%	38%	29,93
Scenario 3 - conservative	37,4%	27,9%	25%	20,91

Source: SNIS 2009 (Dados referentes a 2009) e (ROSITO, 2012). Elaboration GO Associados

* Gross values. ILquids would be R\$ 18,64, R\$ 14,97 e R\$ 10,46, respectively

Reminding the three points...

- Given its GDP per capita, Brazil should have higher water & sanitation coverage
- Private Brazilian groups have been growing since the creation of the new regulatory framework of the W&S sector
- The tragic situation of the Brazilian water & sanitation sector is also a major business opportunity

Multidisciplinary team...



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Economist



Marcelo Morgado

chemical engineer



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Lawyer



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Engineer



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Economist



Luis Felipe Arouca

Engineer

Thank you!

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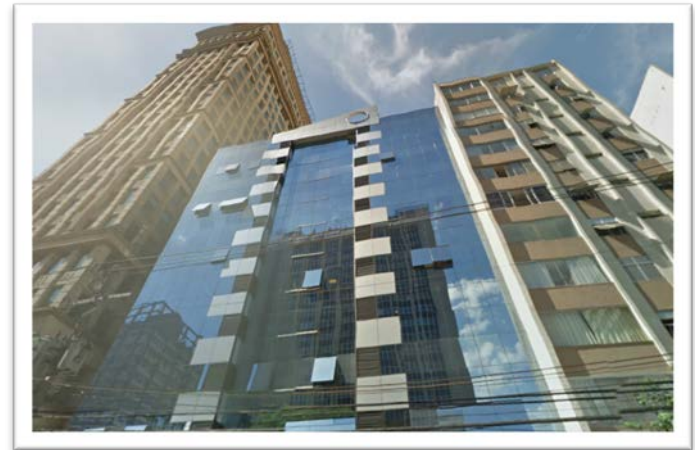
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