



Primary Growth Drivers

Volume growth from 2015-2020 is primarily driven by the continued development of Pre-Salt resource in the deepwater Santos and Campos Basins. In particular, near-term volume growth is expected to come from the start of FPSOs in the Buzios and Lula/Iracema development. Development at Lula-Iracema (the largest driver of growth through 2017) entails a total of 10 FPSOs (8 in Lula, 2 in Iracema). 3 FPSOs are currently in operation and 7 additional FPSOs will be required for development (150 Mb/d of capacity each), 4 of which are replicant FPSOs being constructed in Brazil.

Primary Risks

Project execution, already problematic in recent years given the combination of technical challenges and local content requirements, have become particularly acute given the collapse in oil price and corruption scandal affecting both Petrobras and the Brazilian government. We see two primary risks:

1. Weak oil price and uncertain investment environment could impact investment in the base (ie. maintenance capital), increasing the underlying decline at the 2.4 MMB/d of current production. We see this risk as slightly less acute than some basins heavily dependent on maintenance/infill capital spend (ie. UK North Sea/Norway), however every 1% increase in underlying decline above our 8%/yr base case would reduce 2017 production by 40 Mb/d.
2. Delays to FPSO start-ups. We see a high likelihood of material delays in the start-ups of future FPSOs, particularly the 4 replicant FPSOs being constructed in Brazil with targeted start-ups in 2017-2018 (Lula South, Lula North, Lula Extension, and Lula West – P-66, P-67, P-68, P-69). We have risked project starts in proportion to local content requirements (Buzios, Taratuga Verde), assuming an average 2-year delay in targeted first oil. We model an estimated ~225 Mb/d of incremental production through 2017 from the arrival of 4 FPSOs through (2 in each 2016 and 2017); the modeled production contribution increases to over 900 Mb/d by 2020.

Figure 76: Key Growth Projects, 2014-2020

Project	IEA Region	Country	Sector	Operator	Project Type	Dev Status	API	Prod Start Up Yr	Peak Prod Yr	2014-2017 Prod	2014-2020 Prod
Lula-Iracema	Latin America	Brazil	Santos	Petrobras	UDW	Onstream	27	2009	2022	381	777
Sapinhoa	Latin America	Brazil	Santos	Petrobras	UDW	Onstream	30	2010	2016	171	171
Papa-Terra	Latin America	Brazil	Campos	Petrobras	DW	Onstream	14	2013	2017	96	55
Roncador	Latin America	Brazil	Campos	Petrobras	UDW	Onstream	24	1999	2018	79	55
Frade	Latin America	Brazil	Campos	Chevron	DW	Onstream	20	2009	2017	54	15
Cachalote	Latin America	Brazil	Campos	Petrobras	DW	Onstream	24	2008	2018	32	12
BS-4	Latin America	Brazil	Santos	Queiroz Galvao	UDW	Probable Development	14	2016	2019	30	63
Lapa	Latin America	Brazil	Santos	Petrobras	UDW	Onstream	26	2011	2020	28	85
Buzios	Latin America	Brazil	Santos	Petrobras	UDW	Under Development	28	2016	2023	0	300
Iara	Latin America	Brazil	Santos	Petrobras	UDW	Under Development	26	2018	2026	0	50

Source: Deutsche Bank, Wood Mackenzie