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## **BRIDGE**

***Bridging Brazil's need for a growing, reliable and renewable power generation whilst at the same time developing the Pre-Salt oil & gas reserves full potential***

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SHELL ENERGY BRASIL

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Reserves: Our use of the term “reserves” in this presentation means SEC proved oil and gas reserves.

Resources: Our use of the term “resources” in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves. Resources are consistent with the Society of Petroleum Engineers 2P and 2C definitions.

Organic: Our use of the term Organic includes SEC proved oil and gas reserves excluding changes resulting from acquisitions, divestments and year-average pricing impact.

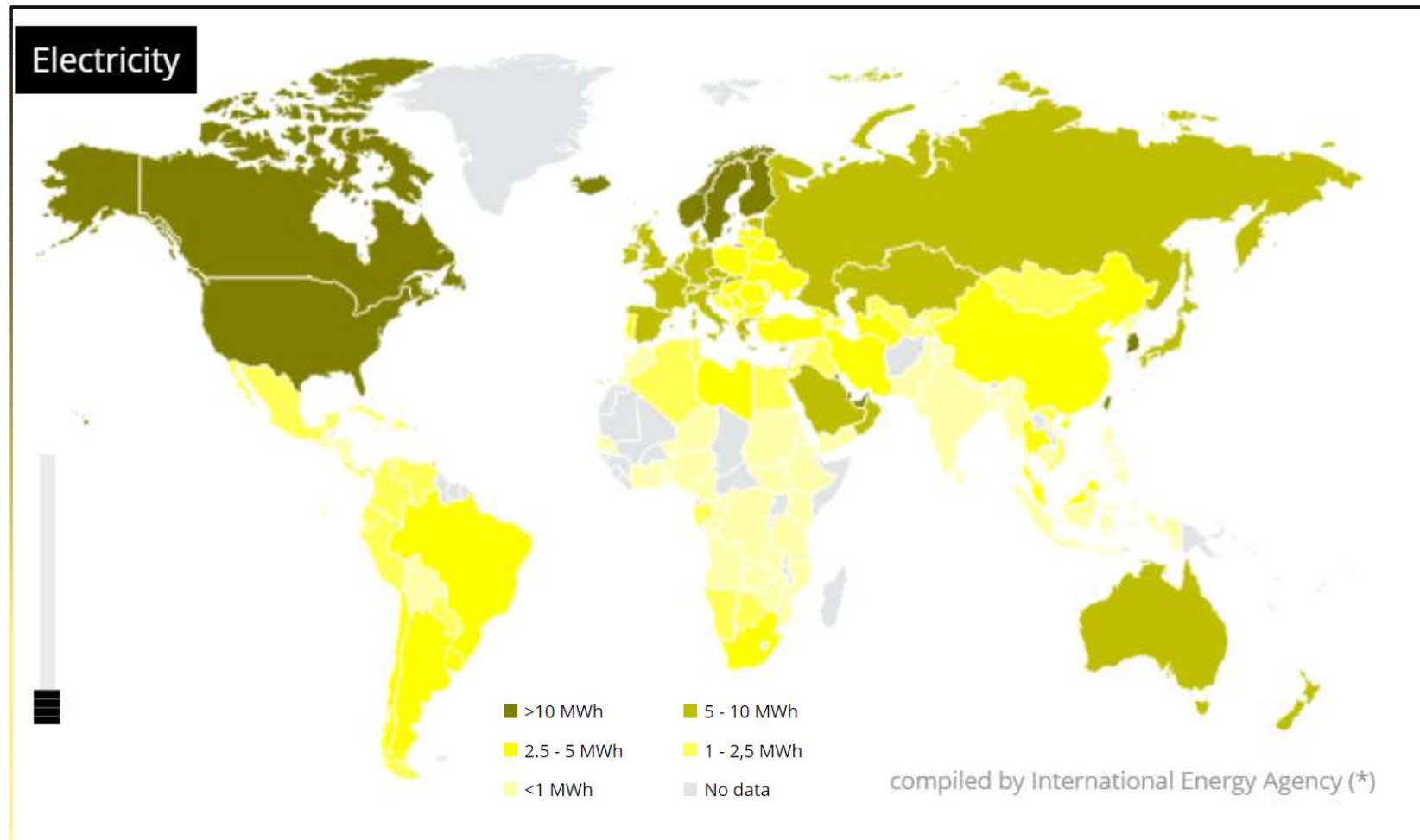
Shales: Our use of the term ‘shales’ refers to tight, shale and coal bed methane oil and gas acreage.

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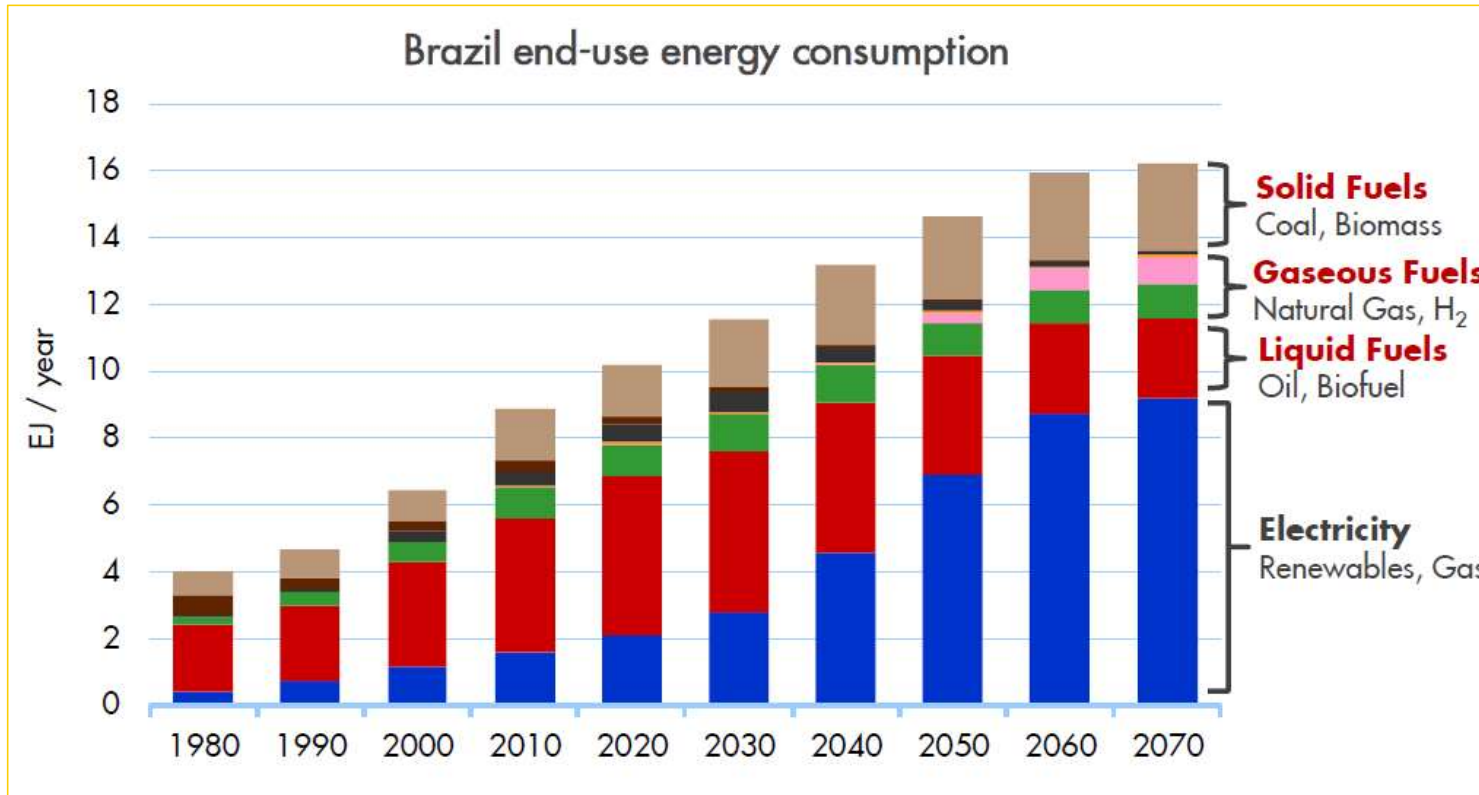
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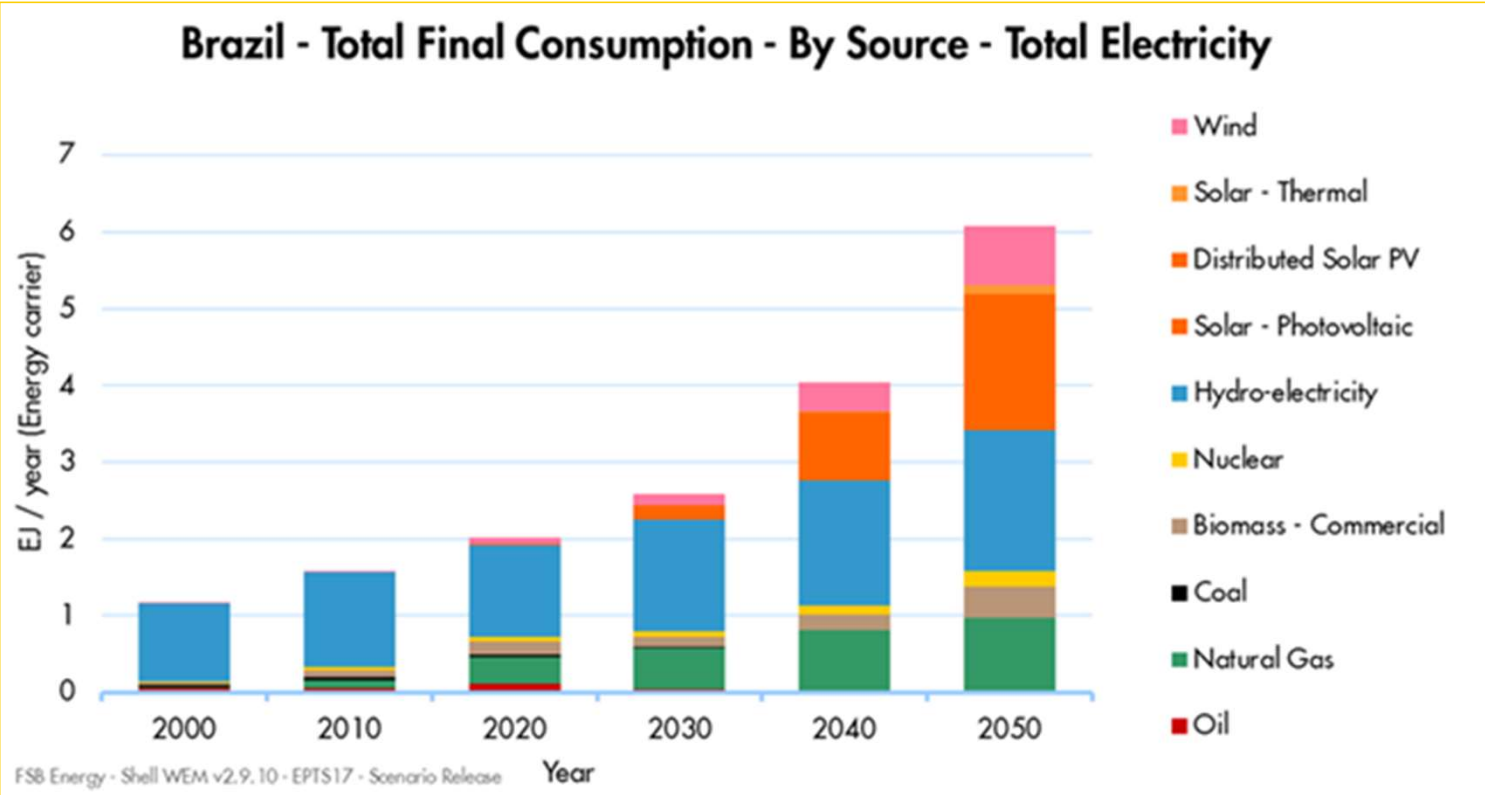
# BRAZIL CONSUMPTION PER CAPITA LACKS BEHIND MORE DEVELOPED COUNTRIES



# TRENDS TOWARDS ELECTRIFICATION – SHELL SKY SCENARIO



# NATURAL GAS TO PROVIDE RESILIENCE FOR RENEWABLES GROWTH



# AS RENEWABLE GROW, ROLE OF GAS & HYDRO NEEDS TO CHANGE

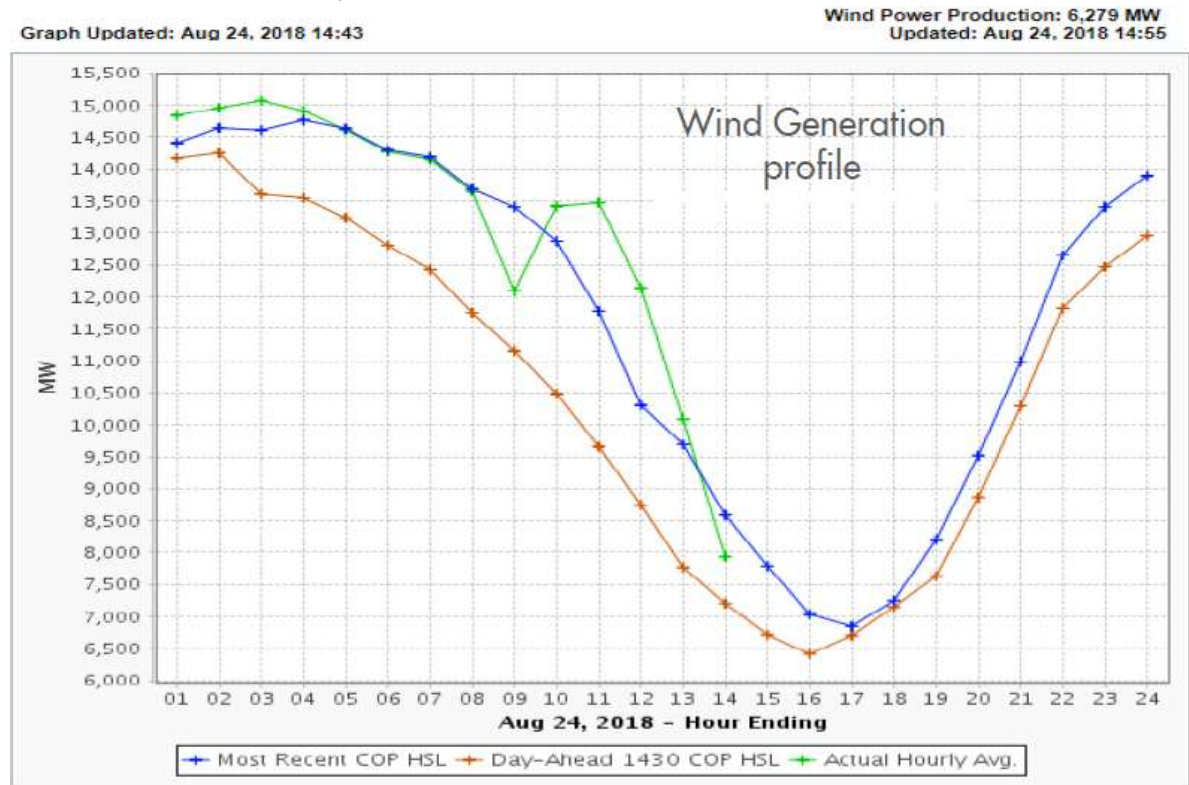
## Associate Gas

- ❑ With base load gas fired generation growth, hydro can be used more efficiently to shape the scheduling gaps, with less meteorological dependency

## Flexible Gas

- ❑ Dispatchable resource for system reliability

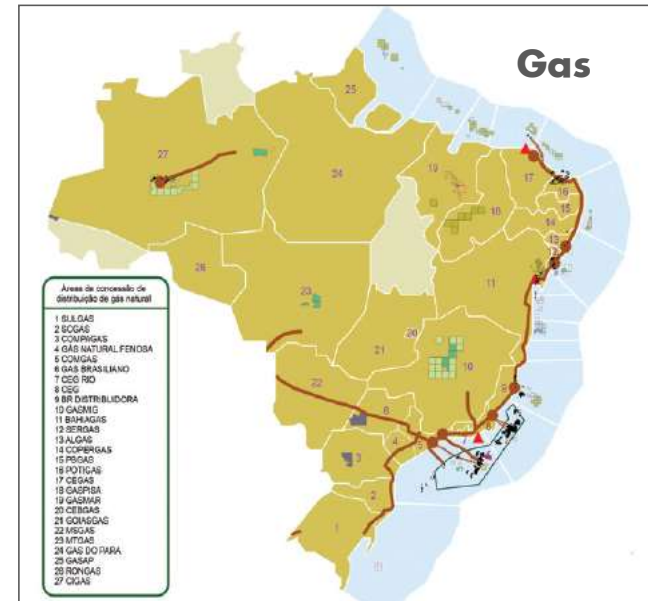
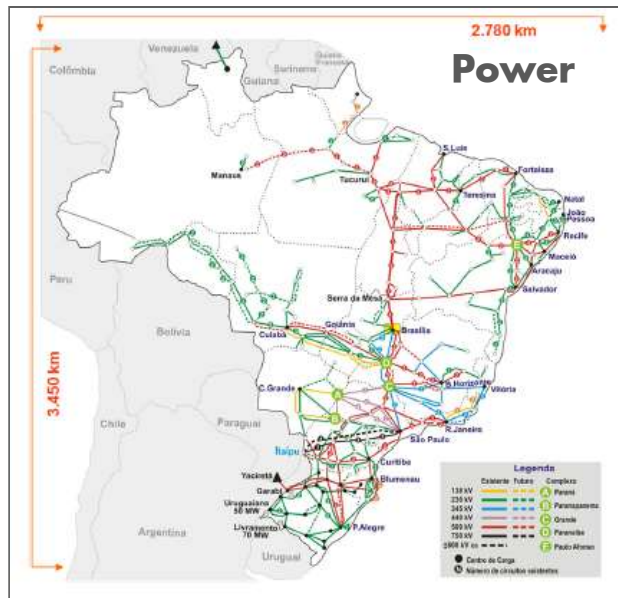
US ERCOT market example





# BRAZIL DOWNSTREAM MARKETS – POWER AHEAD OF GAS

LEVERS TO MONETIZE NATURAL GAS	POWER	GAS
Distribution Network	140.000 Kms	9.000 Kms
Customer Access	Open Access	Capacity fully subscribed
Liquidity	30% of market is unregulated	Not existent
Regulatory Framework	Consolidated	Developing
Value Chain	Diversified	Concentrated
Tax System (VAT)	National Tax System	State Dependent



## MARLIM AZUL - MONETIZE PRE\_SALT GAS UNDER EXISTING INFRAESTRUCTURE

- ❑ USD 700 MM investment into 565 MW power plant
- ❑ First pre-salt gas to power project awarded at power auction
- ❑ High dispatch and strategic location within southeast power submarket
- ❑ Endorses Macaé as a regional gas and power hub
- ❑ Development of local resources, energy for 2,5 MM people and 1,5K jobs
- ❑ 60% efficiency. Approximate 1.200 ktCO<sub>2</sub>e/y GHG emissions reduction
- ❑ On track for January 2023 COD





## ... MONETIZATION WITHOUT MIDSTREAM INFRASTRUCTURE REQUIRES CHANGE

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- ❑ The undeveloped pre-salt gas reserves require additional midstream infrastructure investment, such as evacuation routes (high capex)
- ❑ Power demand auctioned needs to be reconciled with the upstream decision process by:
  - Increasing inflexibility limits (competitive gas to run at baseload)
  - More time to start operations
  - Alignment on power purchase agreement vs upstream concession terms
  - Demand being auctioned



## SUMMARY: ADJUSTMENTS AT THE POWER AUCTIONS TO UNLOCK FULL POTENTIAL

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- ❑ Demand for power expected to grow significantly
- ❑ Gas to provide resilience for renewables growth including base load generation.
- ❑ Downstream Power ahead of Gas
- ❑ Marlim Azul JV is a solution for pre-salt gas to power connected to infrastructure and an opportunity to develop gas and power hub at Macaé
- ❑ Pre-salt reserves have the potential to be a source of competitive supply. Availability and growth will require investment in midstream infrastructure
- ❑ Reconciliation between power auctions and upstream decision process



