

Offshore Brazil - FPSO Summit 2019

The Brazilian Pre-salt Challenges & Opportunities

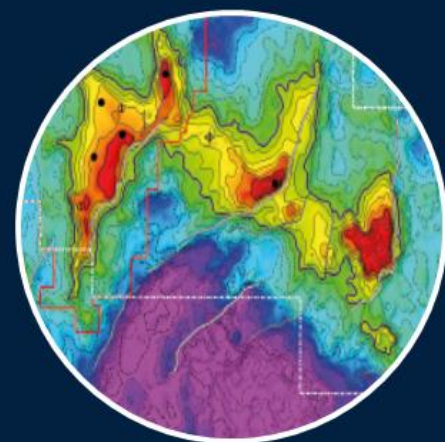
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Dec 2019



Agenda

- PPSA - Roles and Responsibilities
- Pre-salt Case study
- Challenges and Opportunities

Roles & Responsibilities



Production Sharing Agreement (PSA) management



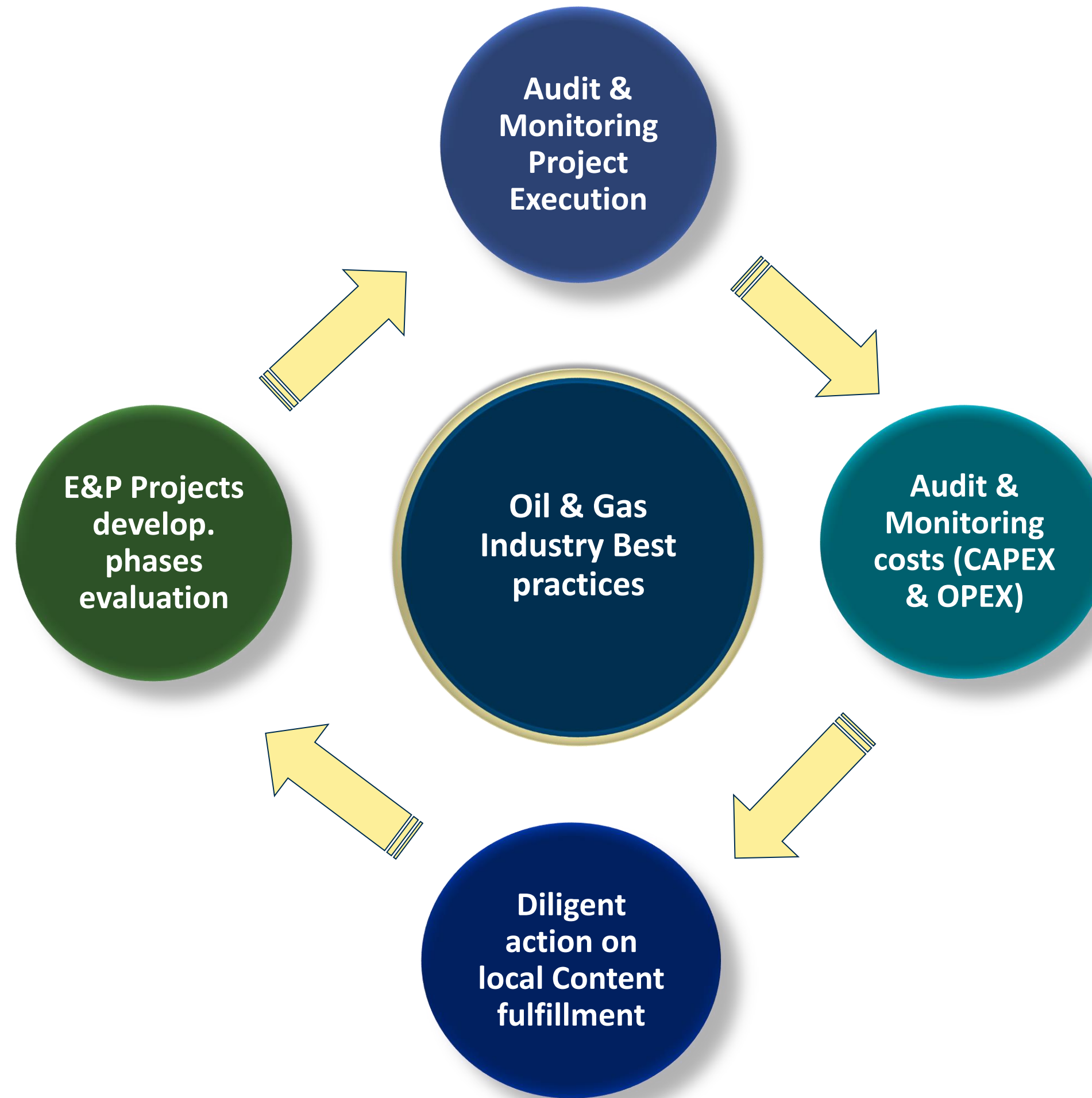
Unitization on behalf of the Government



Commercialization of Oil & Gas Government share

Maximize pre-salt economic results for the Brazilian Government share

Obligations



Pre-salt Case Study



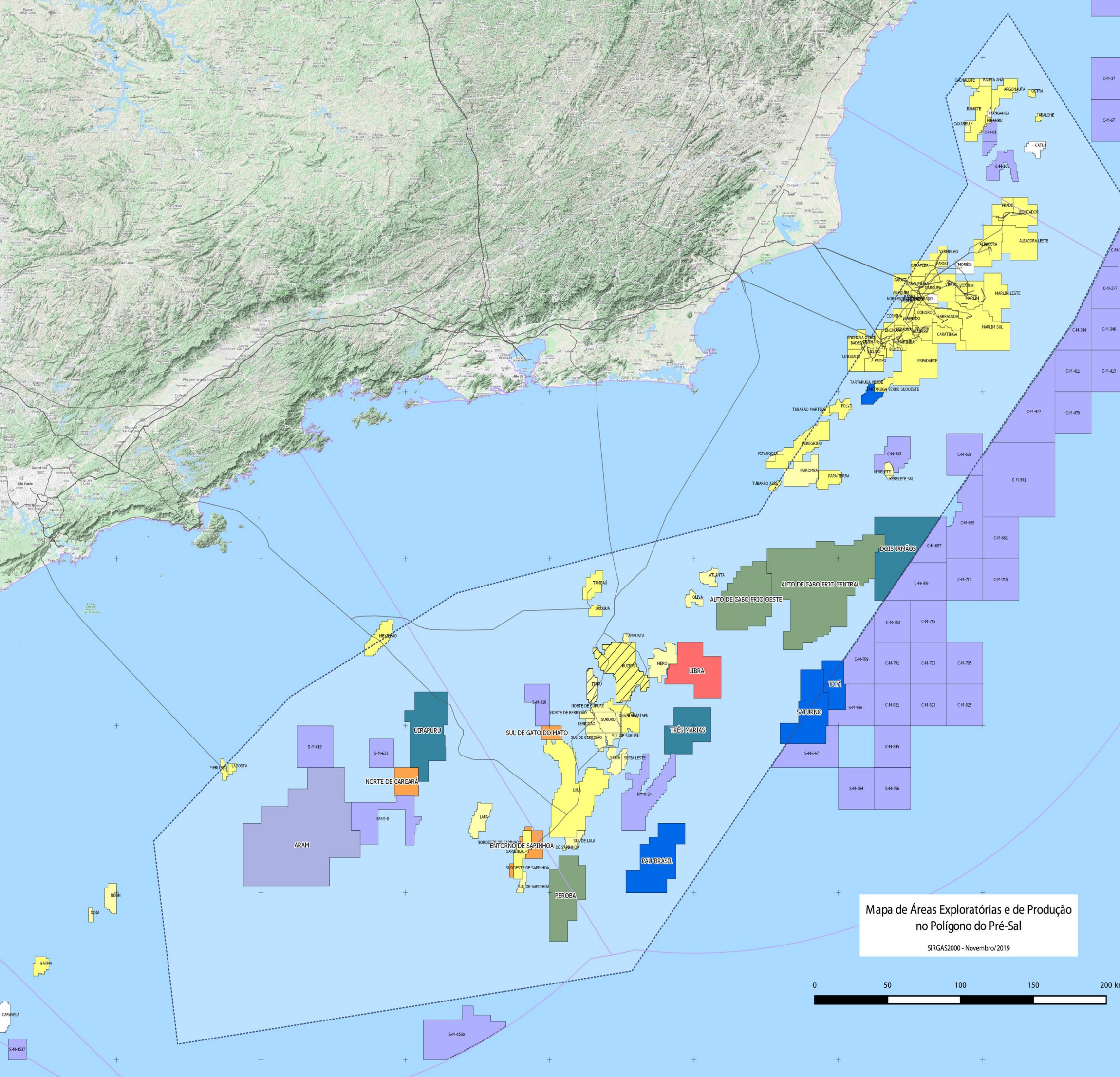
Case study: PSAs Expected results

17 Production Sharing Agreements

14 Signed PSAs

3 PSAs to be signed in 2020

Timeframe: 2020-2032



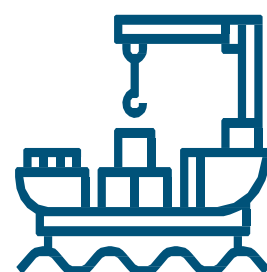
Main premises



First oil date & Production curves from existing Development Plans (DP).
Exploratory Projects (W/O DP), first oil estimated in 8 years from Contract signature with simulated Production curves using Oil in place, pre-salt exploratory success rate, average ramp-up time and declining production rate.



CAPEX from the existing Development Plans (DP).
Exploratory Projects (W/O DP), Costs estimated on in-house generated costs cash flows.
The investments cash flows in 4 years, 3 years before 1st Oil and on the first production year.



FPSO's - Production Units capacity considered from **50.000 to 220.000 barrels/day** depending on the size of reserves.



Cost premises used:
10% depreciation rate
Profit oil percentage, cost recover limits and signature bonus from each specific project.
Exchange rate: 1 USD to 4 Reais



1 Producer Well for each 20.000 barrels of FPSO capacity.
1 Injector Well for each Oil Producer.
1 Exploratory Well per Project.

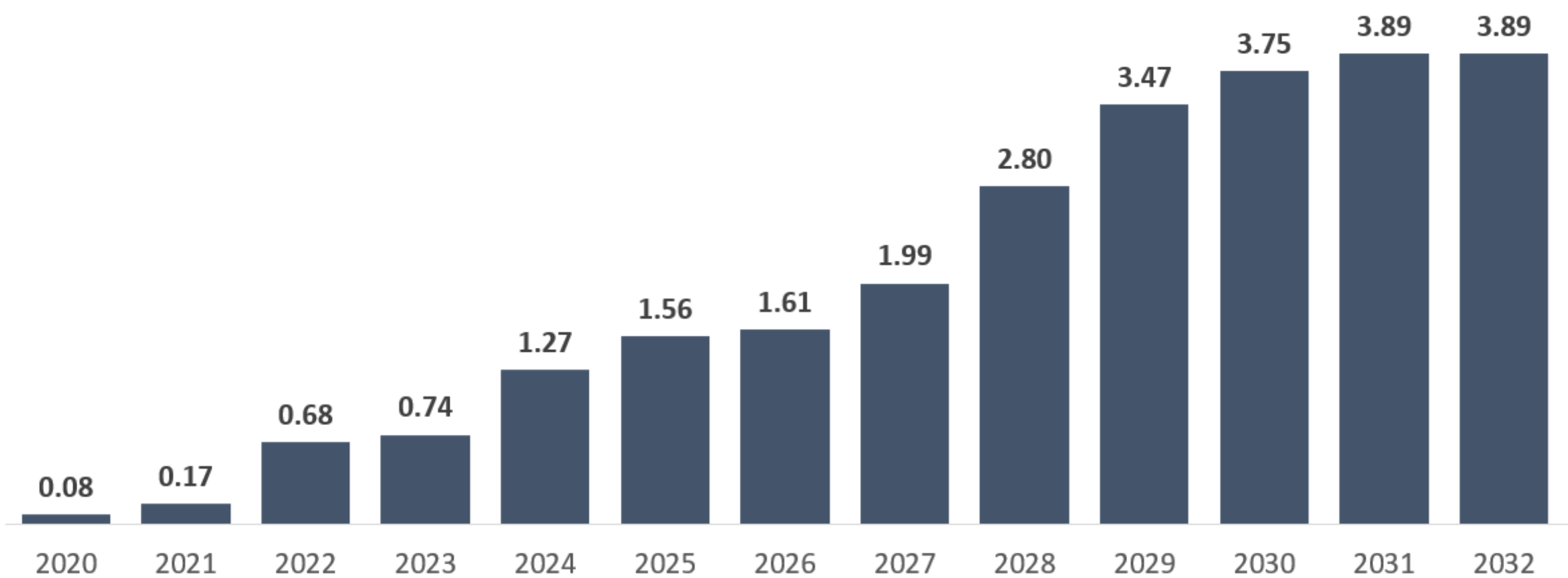


Oil price of US\$ 60/bbl
Gas price of US\$ 5/MMBtu

Oil Production estimated in the 17 PSAs

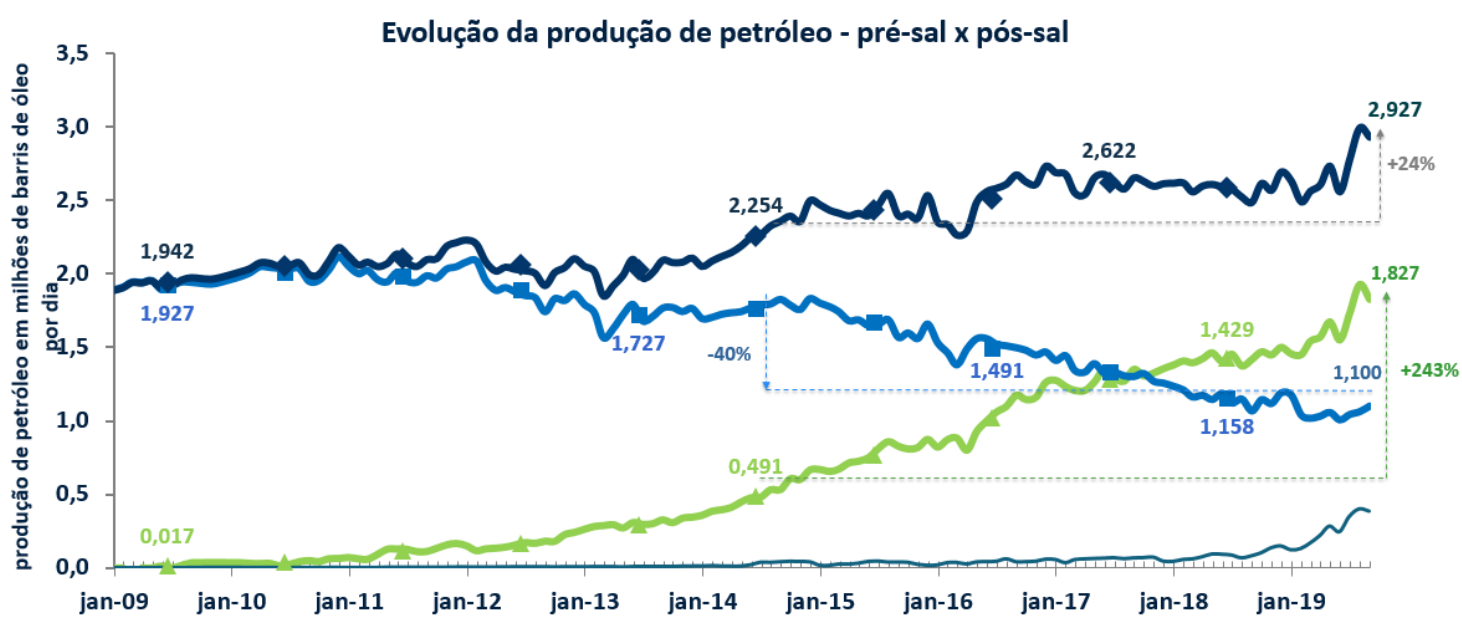
3,9 Millions barrels/day in 2032

Million barrel/day



Brazilian oil production

2,92 millions barrel/day (Sept 19)



Fonte: ANP

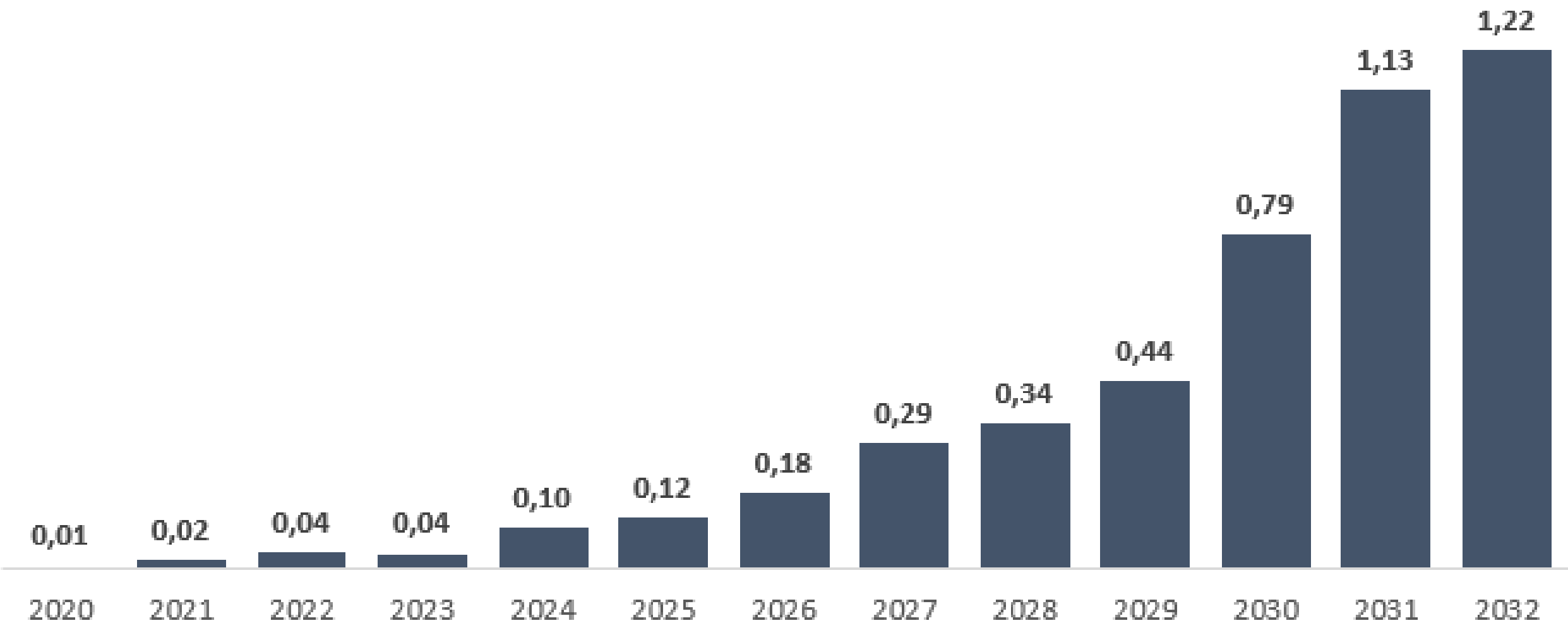
Produção Pré-Sal Produção Pós-Sal Produção Brasil Cessão Onerosa do Pré-Sal

Government Expected volume to be commercialized

1,22 Millions barrels/day in 2032

> Government's Profit Oil

Million barrel/day



Variable in each Project

Minimum percentage:
Sudoeste de Tartaruga Verde : 10,01%

Maximum percentage:
Entorno de Sapinhoá: 80%



Government Take

Amount paid to Federal, States and local Governments

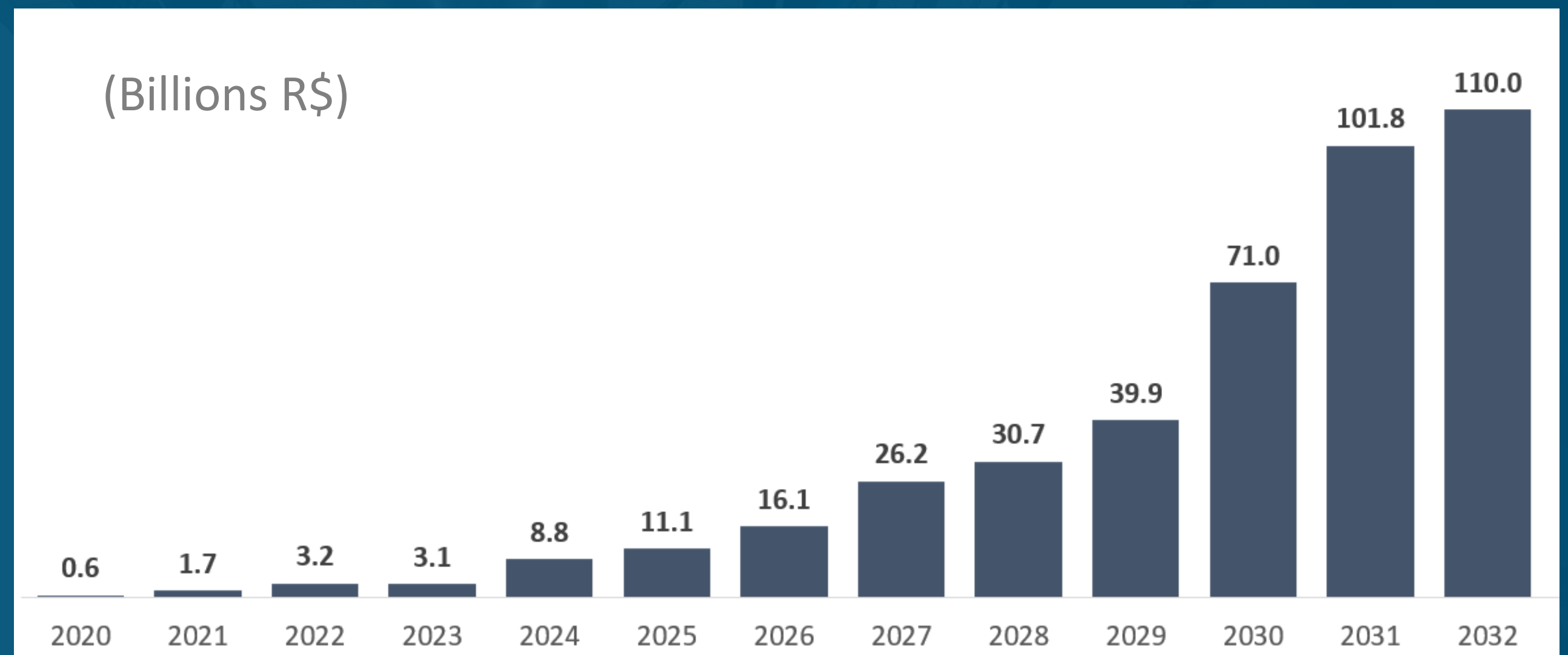
1. Government Profit oil & gas Commercialization;
2. Royalties;
3. Others Taxes.



R\$ 424 billions from 2020 to 2032



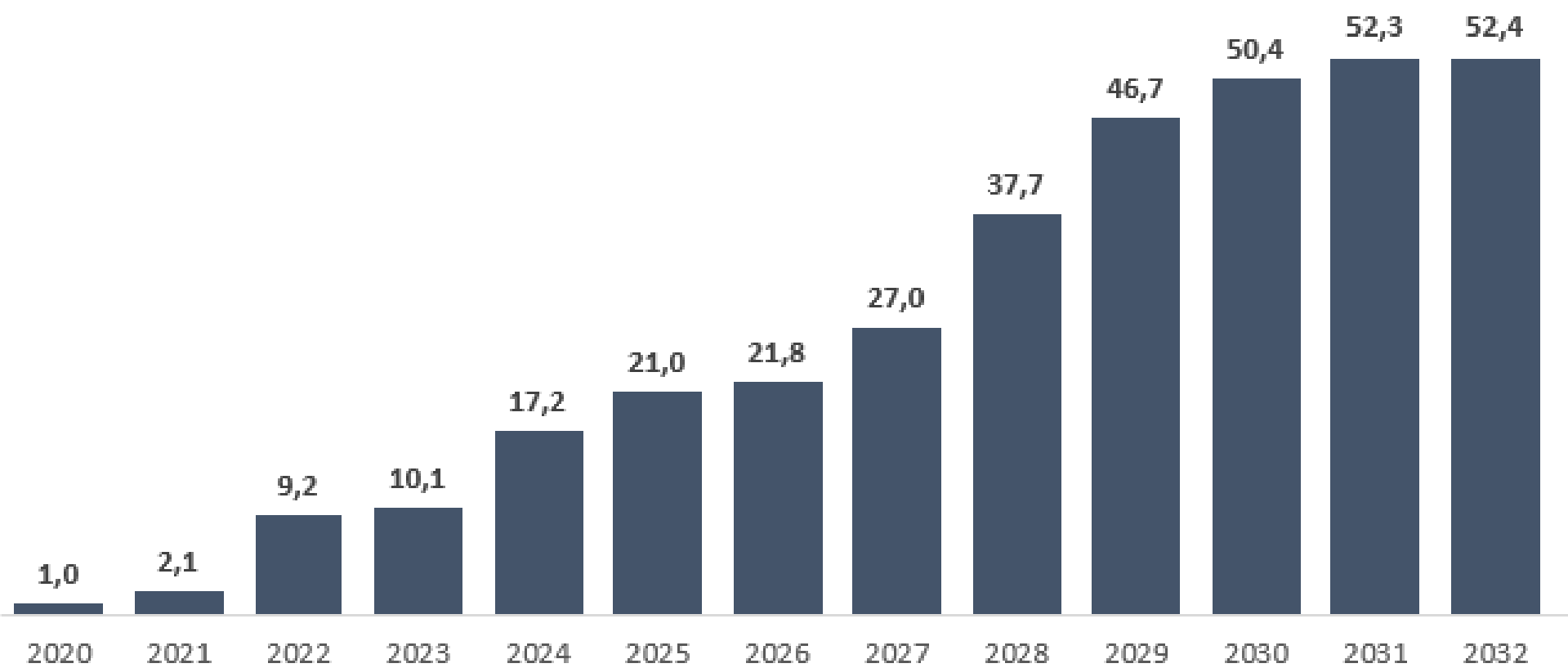
Government Profit oil Commercialization



Royalties

R\$ 349 Billions from 2020 to 2032

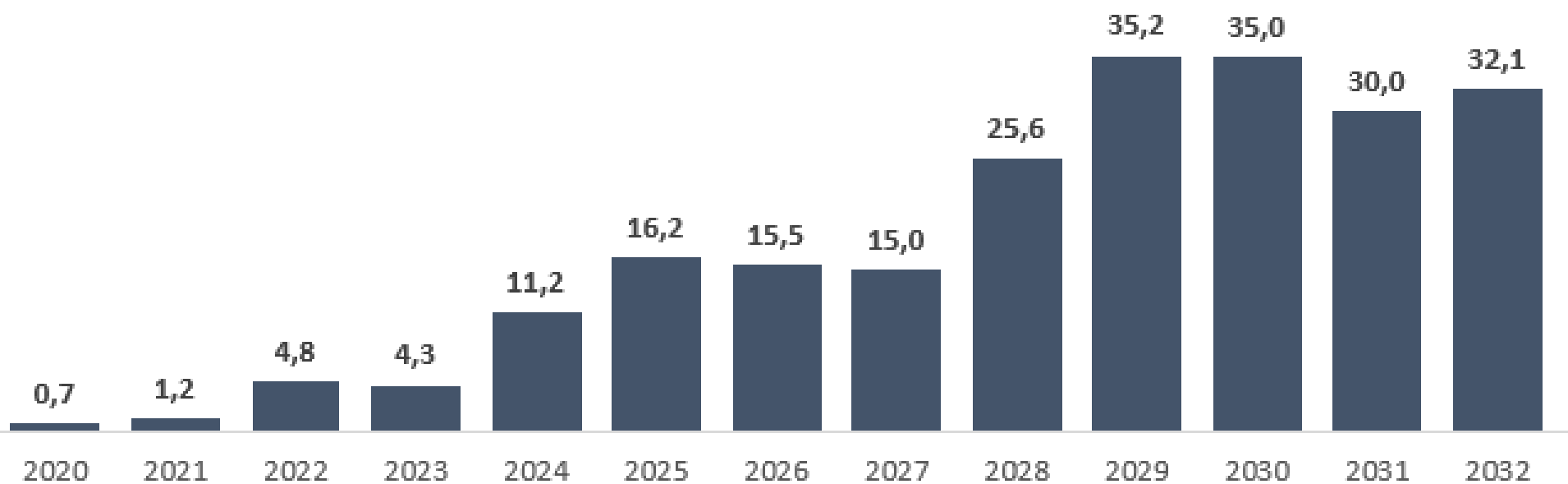
(Billions R\$)



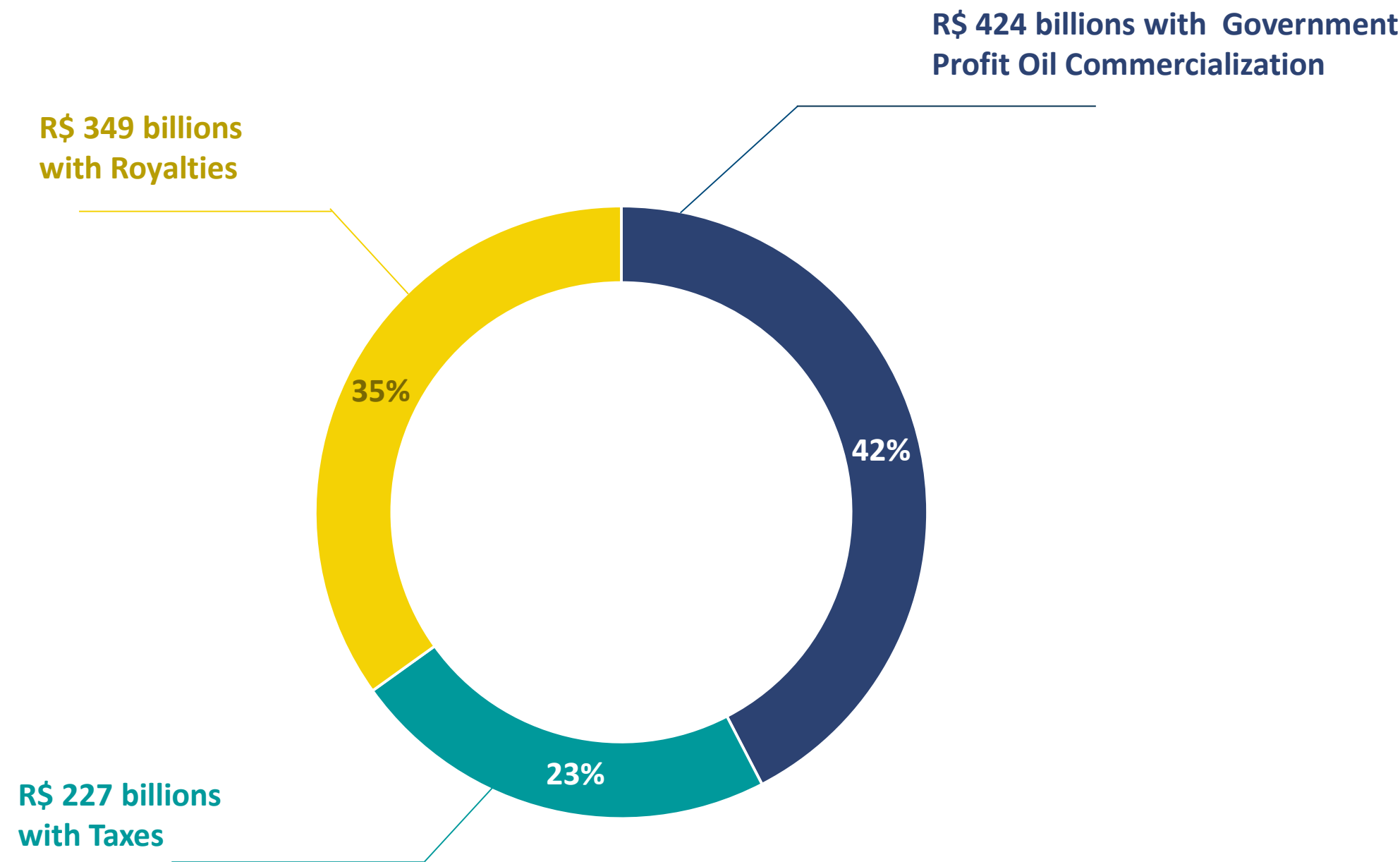
Taxes

R\$ 227 billions from 2020 to 2032

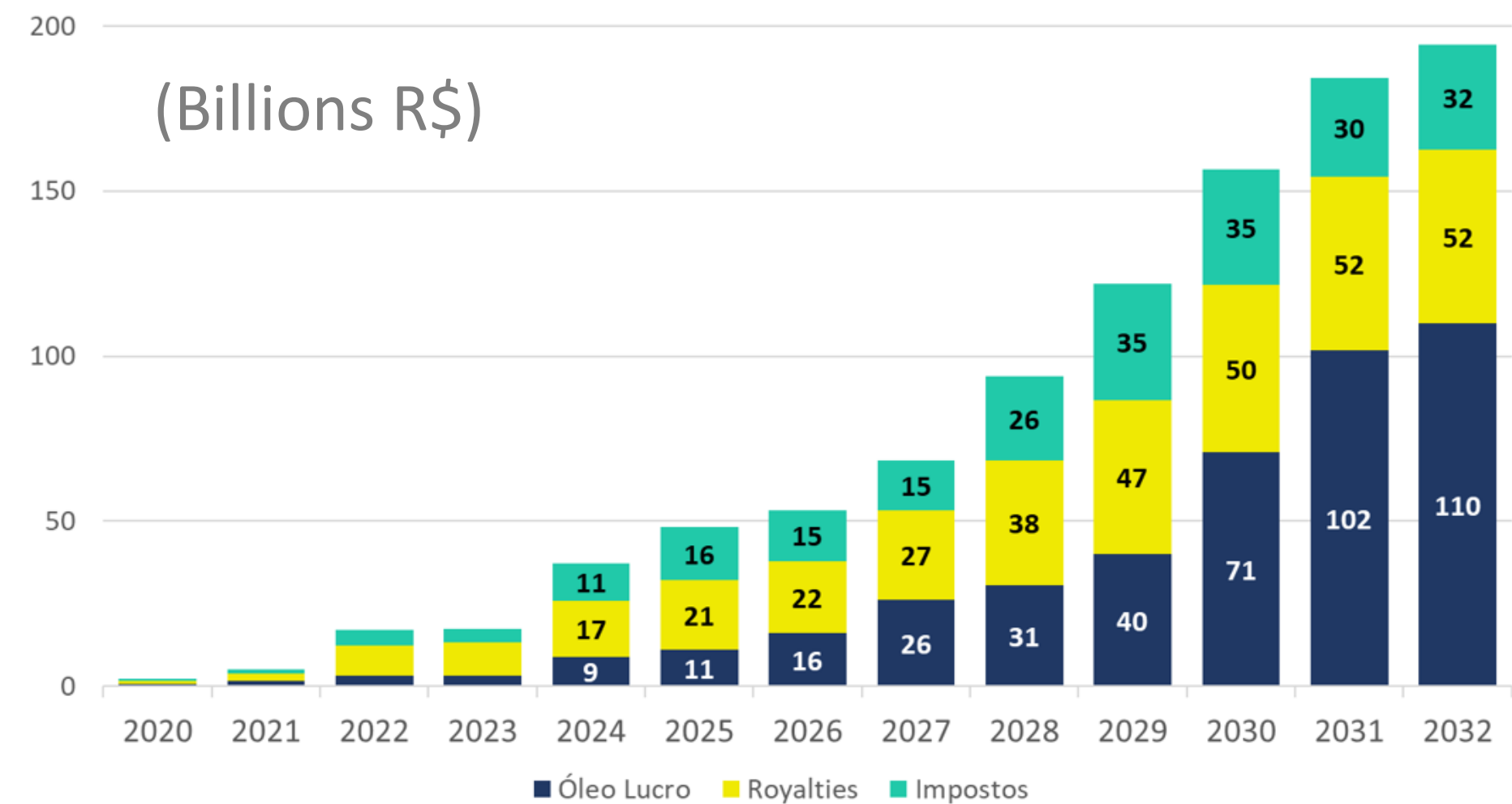
(Billions R\$)



Government Take (2020-2032)



R\$ 1 trillions up to 2032



CAPEX estimated (2020-2032)



**R\$ 560 billions
from 2020 to 2032**

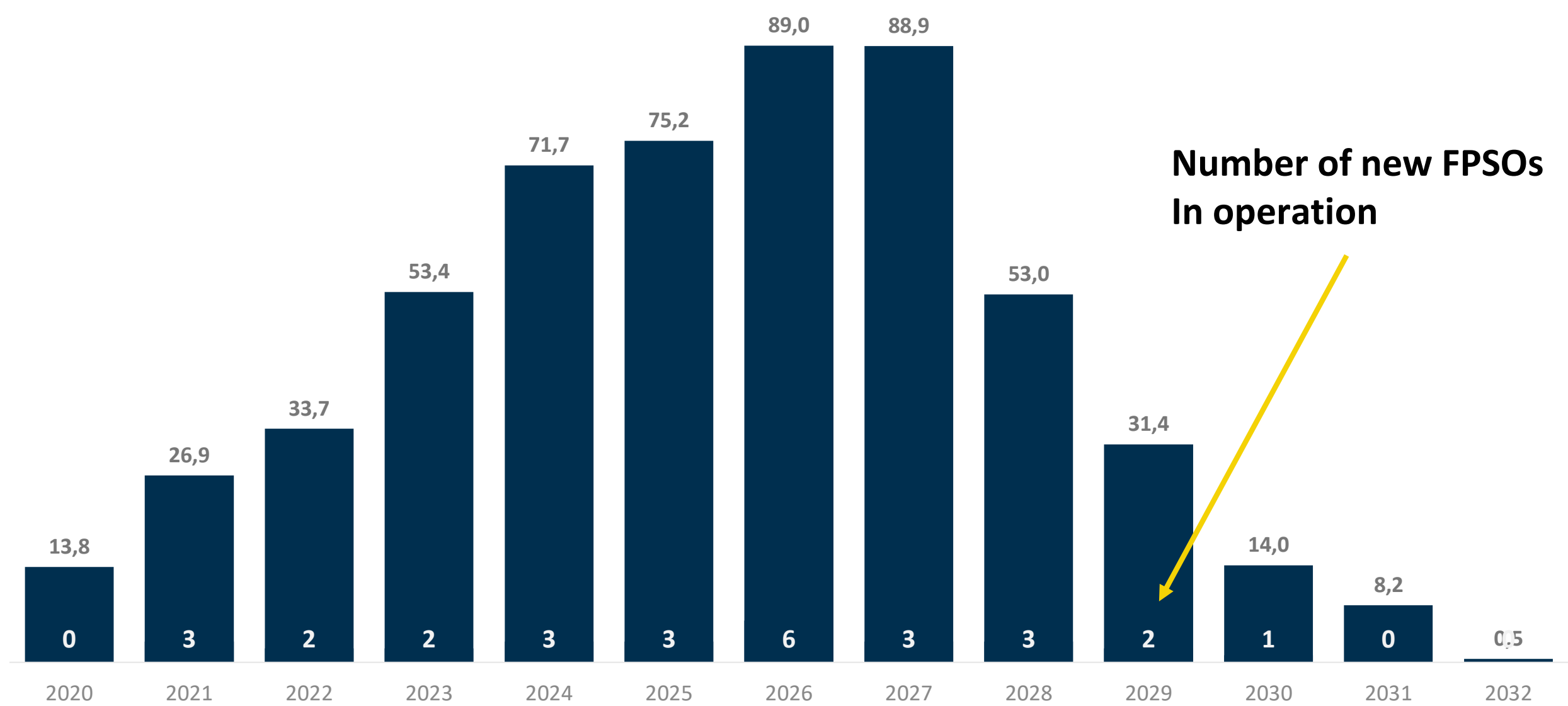
**R\$ 196 billions
Production Platforms**

**R\$ 168 billions
Subsea Systems**

**R\$ 196 billions
Wells**

CAPEX Distribution

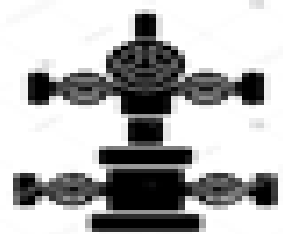
(Billions R\$)



474 Wells



28 FPSOs



2500 km
Subsea lines

474 WCT

General impact of 17 PSAs from 2020 to 2032



Average production 3,9
Millions barrels/day in
2032



Government profit
Oil: 1,2 Millions
barrels/day in 2032



R\$ 560 Billions
invested in the
Industry
OPEX as a upside!



Government take of
R\$ 1 Trillion



Oil & Gas Government
Revenue of R\$ 424
Billions

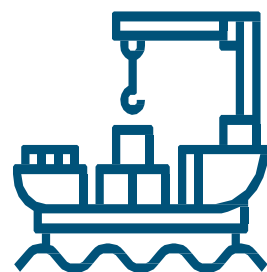


Multiplier effect on
the Jobs and
Brazilians income

Challenges and Opportunities



Challenges and Opportunities



Process Plant footprint optimization to face GOR increasing.



Lack of gas export infrastructure.



Subsea Process & Pumping to handle GOR increasing.

Final Remarks

- The PSC's are improving due to collaboration between PPSA & Operators
- Health, Safety & Environment as a key value to Pre salt Projects
- Gas management & Monetization as one of the biggest Pre salt opportunity

Obrigado!



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