

O PAPEL DA PRÉ-SAL PETRÓLEO E OS DESAFIOS TECNOLÓGICOS DOS PROJETOS

2018 Technology Day
AKER SOLUTIONS
RIO, 19/04/2018

LUIZ GUILHERME SANTOS
SUPERINTENDENTE DE DESENVOLVIMENTO E PRODUÇÃO



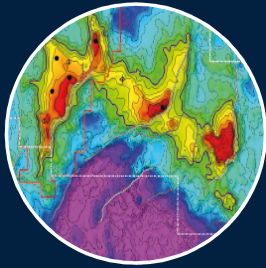
Pré-sal
Petróleo

Agenda

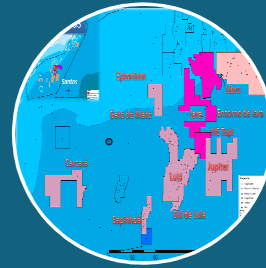
- Pré-Sal Petróleo S.A.
- Production Sharing System
- Pre-Salt Reservoir's performance
- Technology Challenges and Drivers
- Final Remarks

A Pré-Sal Petróleo S.A.

Our Role



Production Sharing Agreement (PSA) management



Unitization on behalf of the Government



Commercialization of Oil & Gas Government share

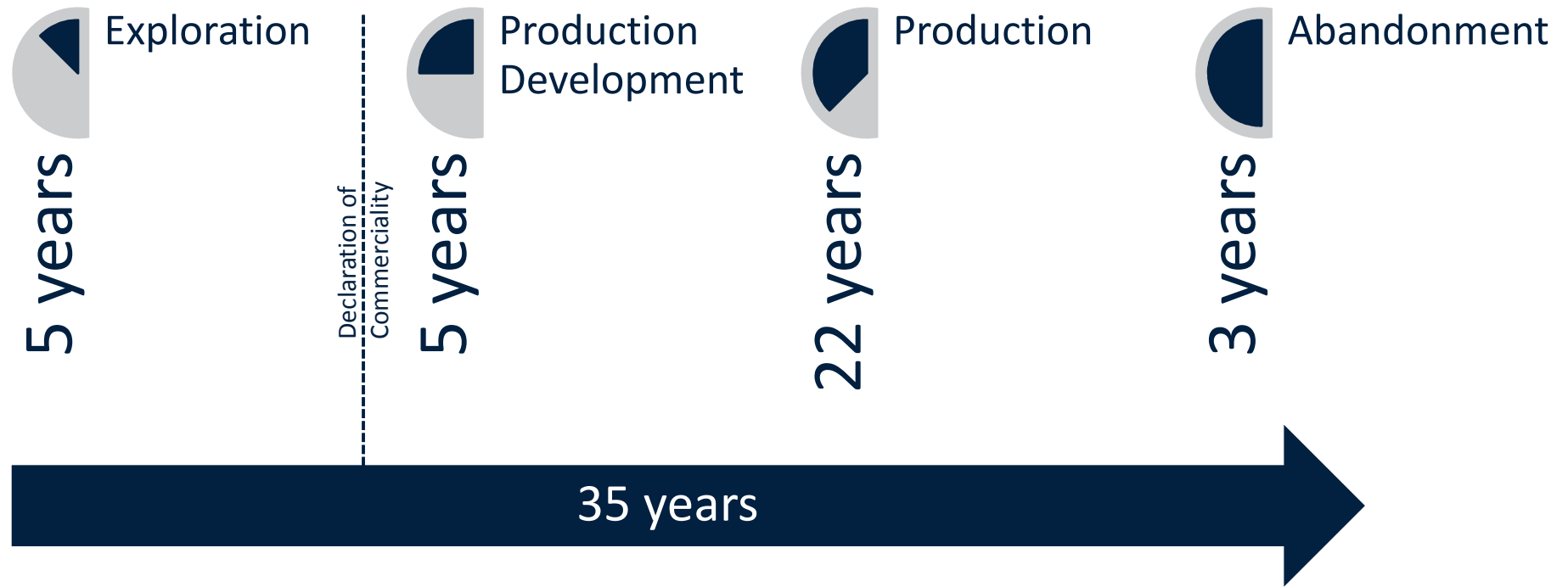


Main Drivers

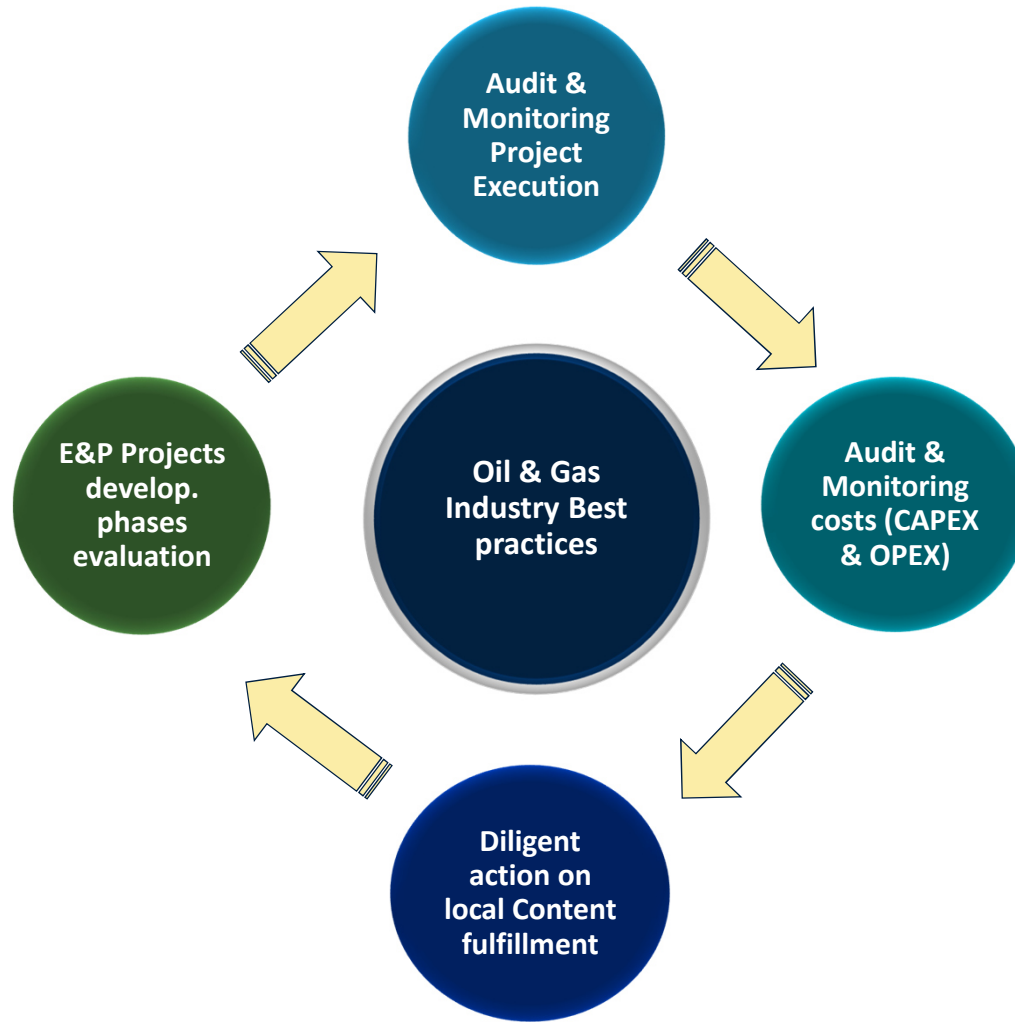


Production sharing System

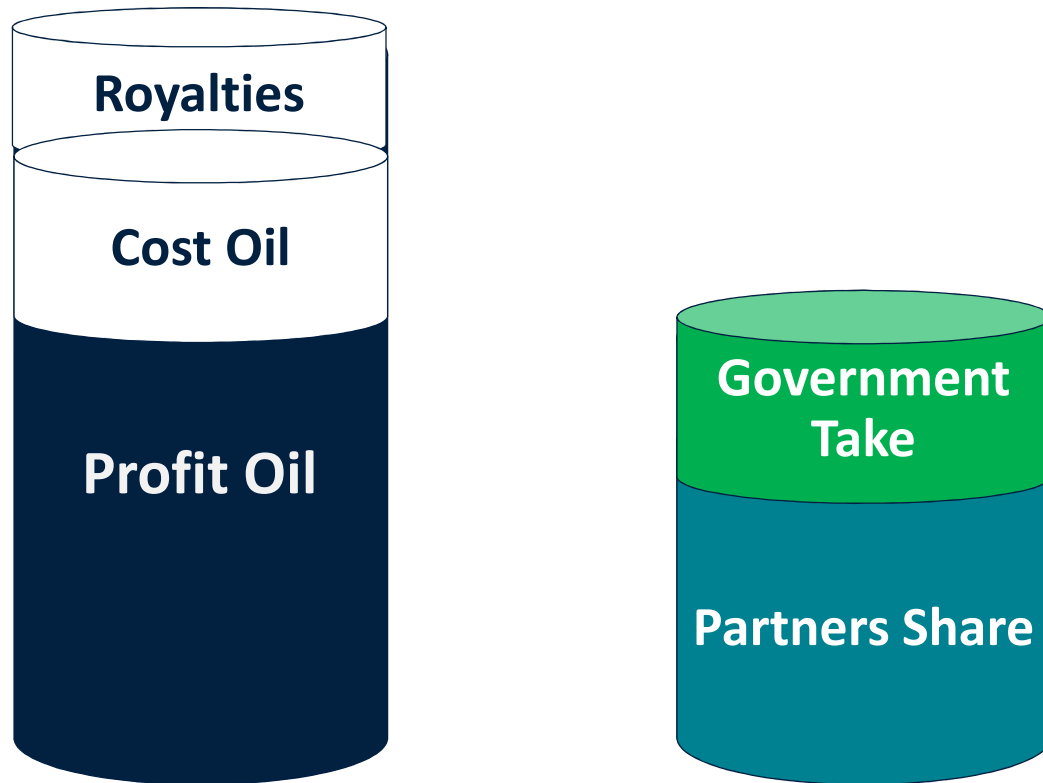
E&P Typical development Project – PSA scenario



Legal Obligations



Production Sharing



Pre salt PSAs

PSA	Operator
Libra	Petrobras
Carcará	Statoil
Peroba	Petrobras
Gato do Mato	Shell
Alto de Cabo Frio Central	Petrobras
Alto de Cabo Frio Oeste	Shell
Sapinhoá	Petrobras

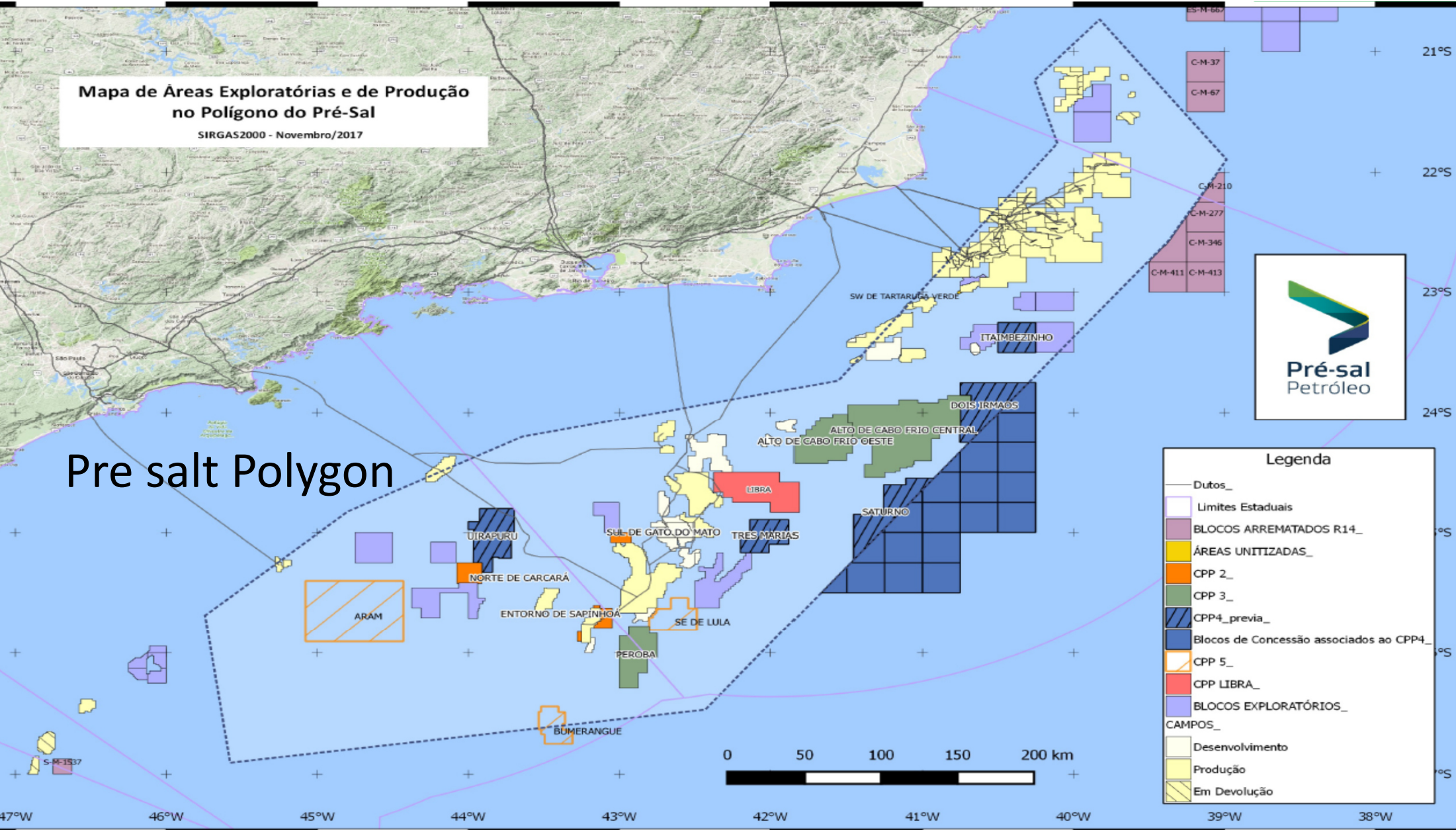
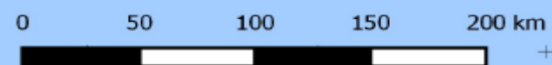
Mapa de Áreas Exploratórias e de Produção no Polígono do Pré-Sal

SIRGAS2000 - Novembro/2017

Pre salt Polygon



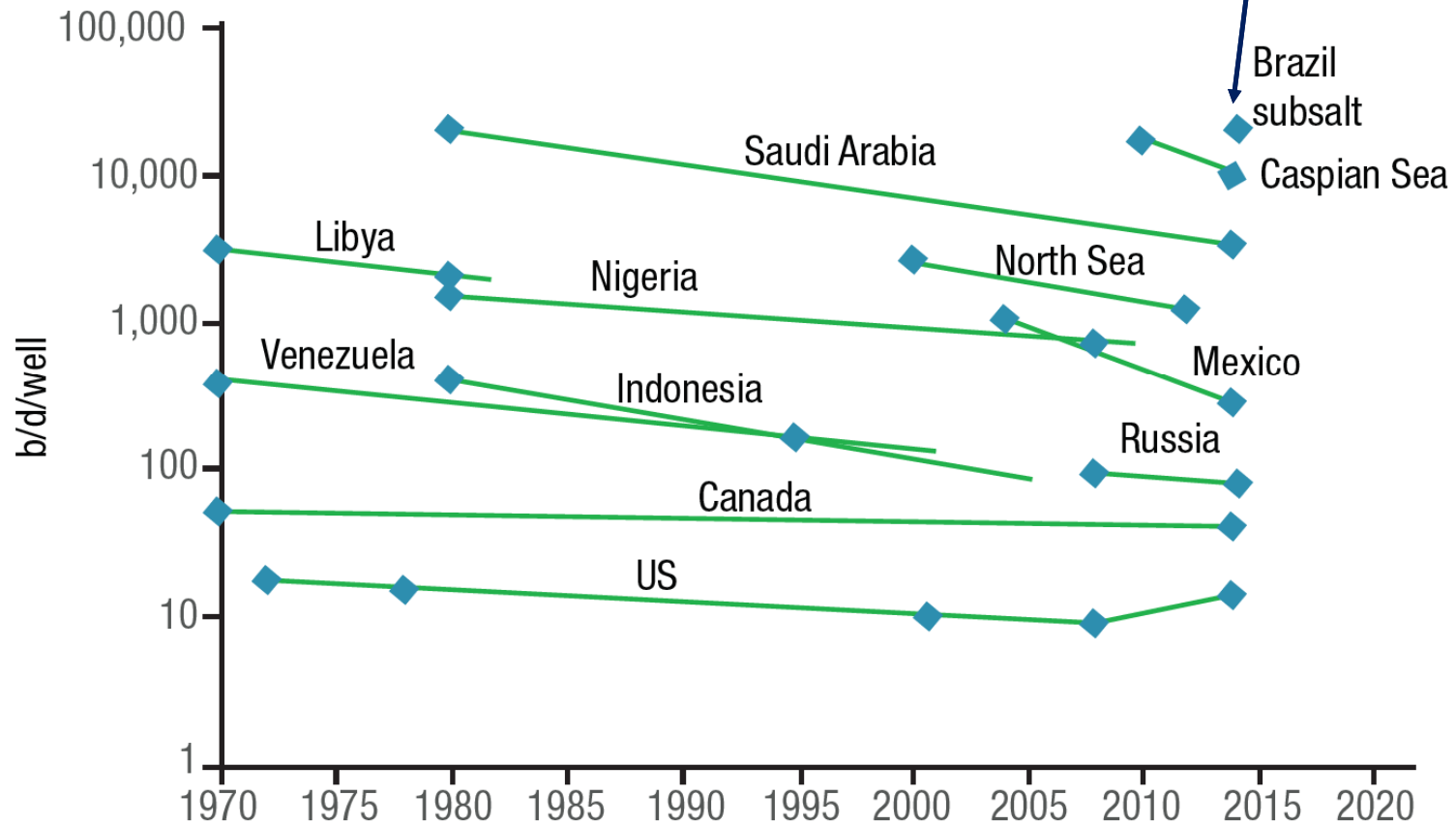
Legenda	
	Dutos_
	Limites Estaduais
	BLOCOS ARREMATADOS R14_
	ÁREAS UNITIZADAS_
	CPP 2_
	CPP 3_
	CPP4_previa_
	Blocos de Concessão associados ao CPP4_
	CPP 5_
	CPP LIBRA_
	BLOCOS EXPLORATÓRIOS_
CAMPOS_	
	Desenvolvimento
	Produção
	Em Devolução



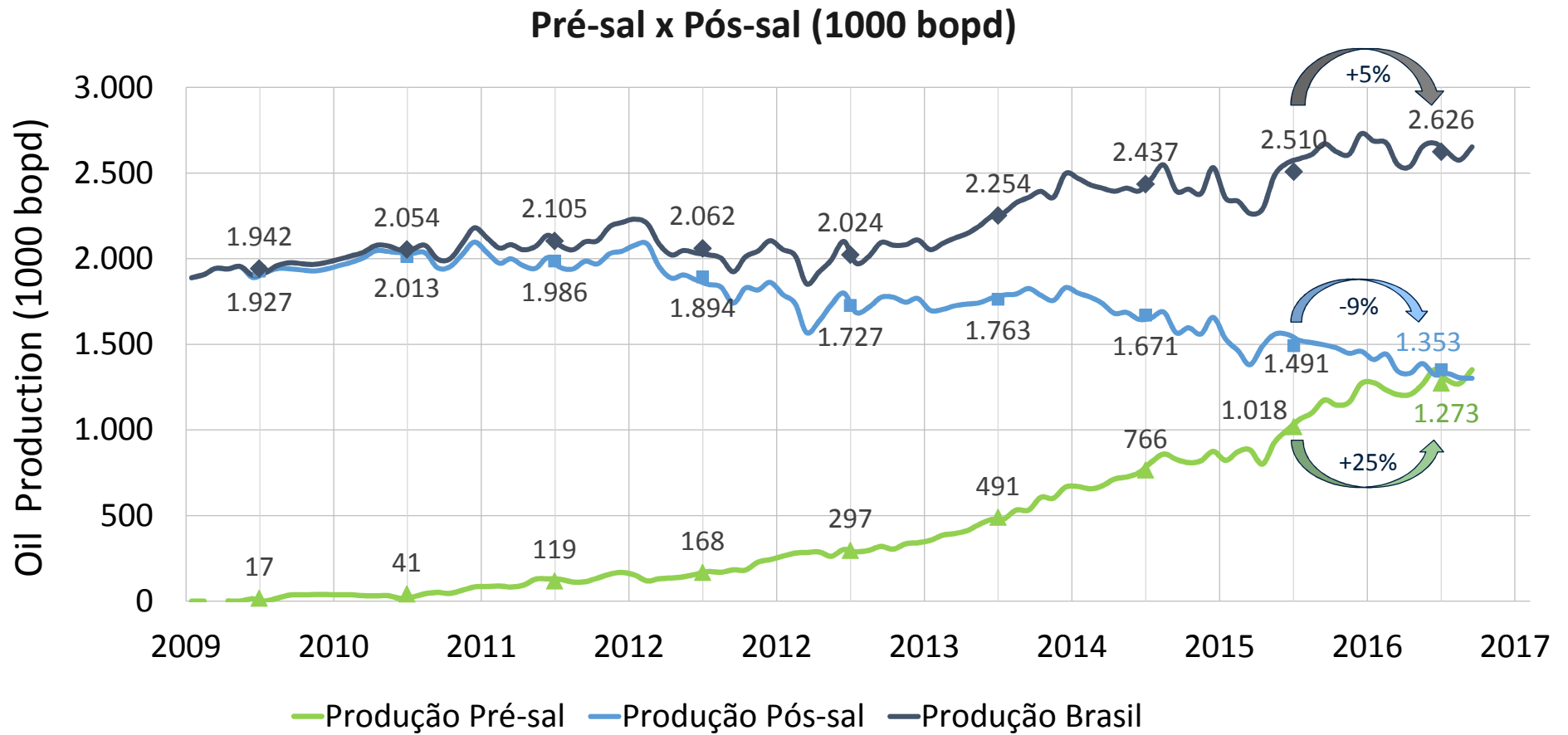
Pre salt Reservoir's performance

World benchmarking

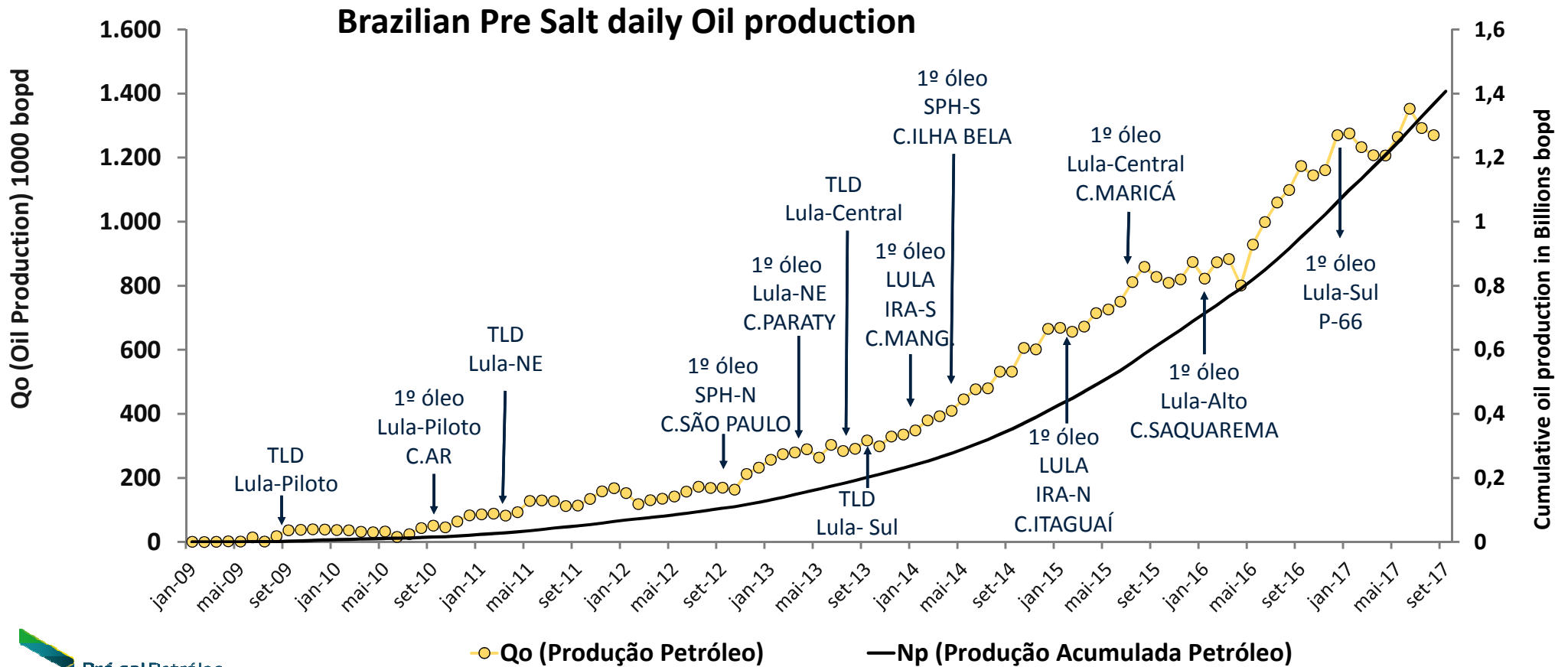
WELL PRODUCTIVITY



Oil Production

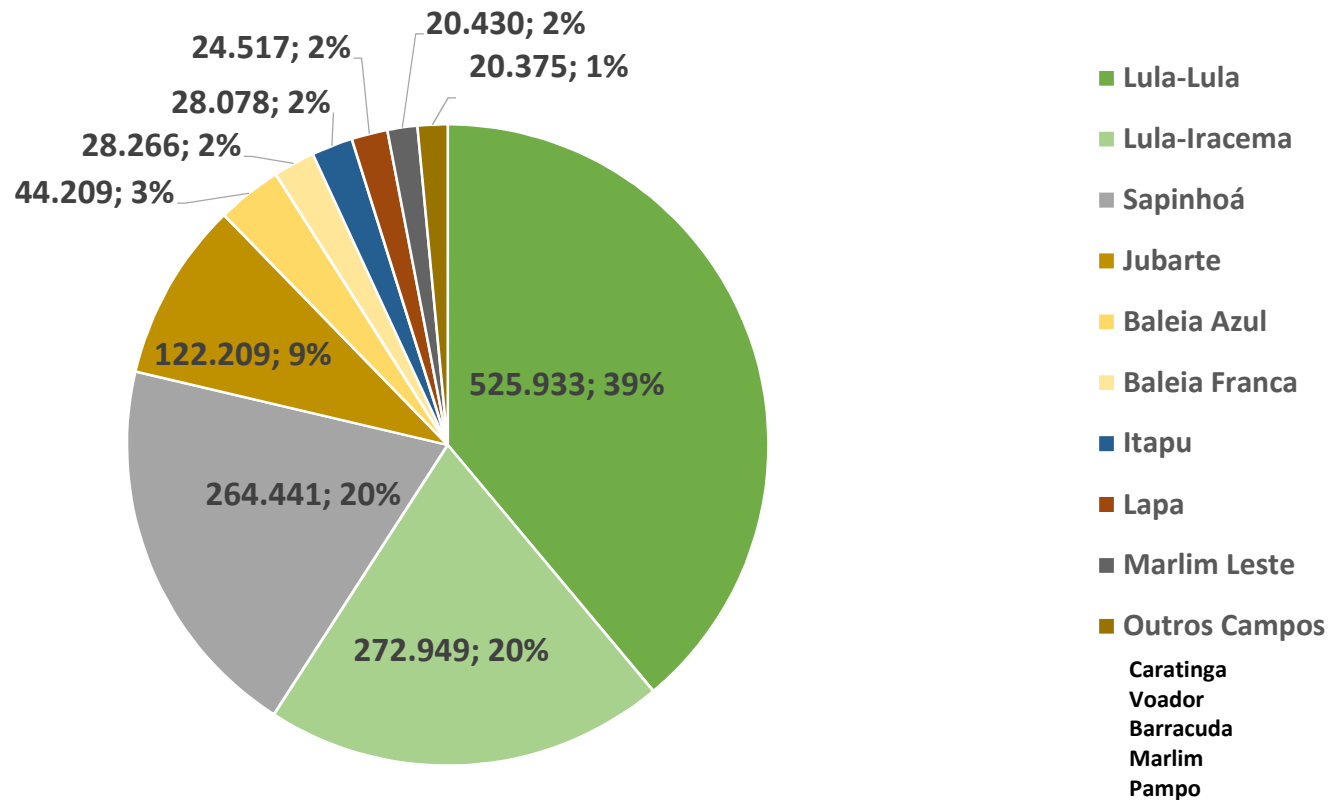


Pre salt >1,4 billion bopd



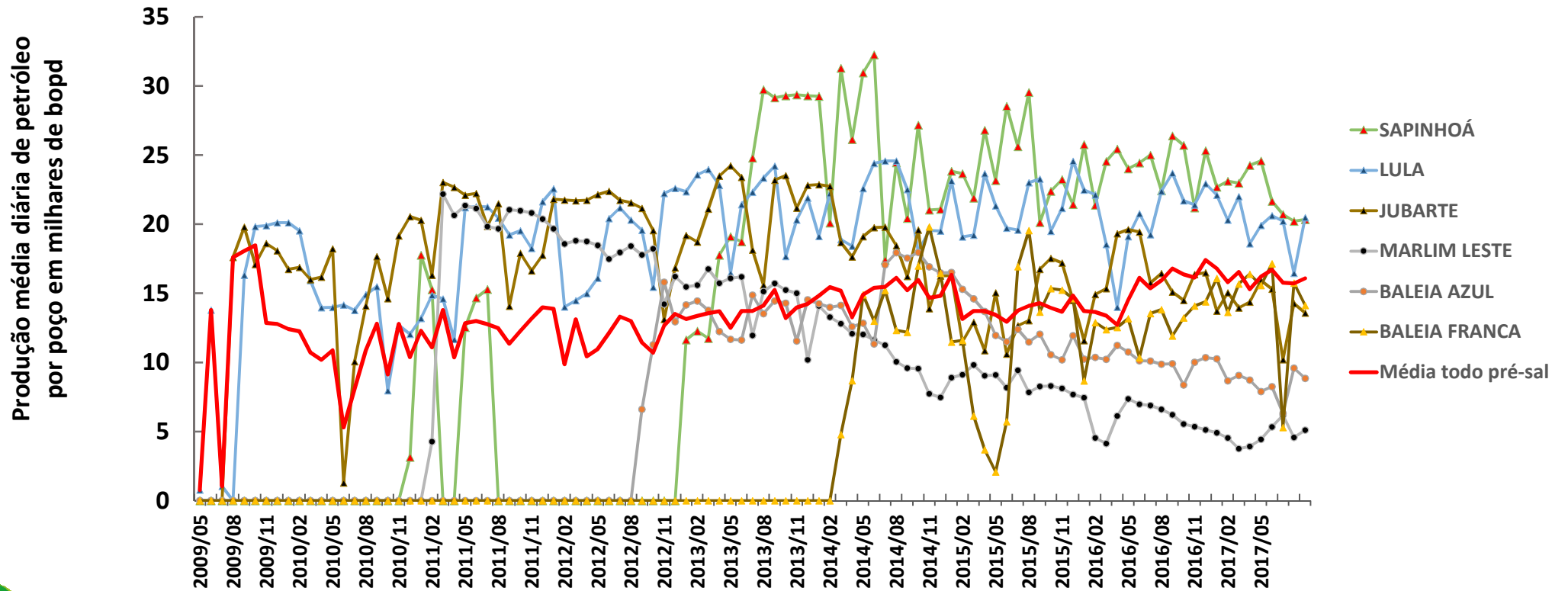
Pre salt Main Oil Fields

Produção Média de Petróleo dos campos do Pré-sal em milhares de bopd e % da produção total do Pré-sal em Set/2017 (1,351 milhão de bopd)



High productivity wells

Produção média diária de petróleo por poço para os principais campos do pré-sal

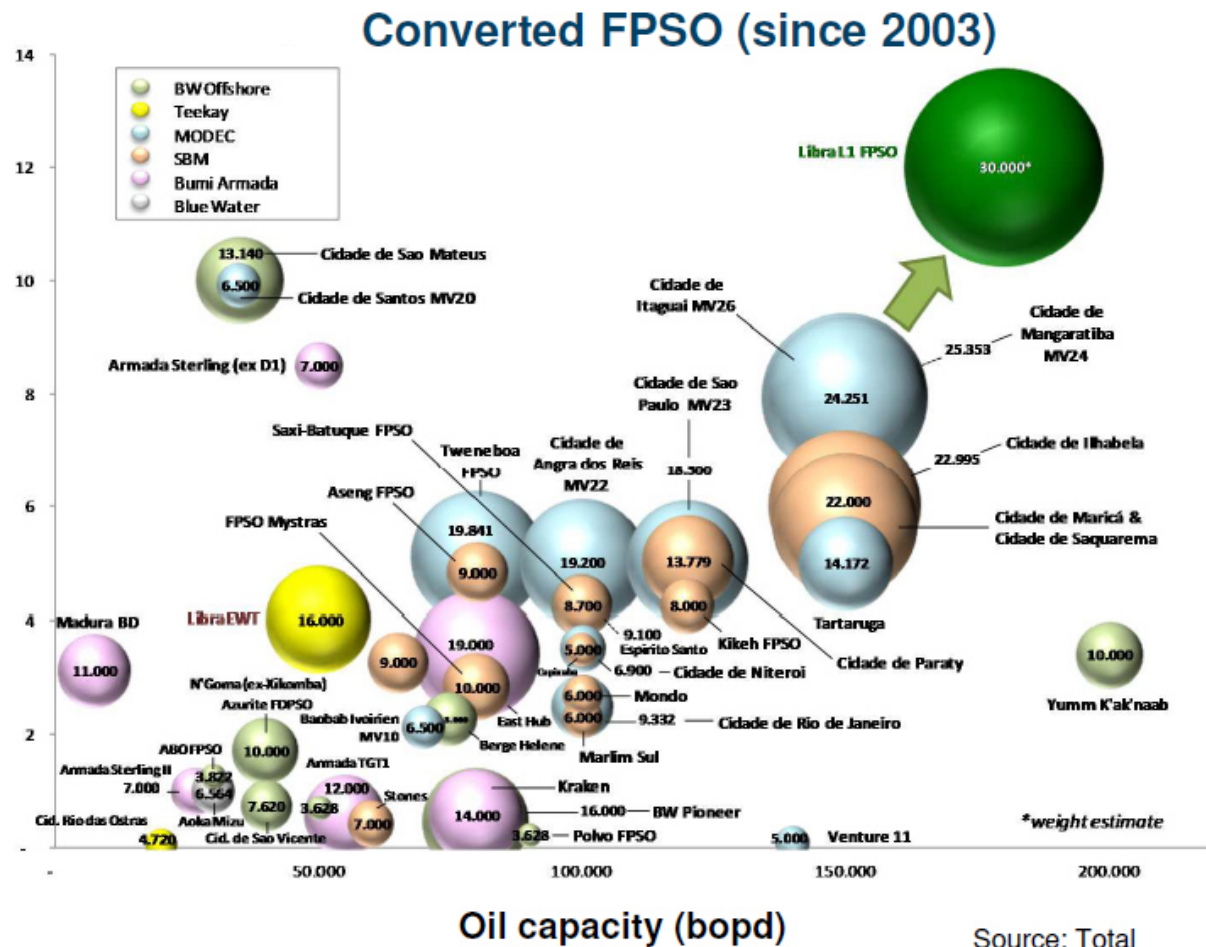


Technology Challenges and Drivers

Challenges & Drivers

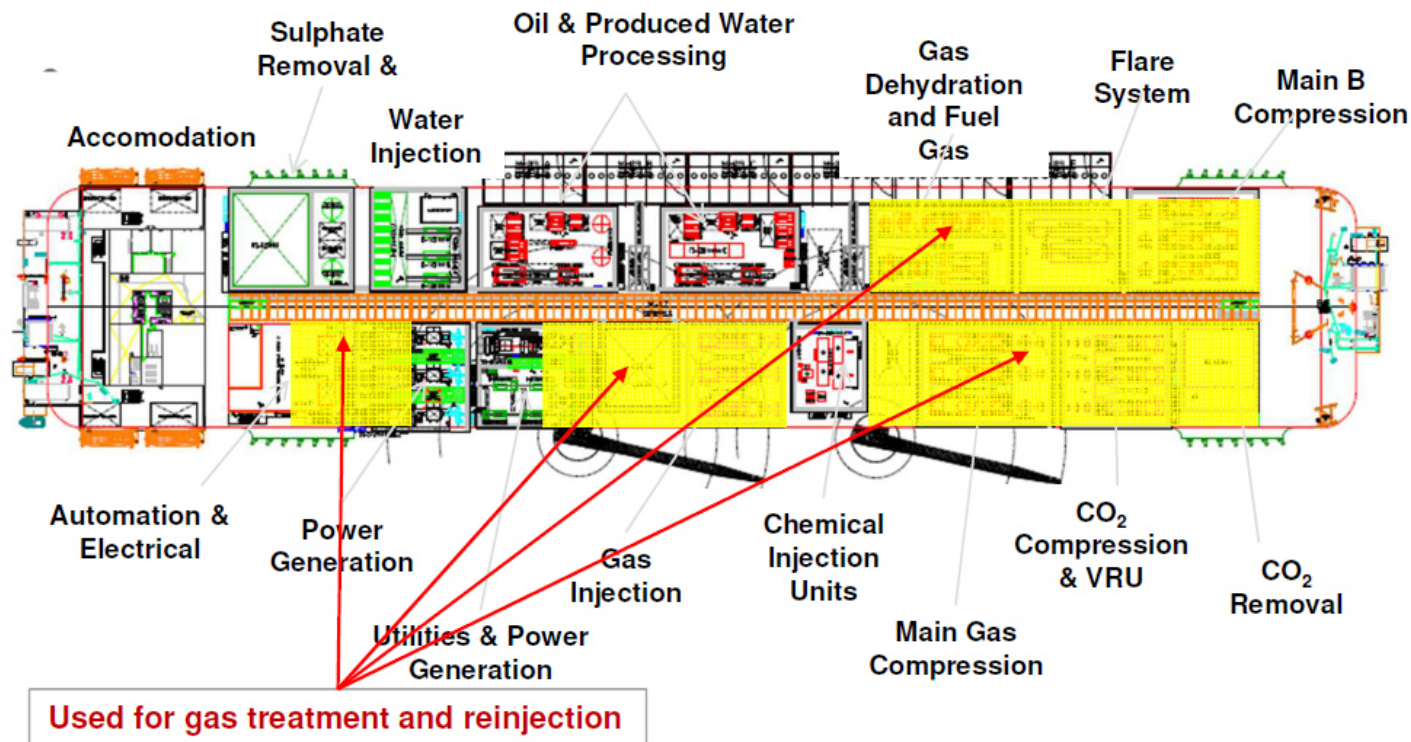
- **Cost Reduction**
- **Conciliation of a Fast-Track x New Technology development**
- **Large Production Units due to gas handling**

Process Plant footprint



Process Plant footprint

Gas became an oil production bottleneck – aprox. 65% FPSO area



Pre-Salt cost saving areas

- **Far from shore base**
- **Lack of pipeline infrastructure**
- **High contaminants level & High GOR**

Pre-Salt cost saving areas

- Far from shore base



IMPROVE

Logistics Costs → Personnel & cargo, fluids and diesel

Telemedicine

Faster & cheaper boats / helicopters

Logistics Hubs

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Pre-Salt cost saving areas

- Far from shore base
- **Lack of pipeline infrastructure**



IMPROVE

Gas handle & monetization technologies
Multipurpose Platform Hub → Gas, GTW, Treatment
and Re-injection

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Pre-Salt cost saving areas

- Far from shore base
- Lack of pipeline infrastructure
- **High contaminants level & High GoR**



IMPROVE

Platform Hub for gas treatment and re-injection
Contaminants separation methods
Subsea Hi-sep with / w.o. contaminants re-injection
Subsea to shore technologies

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Final Remarks

Final Remarks

- **PPSA & Operators with aligned objectives → optimize Schedule and Costs**
- **The PSC's are improving due to collaboration between PPSA & Companies**
- **Health, Safety & Environment as a value to Pre salt Projects**
- **Gas management & monetization as one of the biggest Pre salt challenges**



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