

Angola development

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Overview

Exploration assets

Angola development

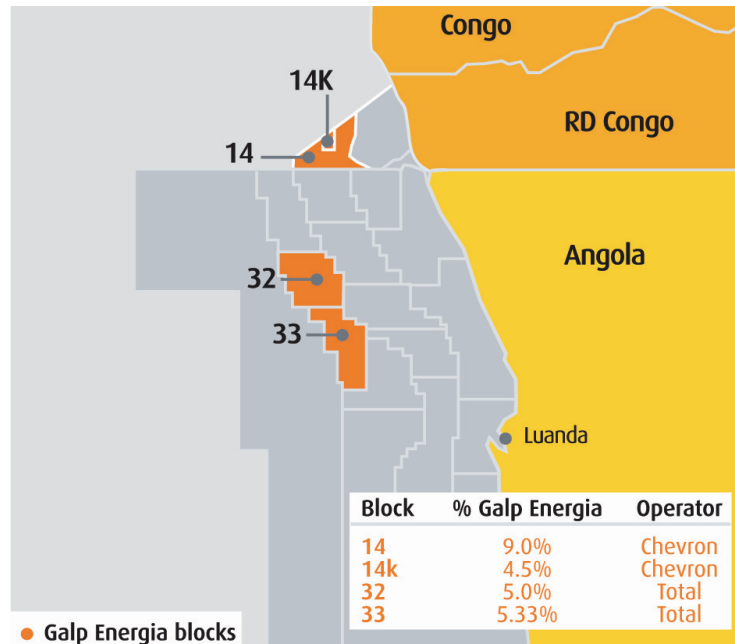
Brazil exploration assets

Pre-salt Santos basin

Final remarks

Successful track record on Angolan projects execution

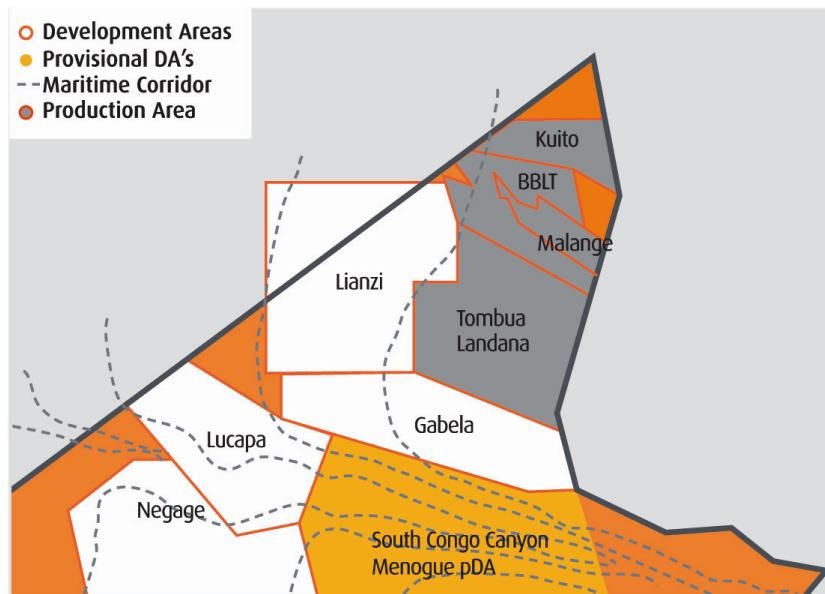
Angolan blocks location



- Presence in Angola since 1982
- 12 discoveries in Block 14 and 14 discoveries in Block 32 and Block 33
- Block 14 is the only producing block
- 255 Mbbbl of total reserves¹ and contingent resources² at YE 2010

Block 14 and 14K provide solid foundation for Galp Energia's presence in Angola

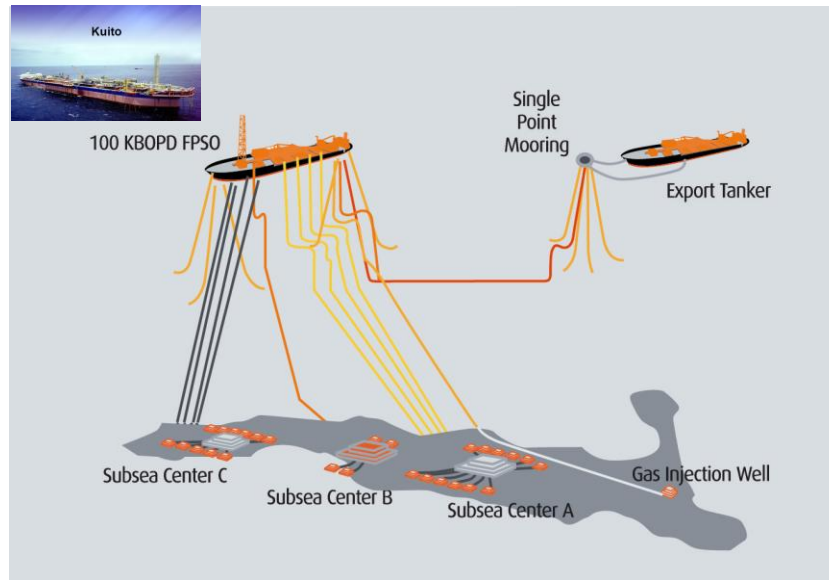
Blocks 14 and 14K areas



- Almost the total area of Blocks 14 and 14K was retained following the expiry of exploration period
- Three fields already under production: Kuito, BBLT and Tômboa-Lândana
- Five areas still to be developed: Malange, Gabela, Lucapa, Negage and Lianzi
- Menongue is a provisional development area

Kuito's FPSO was the first deepwater project in Angola

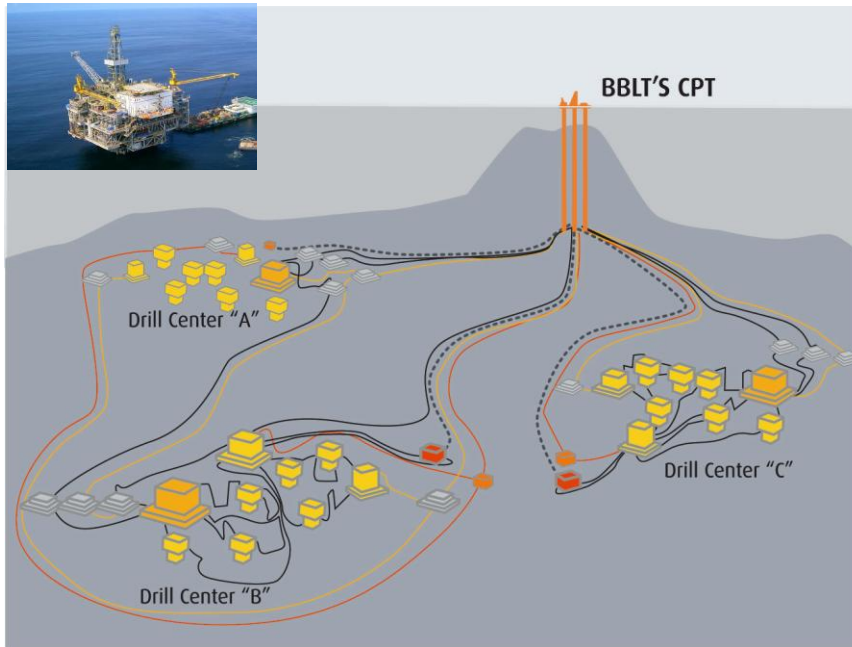
Kuito's development



- Very successful fast track deepwater project with first discovery in 1997 and first oil in 1999
- Development consists of one FPSO, three subsea centers, 22 producers, six water injection and one gas injection wells
- Project acceleration achieved via staged development
- Upgrades successfully performed with vessel on-station

Excellence in execution in BBLT

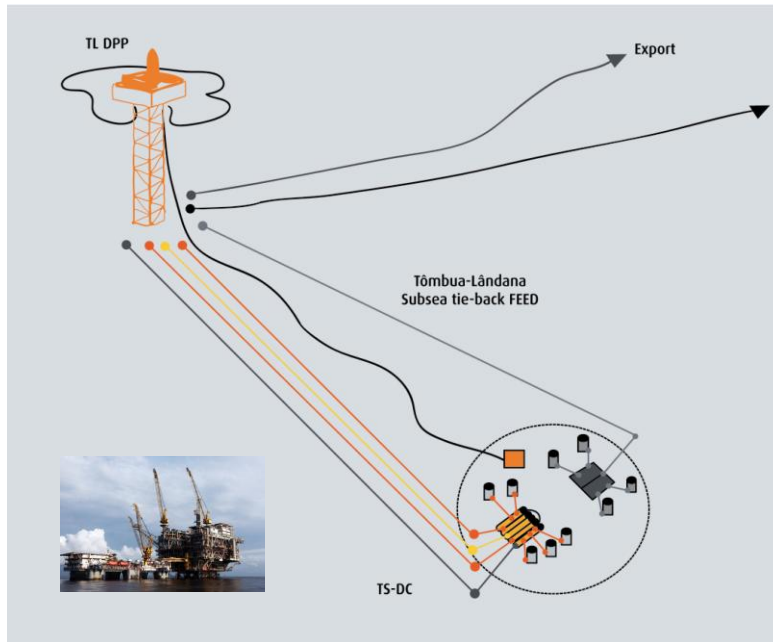
BBLT's Compliant Piled Tower



- Awarded "Project of the Year" by the Offshore Energy Association in 2005
- Development consists of one Compliant Piled Tower (CPT), three subsea centers, 30 producers and 18 water injection wells
- Two stage execution: First BB (CPT, process, import and export facilities); Second LT (subsea centers and tiebacks)
- Hub concept, available to incorporate further tie-backs

Replicating proven concept on Tômbua-Lândana

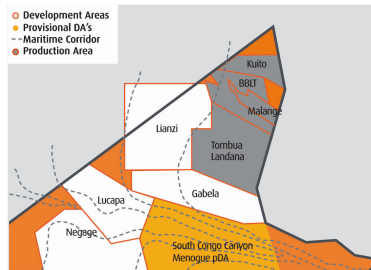
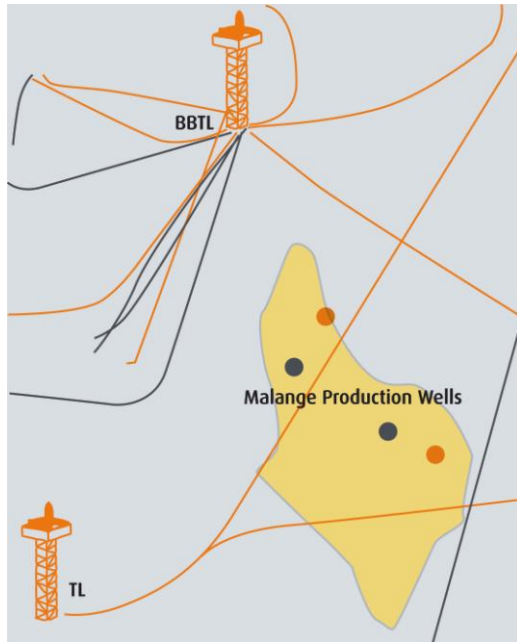
Tômbua-Lândana's CPT



- Weight and cost optimization via Tender Assisted Drilling rig
- One of the tallest fixed structure executed in the world
- Development to date consists of one CPT, one subsea centers, 11 producers and three water injection wells
- Two stage execution: 1st TL (CPT, process, import and export facilities); 2nd TS (subsea centers and tie-back)
- Hub concept, available to incorporate further tie-backs

Malange development leveraging on existing infrastructure

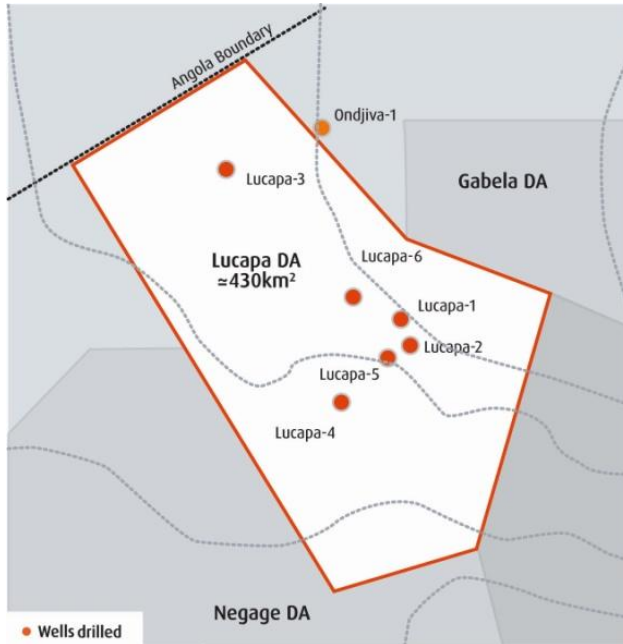
Malange tie-back alternatives



- Malange discovery in 2007 with appraisal programme completed in 2010
- Two drilled wells justified submitting conceptual development plan to concessionaire
- First Pinda development in Block 14 with light oil (40° API)
- Engineering studies underway to mature tie-back development alternative
- Aiming for project acceleration (contractual first oil date in 2016)

Lucapa progressing towards first oil

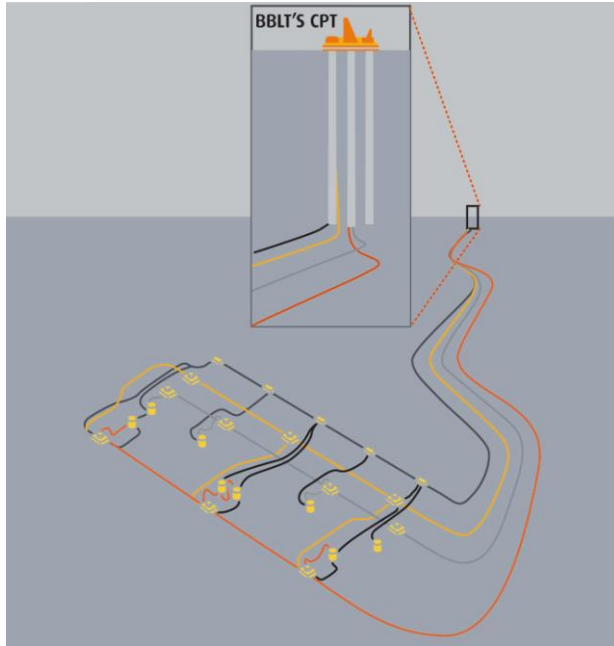
Lucapa's development area



- Lucapa discovery in 2007 with appraisal programme complete in 2010 with Lucapa-6
- Six exploration and appraisal wells drilled justified submitting conceptual development plan to concessionaire
- Engineering studies ongoing to select optimal development alternative
- Contractual first oil expected for 2016

Lianzi overcoming challenges via technology development

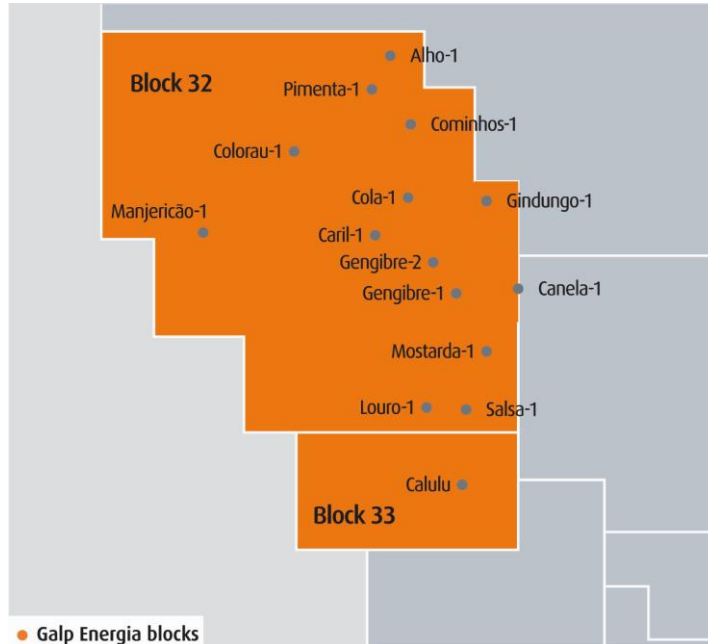
Lianzi development



- First unitized development between Angola and Republic of the Congo
- Long tie-back to BBLT, 42 km away
- Technology qualification: direct electrical heating, subsea sampling and subsea multiphase metering
- Engineering optimization studies underway to BBLT tie-back development alternative

Translating exploration success into development projects

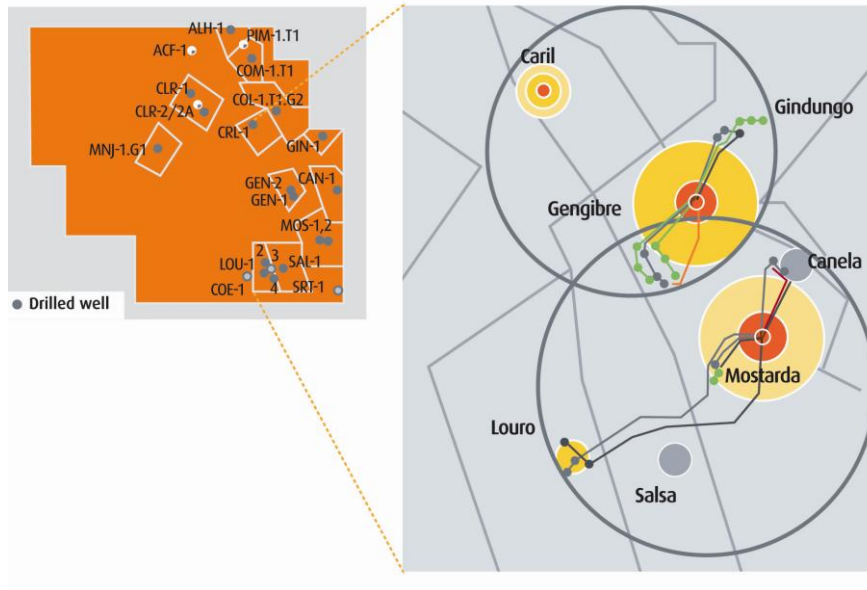
Block 32 and 33 areas



- 13 discoveries and 12 development areas submitted to concessionaire
- Total surface area of 1,113 km²
- One concept at pre-development stage: Block 32 Kaombo
- Block 33 proceeding with evaluation programme

Kaombo with split hub concept

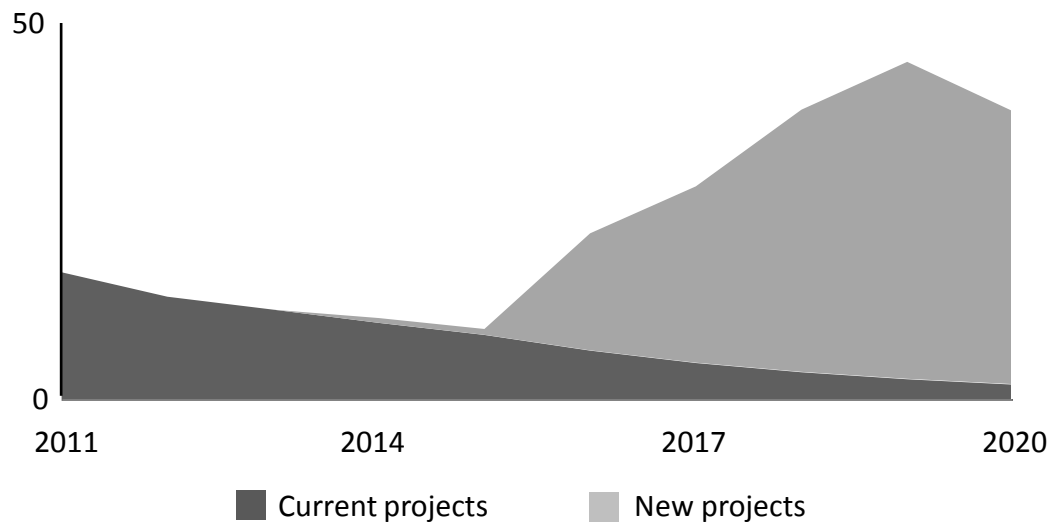
Block 32 development hubs



- Kaombo “Split Hub” concept approved
- Engineering optimization studies ongoing to mature “Split Hub” concept
- Two FPSO supporting six development areas with an aggregated capacity of c.200 kbopd
- First oil date staged per FPSO expected by 2016 and 2017

Angola WI production of c.35 kbopd in 2020

Angola WI production (kbopd)



Working interest production CAGR 2010-20 of 7%

Acronyms

#	Number	HR	Human Resources
\$	United States dollar	IOC	International Oil Company
%	Percentage	IPO	Initial Public Offering
2D	Two dimensional seismic	Kboepd	Thousand barrels of oil equivalent per day
3D	Three dimensional seismic	Kbopd	Thousand barrels of oil per day
ANP	Brazilian agency for oil, natural gas and biofuels	Km	Kilometre
API gravity	American Petroleum Institute gravity	Km ²	Square kilometre
BB	Benguela and Belize	LLI	Long Lead Item
BBLT	Benguela, Belize, Lobito, and Tomboco	LNG	Liquified Natural Gas
Bcm	Billion cubic metres	LT	Lobito Tomboco
Bln	Billion	M ³ /d	Million cubic metre per day
Boe	Barrel of oil equivalent	Mln	Million
c.	Circa	MW	MegaWatt
CAGR	Compound Annual Growth Rate	NG	Natural Gas
CSEM	Control Source of Electromagnetic Method	NOC	National Oil Company
CO ₂	Carbone Dioxide	p.p.	Percentage point
CPT	Compliant Piled Tower	R&M	Refining & Marketing
E&P	Exploration & Production	RCA	Replacement Cost adjusted
EPC	Engineering, Procurement and Construction	TL	Tômbua-Lândana
EWT	Extended Well Test	Ton	Tonne
FLNG	Floating Liquified Natural Gas	TS	Tômbua South
FPSO	Floating Production Storage Offloading	UOTE	Oil Transhipment Unit
G&P	Gas & Power	WAG	Water-alterning-gas
GWh	GigaWatt hour	WAT	Wax appearance temperature
H ₂ S	Hydrogen sulfide	WI	Working interest
HC	Hydrocarbon	YE	Year End

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Financial outlook figures are RCA figures except otherwise noted.

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