CAETS 2021
ARGENTINA
Engineering a Better World
THE FUTURE OF ENERGY

Buenos Aires, September 17-24, 2021

The Role of Gas in the Energy Transition

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Cooking meals for families

Heating baths and showers for children and their mothers and fathers

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Making glass for our houses, kitchens, offices and pharmacies, including cutting borosilicate for COVID vaccine vials

Heating schools, universities, hospitals, hotels, offices for students, patients, guests and workers

Baking bricks for people’s houses

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Generating power for citizens and business in cities

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Transporting our imports and exports between continents

Heating metals for manufacturing our cars, including electric vehicles

Delivering goods to our homes, businesses and offices

Processing food and baking cakes for children and adults

Making fertilizers to produce our foods on farms

Making paper for our books and parcels and offices

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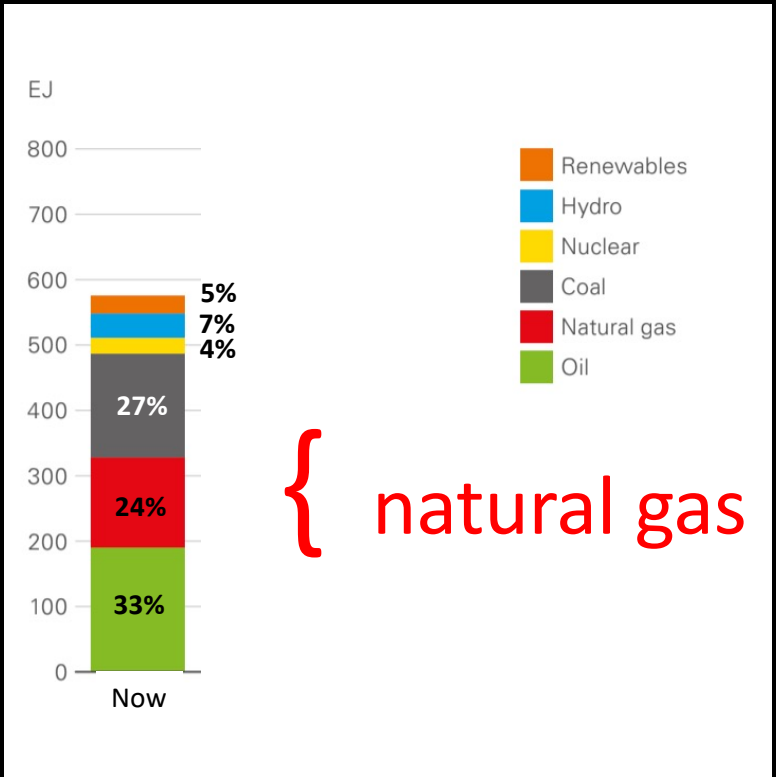
Making aluminium for our aeroplanes and cars and buildings

Making steel for our railways and buildings and vehicles

Natural gas is a widely available, trusted and versatile energy source, likely to grow to being the largest source of primary energy

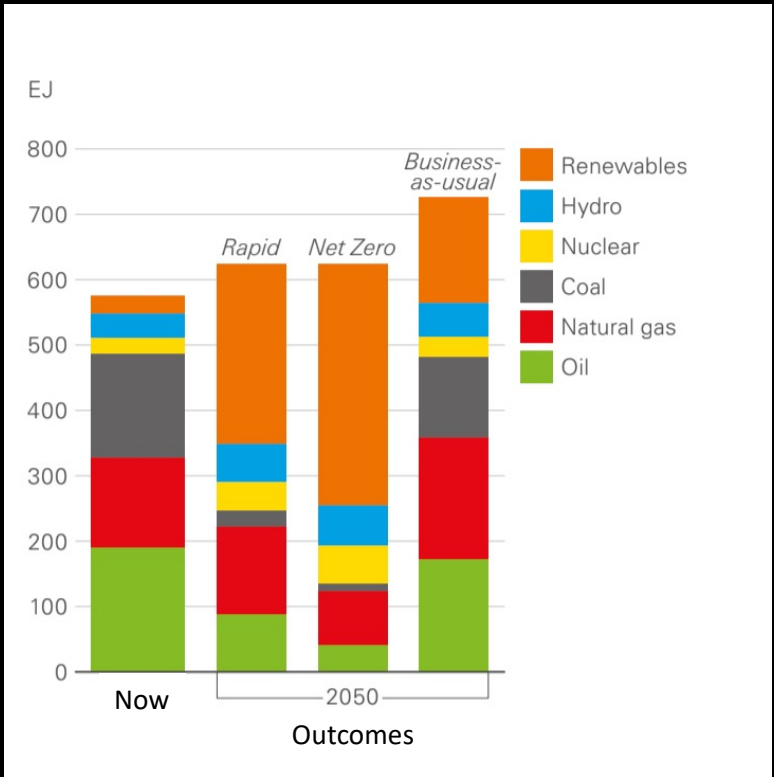
Looking to the future, the GHG emissions from natural gas requires hydrogen to also play a critical role in the energy transition

Role of Natural Gas today



- 4 TCM per year
- Consumed in 110 countries
- Exported as LNG by 21 countries to 42 importing countries
- 24% of primary energy
- 23% of power generation
- 1700 GW of gas-fired power
- 8 Gt of CO2 per year
- Proven Reserves:Production - 50 years

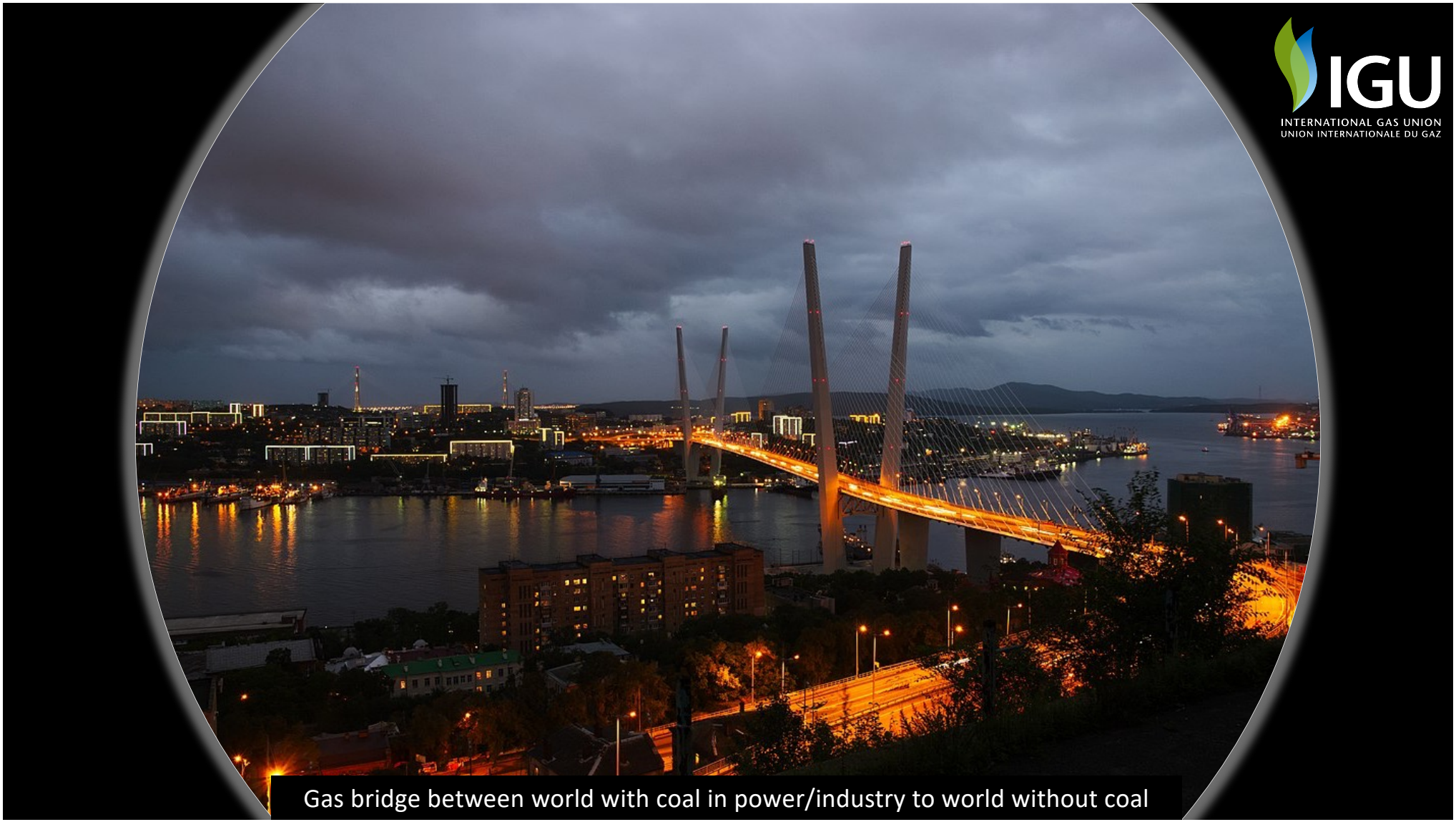
Global Supply of Energy 2050



- Energy supply system, role of natural gas not known yet … unknowns
  - Energy efficiency gains
  - Nuclear expansion
  - Electric/hydrogen mobility (air, sea, road)
  - Carbon capture
  - Green hydrogen
  - Battery storage
  - Hard to abate (cement, steel, ammonia) use
- Natural Gas to play ten critical bridging roles

Bridges connect places that are impossible or difficult to travel between

- often for a very long time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Gas bridge between world with coal in power/industry to world without coal


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Gas bridge to allow current generation of old nuclear reactors to be phased out

Gas bridge power between today in renewable Wind and Solar to a world with 10+ times that capacity


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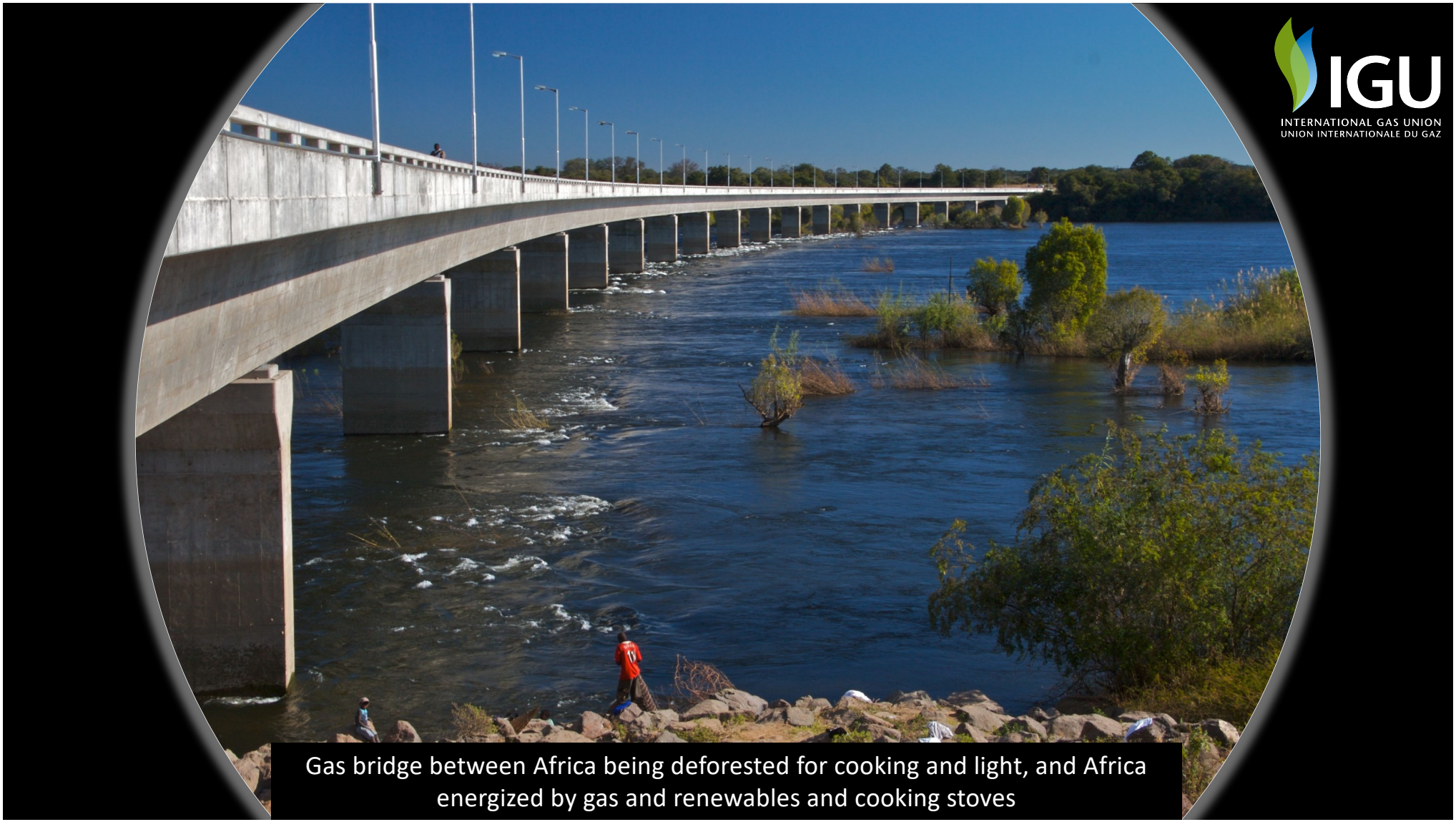
Gas bridge between insignificant utility scale battery storage to a later time when installed battery capacity significantly increased

Gas bridge between onshore wind and offshore floating wind

Gas bridge between current power grids and reconfigured strengthened power grids that can accommodate remote renewables, power system stability challenges, without rotating steel

Gas bridge between grey/blue hydrogen and green hydrogen, including transmission and distribution in networks



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Gas bridge between Africa being deforested for cooking and light, and Africa energized by gas and renewables and cooking stoves

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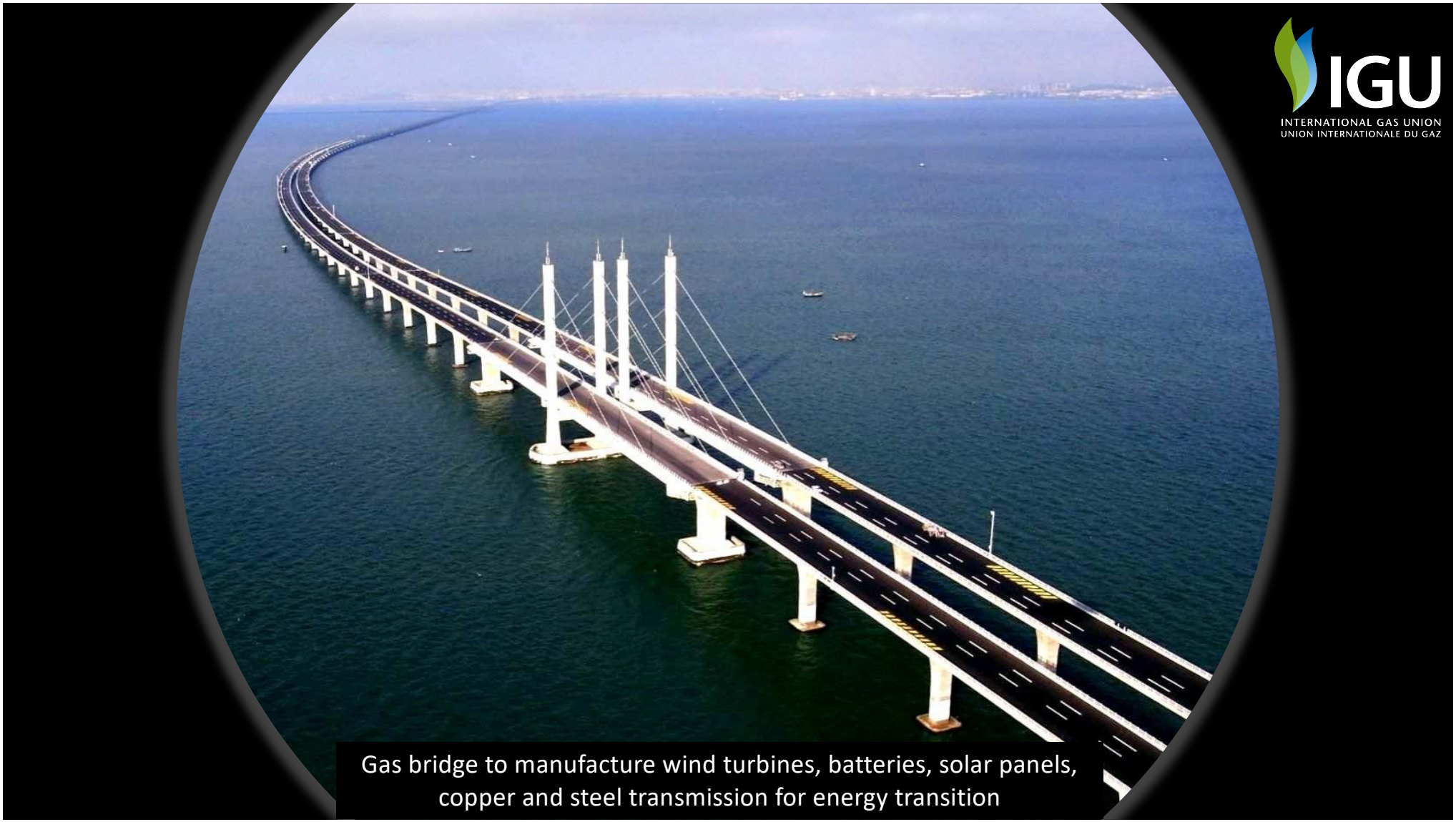
Gas bridge between poor air quality in China and India today, and a future where it is much improved



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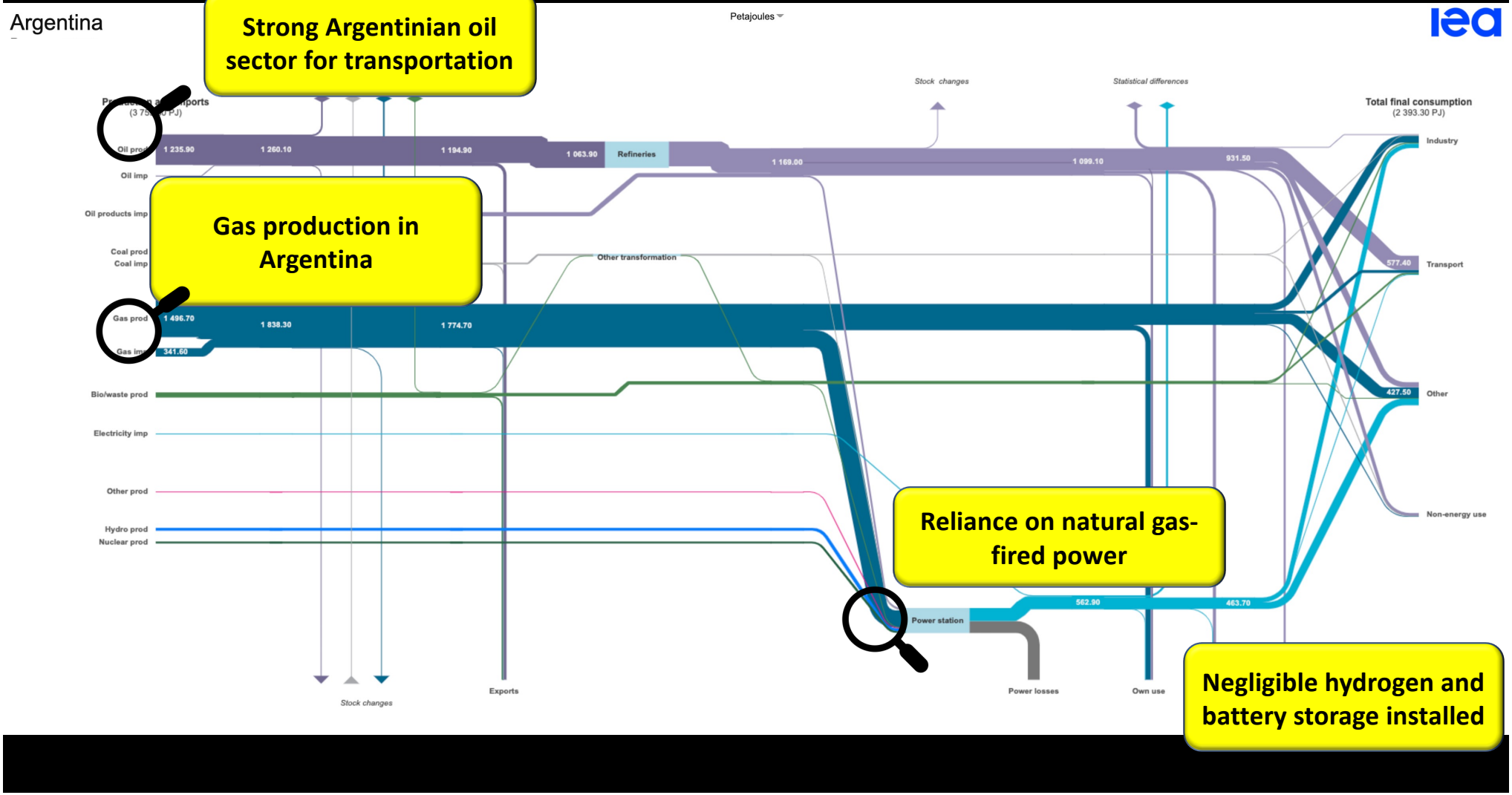
Gas bridge to manufacture wind turbines, batteries, solar panels, copper and steel transmission for energy transition

Argentina


Strong Argentinian oil sector for transportation
Gas production in Argentina
Reliance on natural gas-fired power
Negligible hydrogen and battery storage installed
Petajoules
iea
Stock changes
Statistical differences
Total final consumption
(2 393.30 PJ)
Oil prod
Oil imp
Oil products imp
Coal prod
Coal imp
Gas prod
Gas imp
Bio/waste prod
Electricity imp
Other prod
Hydro prod
Nuclear prod
1 235.90
1 260.10
1 194.90
1 063.90
Refineries
1 169.00
1 099.10
931.50
Other transformation
1 496.70
1 838.30
1 774.70
341.60
577.40
427.50
Industry
Transport
Other
Non-energy use
562.90
463.70
Power station
Exports
Stock changes
Power losses
Own use


There can be no
successful Energy
Transition without gas

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THANK YOU

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