

# Rio de Janeiro State



GOVERNO DO ESTADO  
**RIO DE JANEIRO**  
VAMOS VIRAR O JOGO

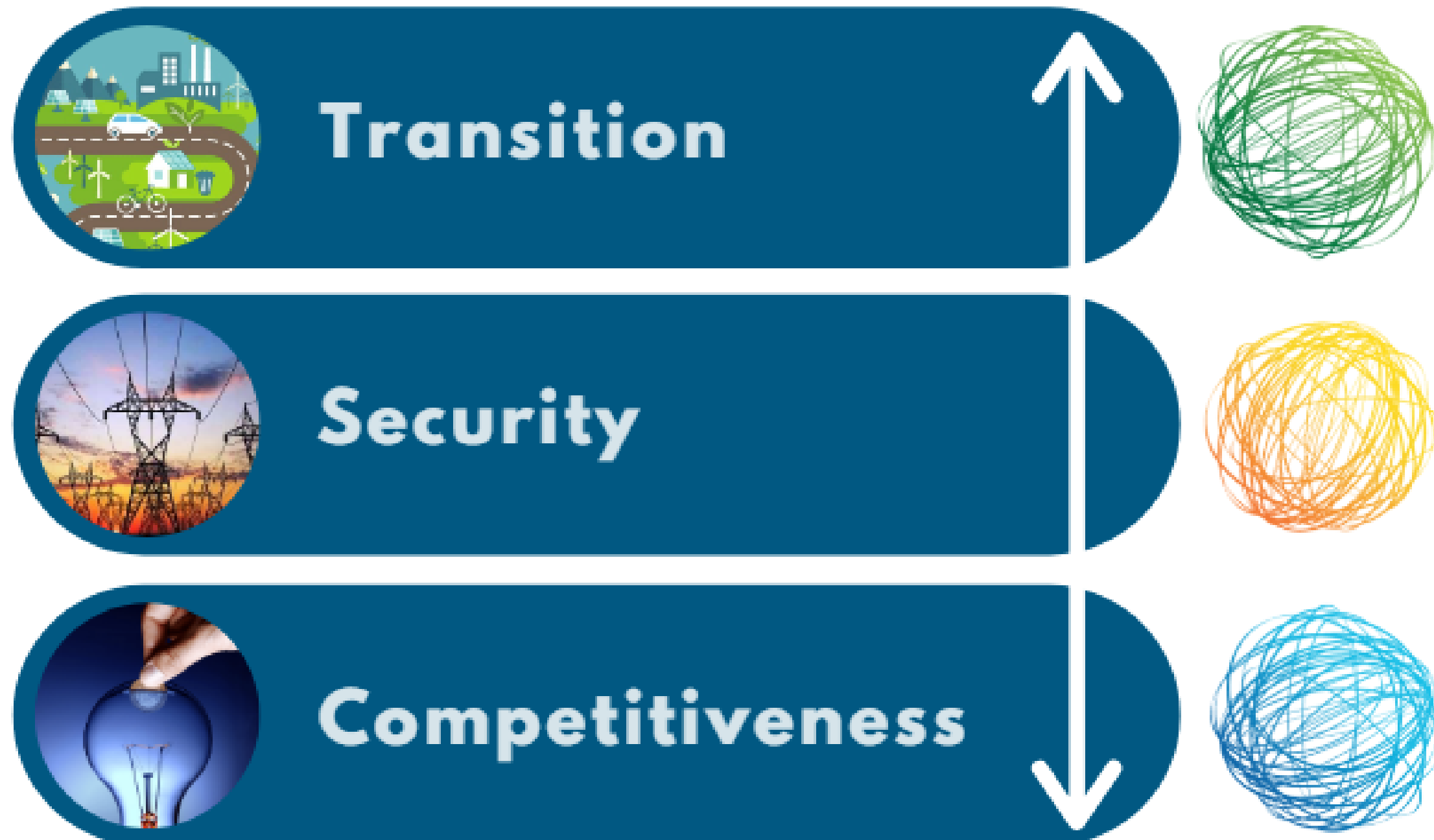
Secretariat of Economic Development, Energy, and International Relations - SEDEERI

# Rio Capital of Energy Program

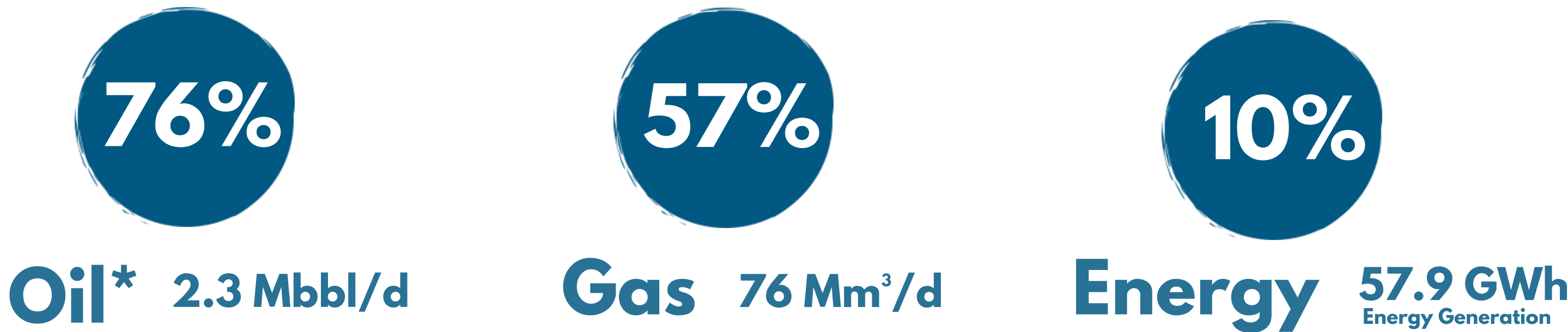


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Consolidate the State of Rio de Janeiro as the “Capital of Energy”, a reference in security of national supply, protagonist in the country's energy transition to a more diversified matrix, with reduction of greenhouse gas (GHG) emissions and oriented towards energy cost competitiveness.



## NATIONAL PARTICIPATION



\*Brazil: 9th Largest Producer in the World  
Rio de Janeiro: 13th

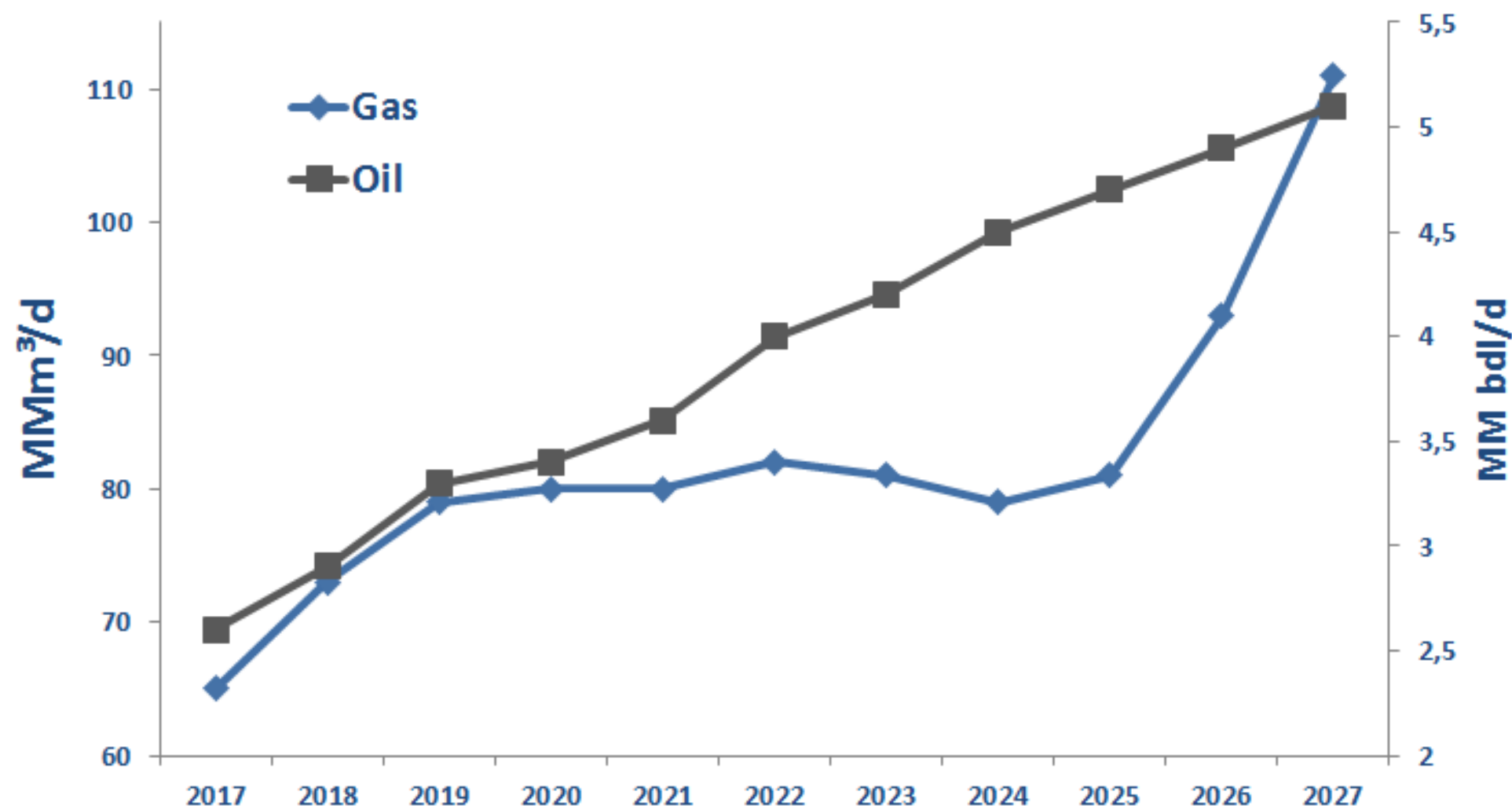
.....  
The only nuclear power producer in Brazil.  
1st state in natural gas thermal generation.  
3rd largest national producer of electricity



# Future O&G Production



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## In The Upcoming Years...



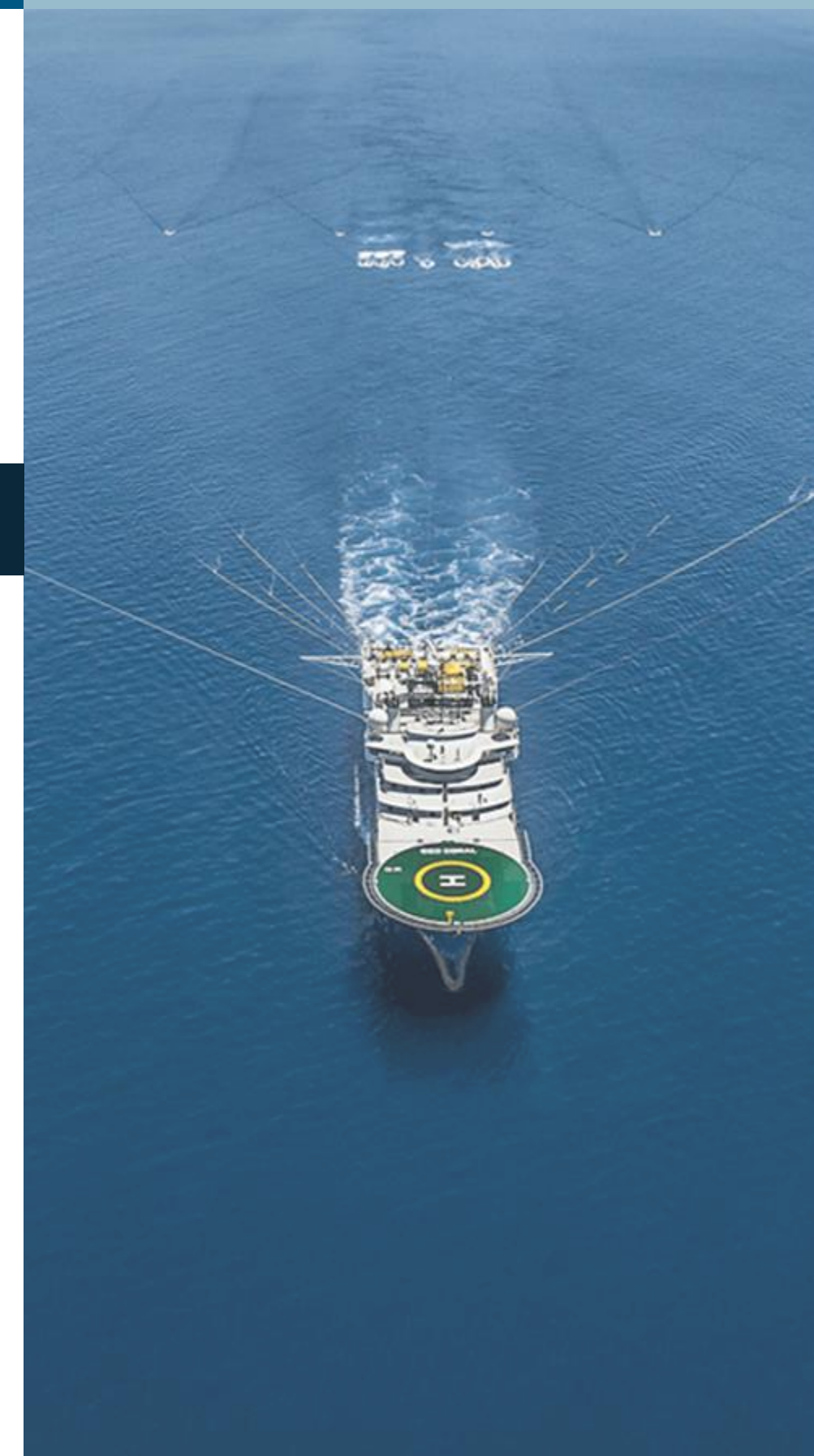
**96%** increase in total oil production



**70%** increase in gas net production

There is a great expectation that the O&G sector will expand over the next decade.

In order for this potential to take place it will be necessary to give an economic destination to the associated gas.



# Mature Fields



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**Fields over 25 years or with 70% of proven reserves**

## Potential Until 2025



30 thousand new jobs



new technologies



approximately 20 eligible fields in Campos Basin - RJ



Lower Cost of production

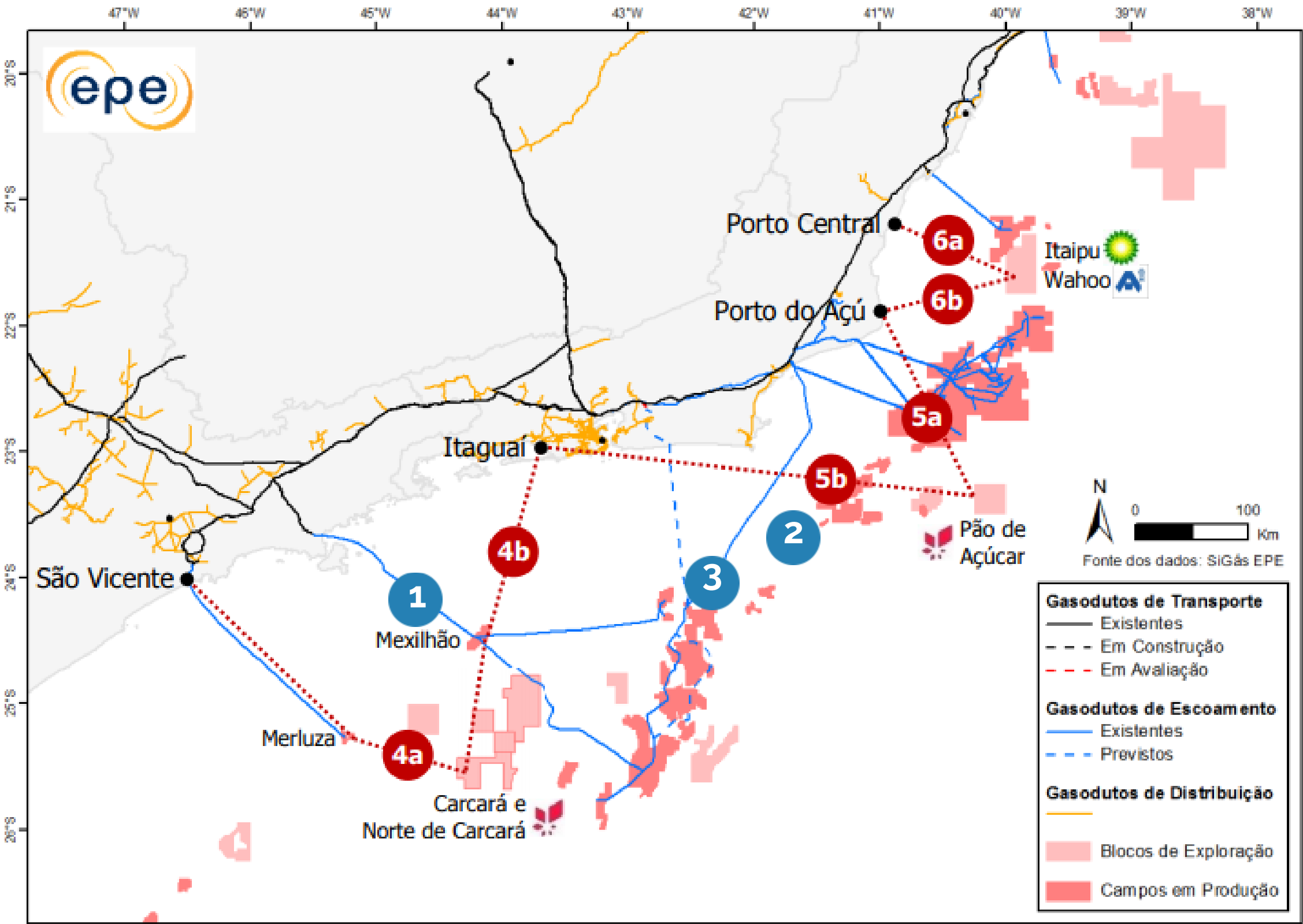


230,000 barrels of oil per day



Royalty reduction: from 10% to 5% in the incremental production

# Gas Logistics



Route	Capacity	Status
1 Caraguatatuba	10 MM m <sup>3</sup> /d	In Operation
2 Cabiúnas	16 MM m <sup>3</sup> /d	In Operation
3 COMPERJ	18 MM m <sup>3</sup> /d	In Construction
4a São Vicente	10-15 MM m <sup>3</sup> /d	In Study
4b Itaguaí	10-15 MM m <sup>3</sup> /d	In Study
5a Porto do Açú	10-15 MM m <sup>3</sup> /d	In Study
5b Itaguaí	10-15 MM m <sup>3</sup> /d	In Study
6a Porto Central	10-15 MM m <sup>3</sup> /d	In Study
6b Porto do Açú	10-15 MM m <sup>3</sup> /d	In Study

**Total  
Capacity**

**Current: 44 MM m<sup>3</sup>/day  
Potencial: 74-89 MM m<sup>3</sup>/day**

# The New Gas Market



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State of Rio is promoting actions in line with the Federal Government in order to create the "New Gas Market" – an open, dynamic, competitive and integrated market to the energy matrix.

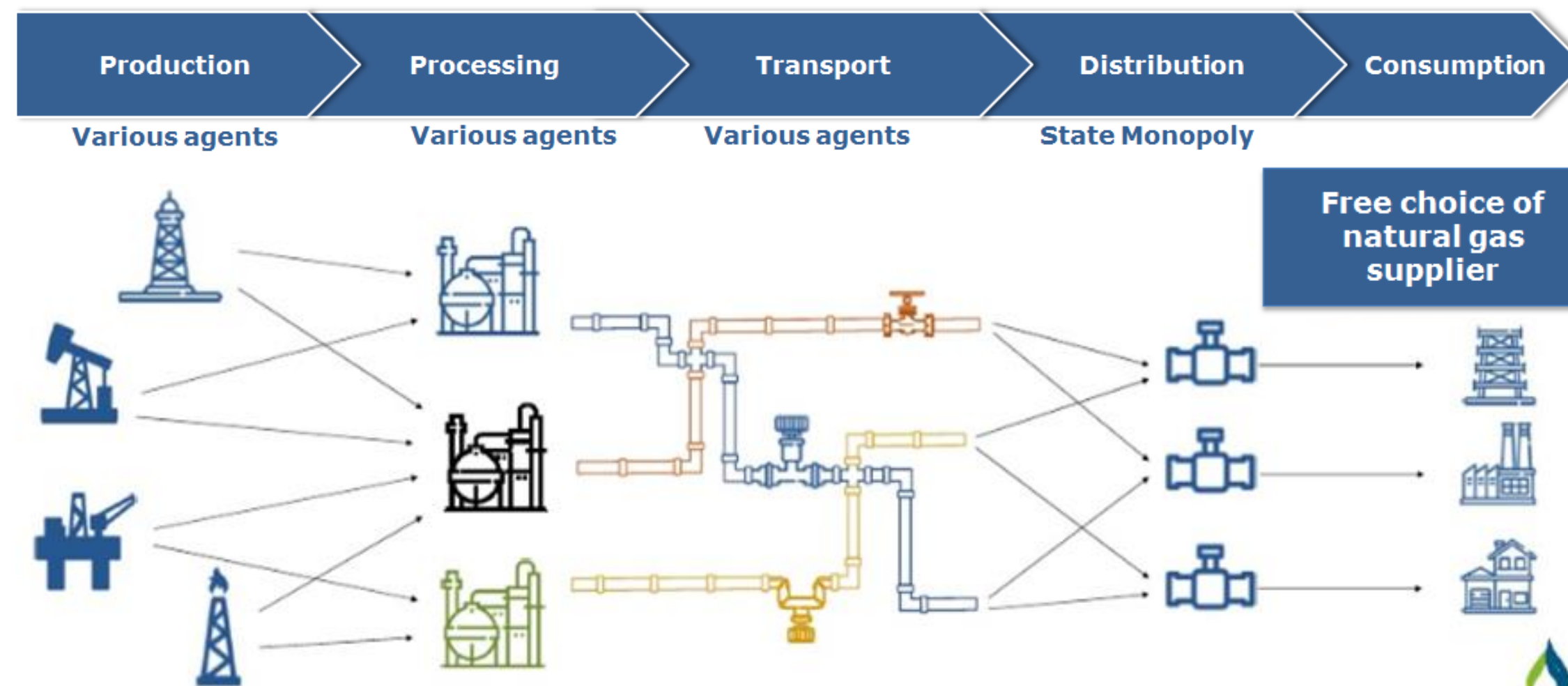
## Main Pillars

Promotion of Competition

Removal of Tax Barriers

Harmonization of State Regulations

Integration with the Electric Sector



Fonte: Elaboração IBP.



# New State Regulation



## AGENERSA N° 3862 Regulation

AGENERSA has recently improved the regulation for the piped gas distribution service for Free Agents -which are gas intensive consumers.

Measures	Before	After
Minimum Volume for Free Agents	25.000 m <sup>3</sup> /dia	10.000 m <sup>3</sup> /dia
Free Agents	Difference in treatment between CL, AP e AI	Isonomy in between CL, AP e AI
Tariff for Free Agents	22.5% discount for AP and AI with Dedicated Pipeline	Specific methodology for new consumers with Dedicated Pipeline
Marketer Discount	1.9%	Under Study
Pipe Construction	LDC's Monopoly	Investor's Preference



# Impacts on the Industry



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## Potential investments based on a new Natural Gas Market



**Petrochemical**



**Thermal Power Plant**



**Fertilizers**



**Steel**



**Glass**



**NGV**

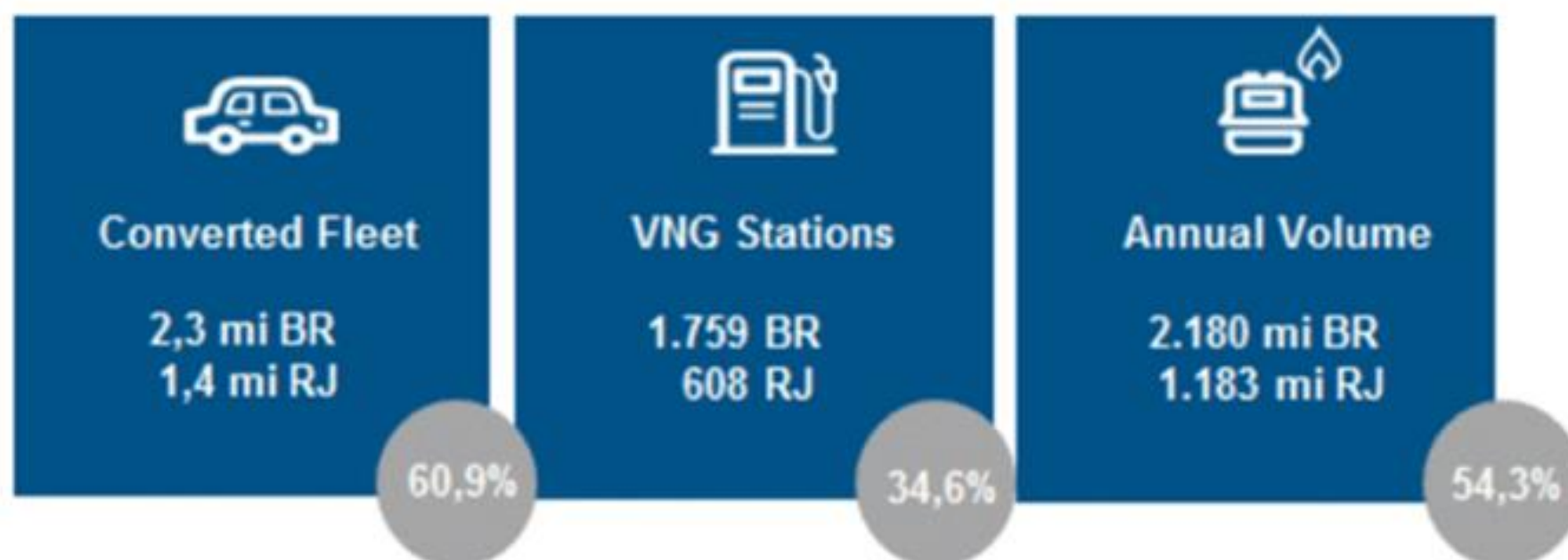


# Gas for Transports



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Brazil imports in diesel the equivalent of 39 million m<sup>3</sup>/day of gas



## Expected Benefits



- Energy matrix diversification
- Reduction of diesel oil imports
- Reduction in transport costs
- Greenhouse gas and particulate emission reduction
- Noise Reduction
- Sustainability: CO<sub>2</sub> reduction

## Working Group Focused on Structuring Projects using Gas

- VNG Gas Station Expansion
- Intensified Use of NG in Heavy Vehicles

# Rio de Janeiro State Protagonism



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- **Transparency in the piped gas distribution service tariff calculation methodology**
- **Efficiency in the gas acquisition by LDCs.**
- **Autonomous Regulatory Agency**
- **Adherence to tax adjustments**
- **Network expansion policy with economic criteria**



## Vocations



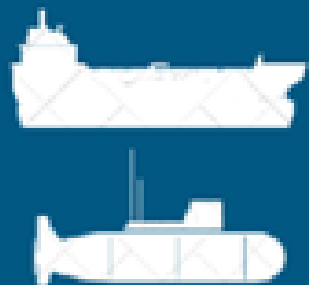
Maintenance and Repair due to Maritime Cabotage and supply vessels demand;



Modules & Topsides Construction and Integration



Decommissioning, Ships scrapping and Maritime Cabotage (BR do Mar)



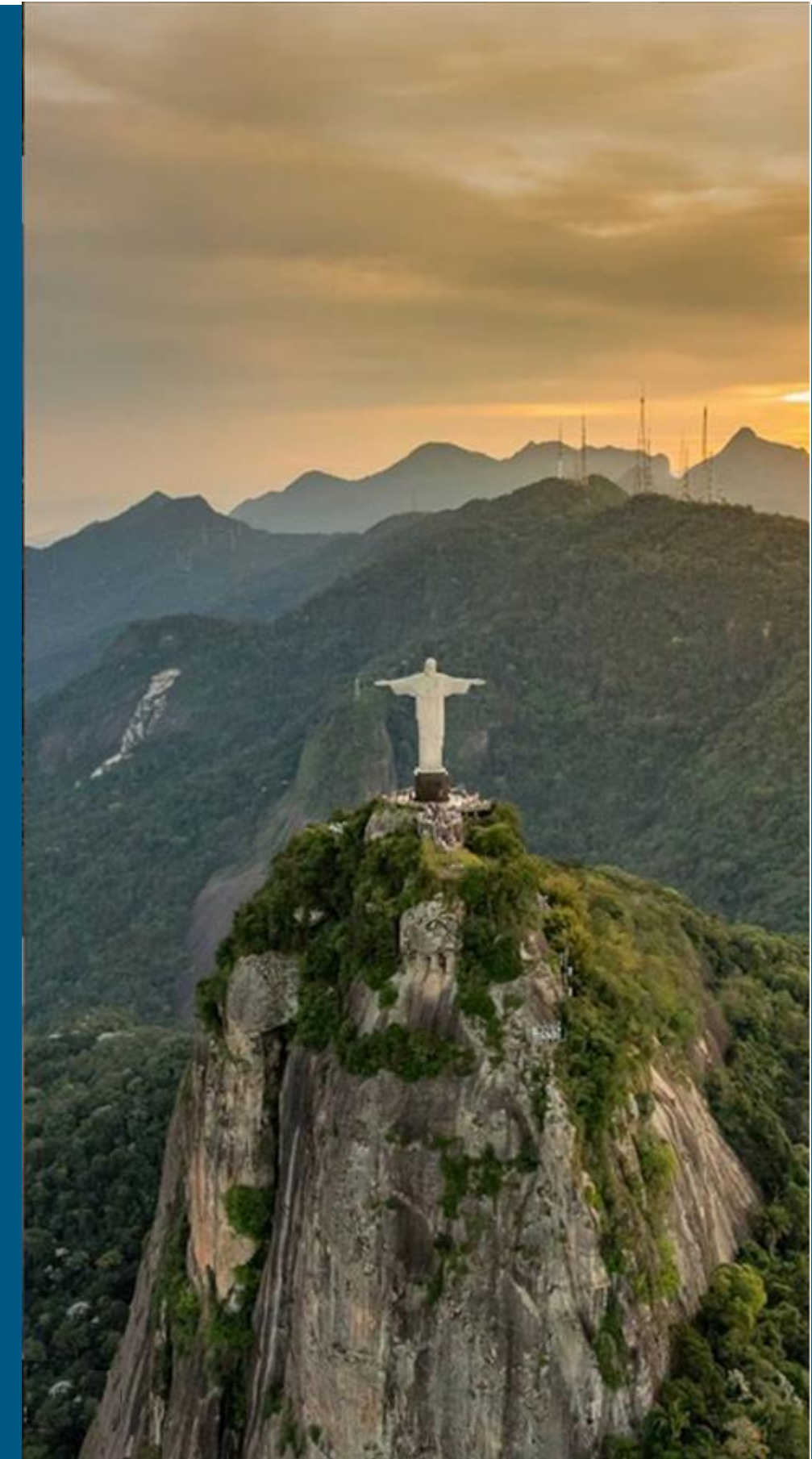
Technological Naval Cluster



**There will be a demand for 200 vessels in Brazil, among Offshore Supply Vessels, Container Ships, Bulk carriers, Port Tugs, Pushers and Barges.  
Rio will be directly impacted by half of this huge fleet until 2023.**

**Is related to 3 main vectors**

- **Oil & gas exploration**
- **BR do Mar Program**
- **Investment Partnership Program (PPI)**



# Decommissioning Opportunities



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**Decommissioning: an inducer for the revitalization of the Rio de Janeiro State's shipbuilding industry**

## Units over 25 Years Scenario

**66**

Units in Brazil

**22**

Close to Rio

**12**

Units foreseen by  
ANP for RJ



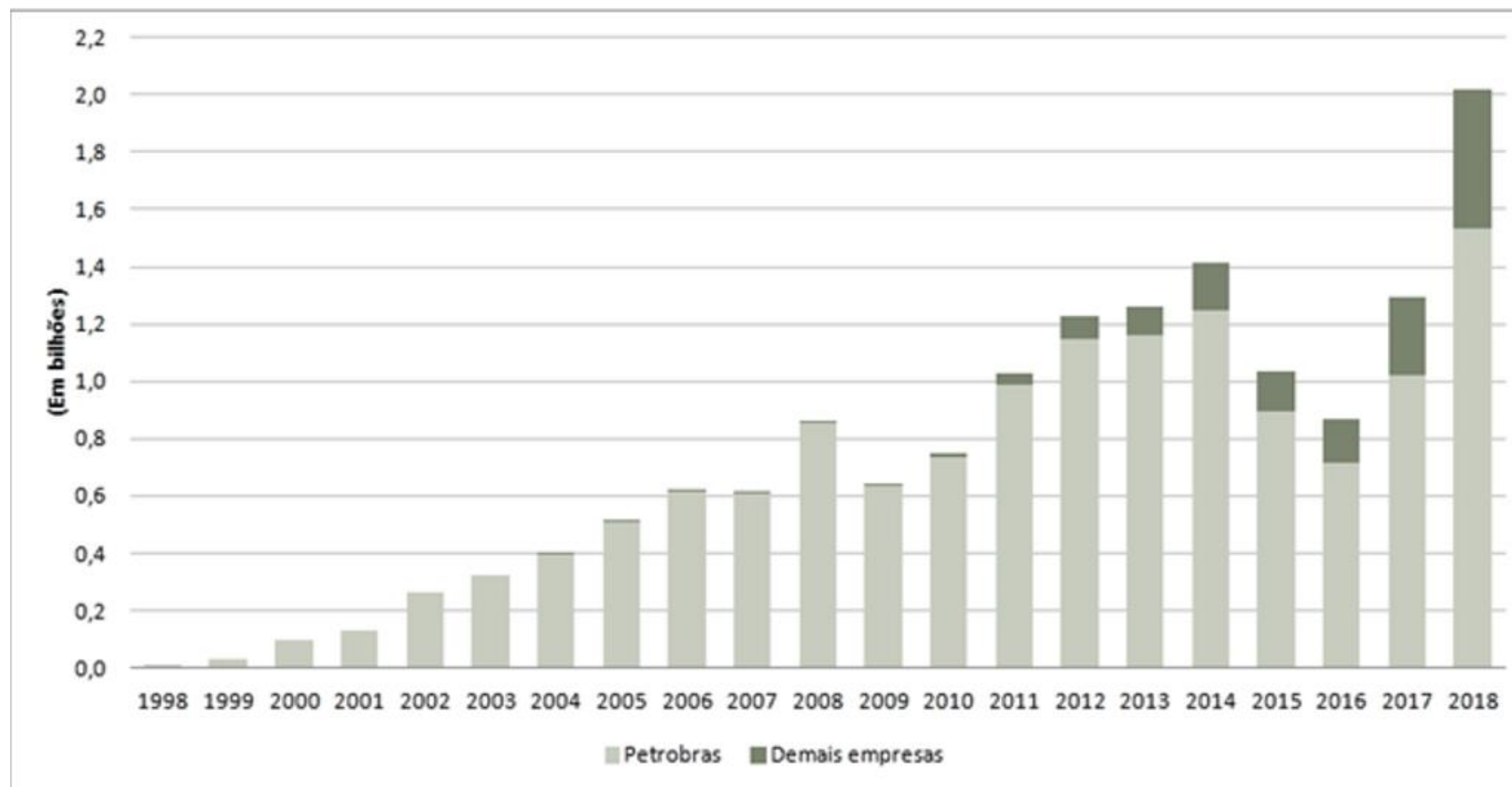
**Scrap metal TON: US\$ 200-450**

Market Ripple Effect:

- Engineering projects;
- Cargo movements;
- Waste management;
- Underwater inspection;
- Manufacture and assembly;
- Cutting and welding services;
- Subsea services (ROV, Risers, etc)

**ANP, IBAMA and Navy have issued a Joint Standard Note on the theme which is in Public Hearing now**

## Volume of Investment Obligations Generated per Year (Up to 4th Quarter / 2018)



Changes in ANP Regulation No. 3/2015  
(Resolution N° 799, September 2nd, 2019)

- Extinction of the Scientific Technical Committee (COMTEC)
- Non-interference by the Agency on the allocation of Intangible Assets rights that shall comply with the law
- Expansion of the scope of application of resources in own facilities (oil companies), supplier companies, Universities and Research Centers

Expected R&D investments of approximately R\$ 3 billion per year over the next 30 years.

# Industrial Investments



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CAPEX (approximately)

## US\$ 4.5 BILLION

### 1. Itaboraí - Maricá

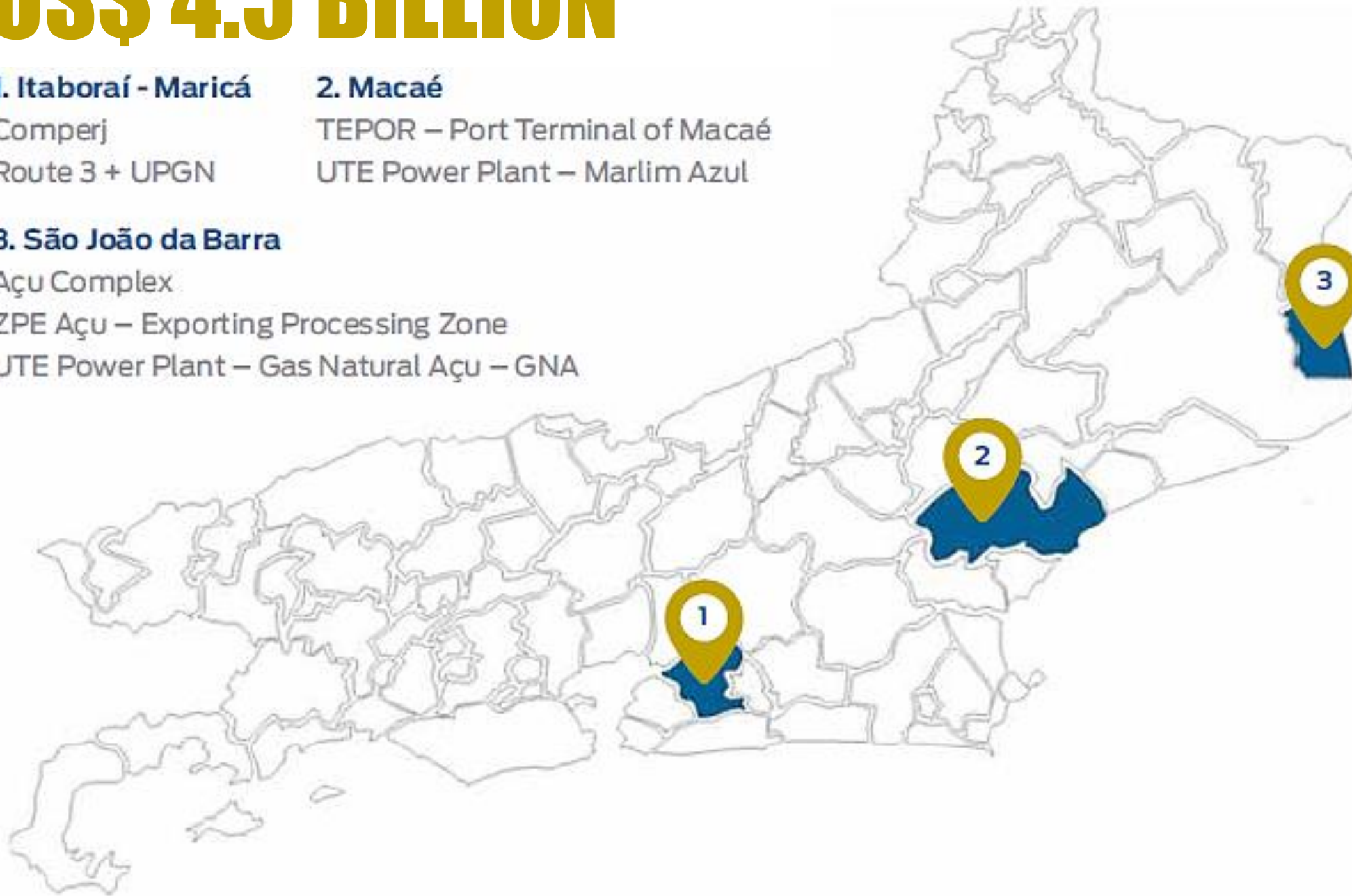
Comperj  
Route 3 + UPGN

### 2. Macaé

TEPOR – Port Terminal of Macaé  
UTE Power Plant – Marlim Azul

### 3. São João da Barra

Açu Complex  
ZPE Açu – Exporting Processing Zone  
UTE Power Plant – Gas Natural Açu – GNA



## Comperj

- Route 3 Gas Pipeline
- 2020 conclusion
- NGPP operation by 2021

## TEPOR

- 2 terminals
- Crude Oil storage with 4.5 million barrels

## Açu Port

- Latin America's biggest port
- 2 NGPP by 2021 (3 GW capacity - incremental potential up to 6 GW)
- LNG terminal capacity: 21 MMm3/day

# Wind Power



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Rio de Janeiro has an electric park installed

Gargaú: 28 MW - Supplies 80,000 inhabitants from São Francisco de Itabapoana

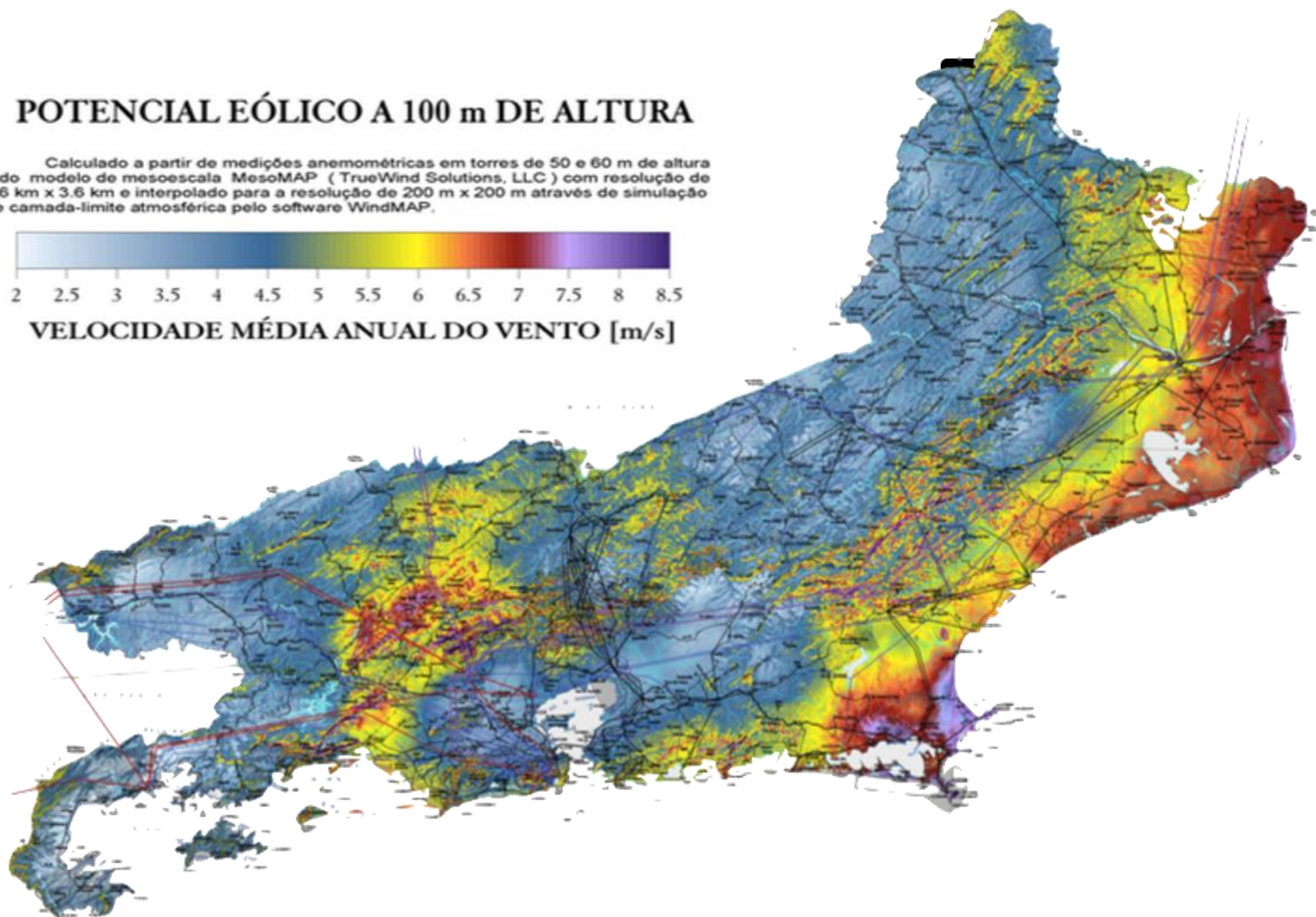
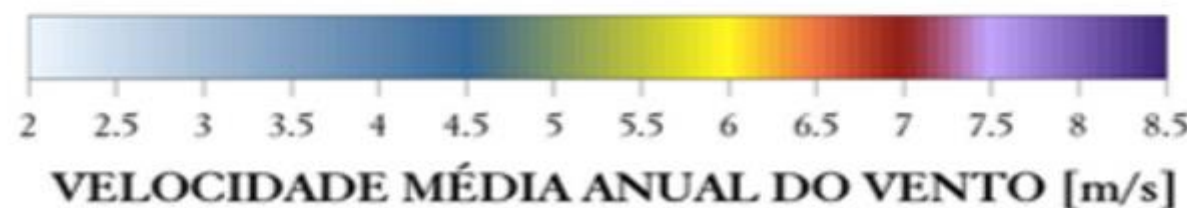
## RJ State Potential

**47 GW**  
Onshore

**41 GW**  
Offshore

### POTENCIAL EÓLICO A 100 m DE ALTURA

Calculado a partir de medições anemométricas em torres de 50 e 60 m de altura e do modelo de mesoescala MesoMAP ( TrueWind Solutions, LLC ) com resolução de 3.6 km x 3.6 km e interpolado para a resolução de 200 m x 200 m através de simulação de camada-limite atmosférica pelo software WindMAP.





# Solar Power

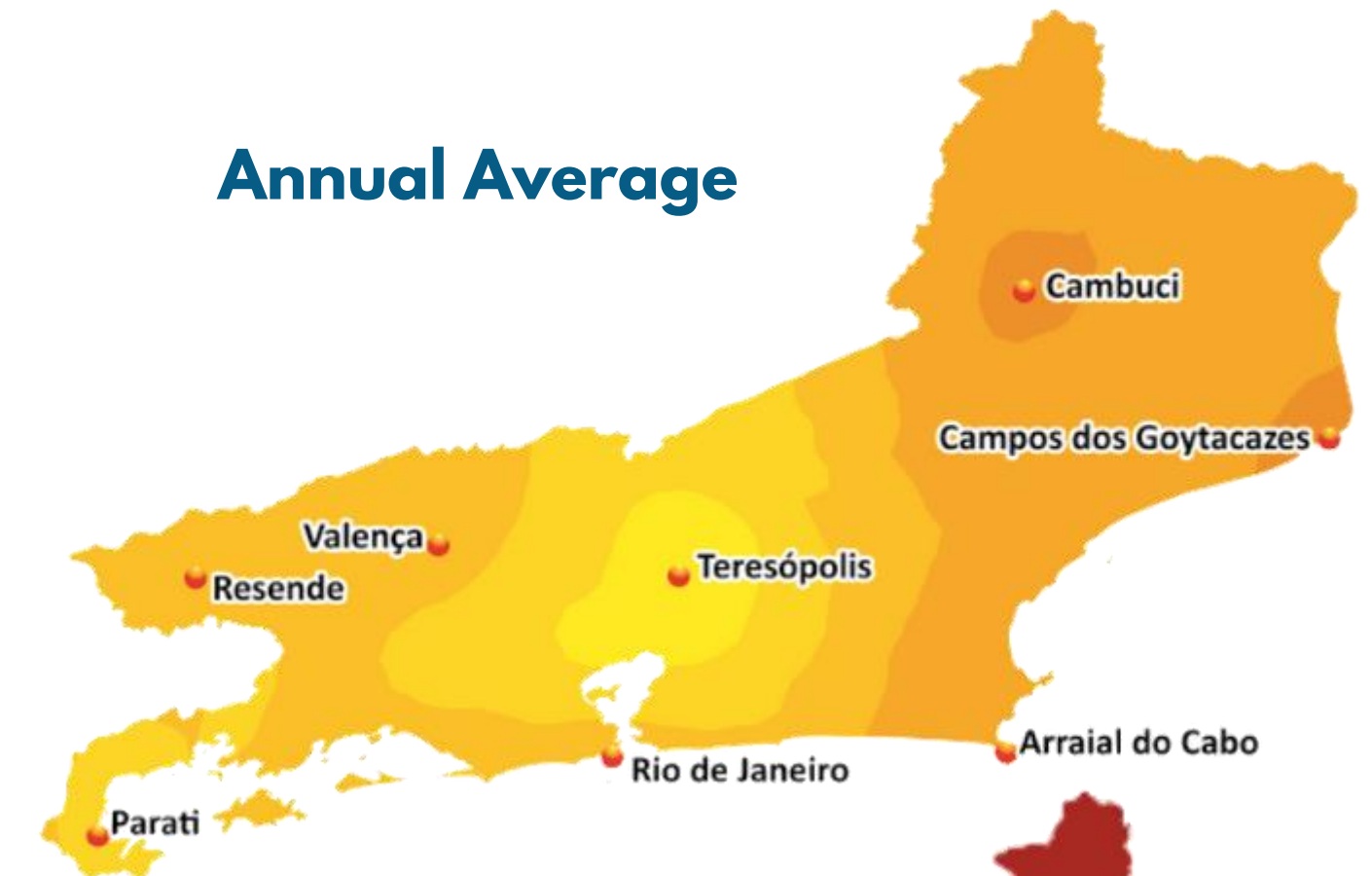
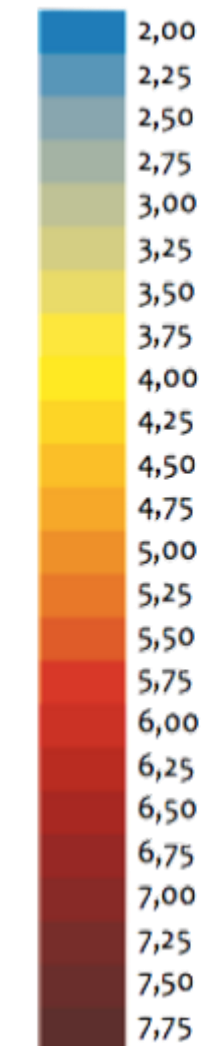


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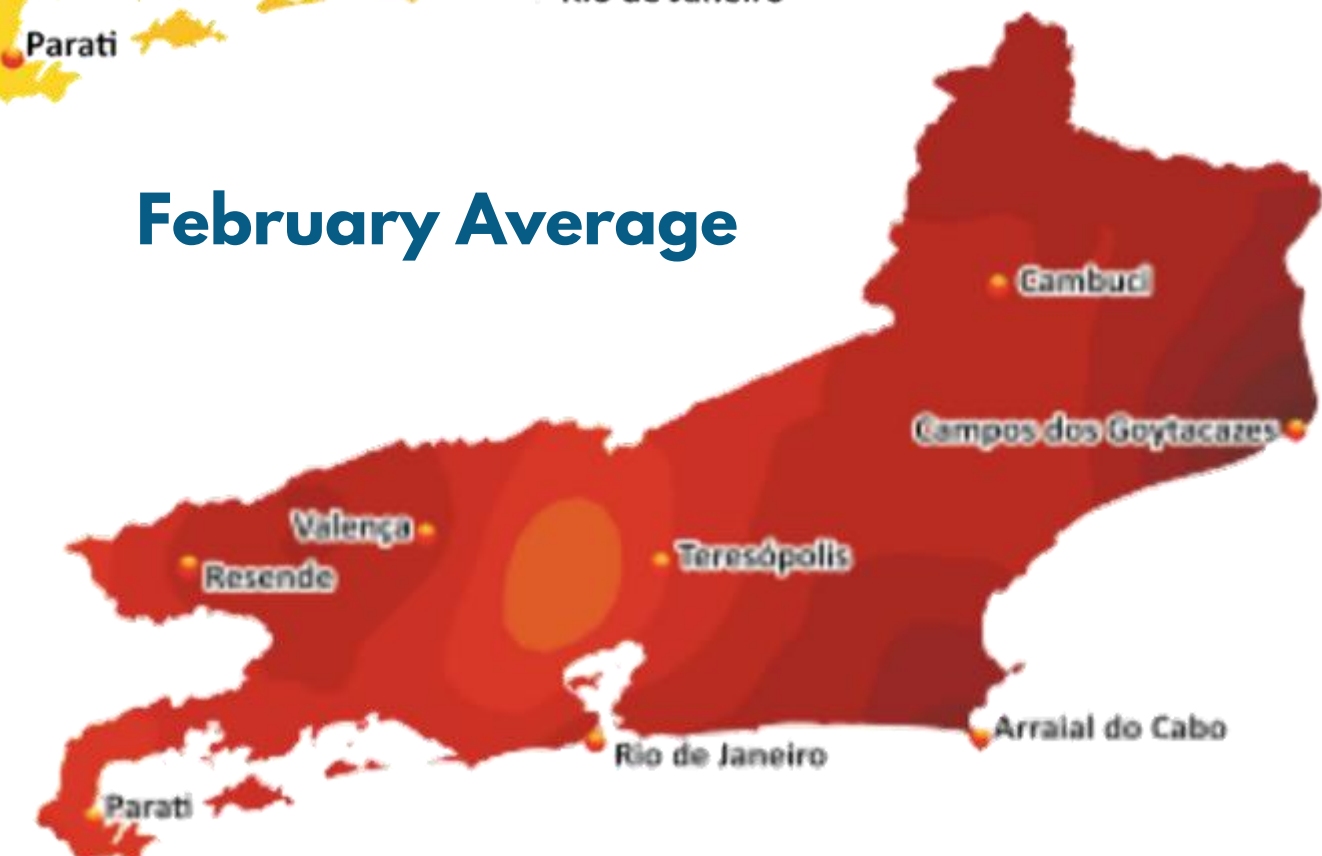
- Annual global solar irradiation from 1,460 to 2,010 kWh / m<sup>2</sup>
- Rio de Janeiro has higher solar radiation than Germany
- Potential: Rooftop 17,8 GW  
Ground 123 GW
- The entire state is mapped and all data is available online.

## Annual Average

Legenda [kW/(m<sup>2</sup>·dia)]



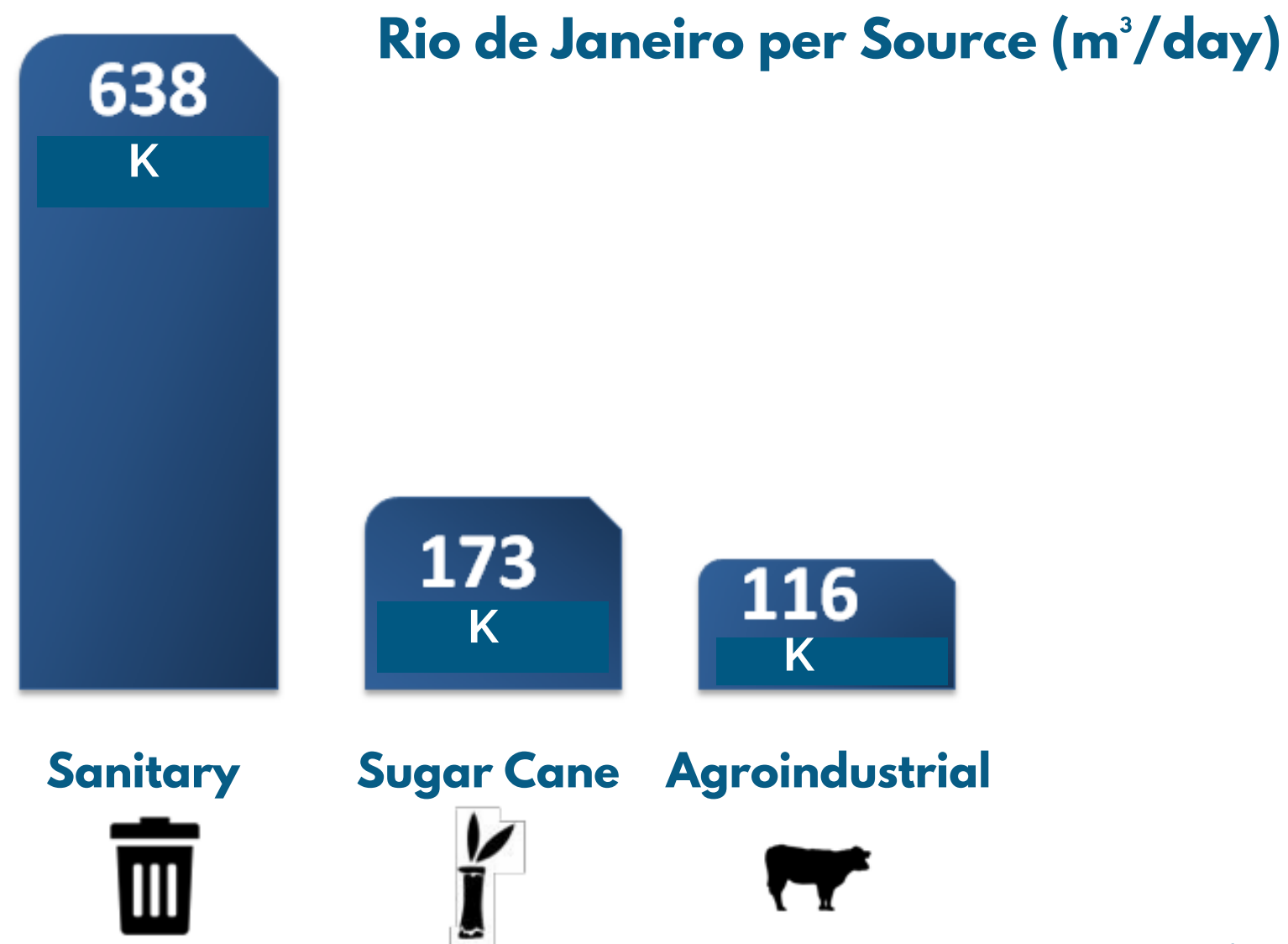
## February Average



**Potential: 1 MM m<sup>3</sup>/day (~ 167 MW)**

**For every 100,000 m<sup>3</sup>/day will generate:**

- 60 direct jobs and 200 indirect jobs
- Contribution for the Low Carbon Economy



Source: ABiogás



## Dois Arcos

Capacity: 15,000 m<sup>3</sup>/day

Municipality: São Pedro da Aldeia



## Gás Verde

Capacity: 213,000 m<sup>3</sup>/day

Municipality: Seropédica



## Gás Verde

Capacity: 16.9 MW

Municipality: Nova Iguaçu

## Gás Verde (under construction)

Capacity: 8,5 MW

Municipality: São Gonçalo

# Danke!

**Lucas Tristão**  
**Secretary of Economic Development,  
Energy and International Relations**

[www.desenvolvimento.rj.gov.br](http://www.desenvolvimento.rj.gov.br)



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