

Mozambique

Gas Supplier to the World?

Paul Eardley-Taylor, Standard Bank

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GLOBAL ENERGY OUTLOOKS (1/2)





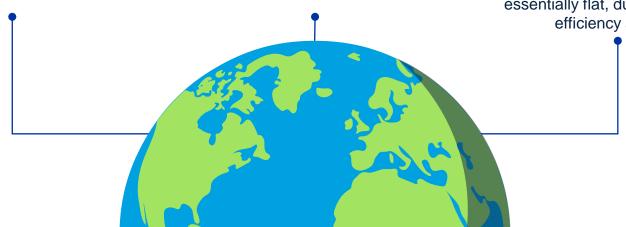
In 2019, BP (to 2040) published its Global Energy Outlook, which supplements ExxonMobil's and the IEA's 2018 annual global Energy Outlooks



Global population by 2040 estimated around 9.2 billion. This is anchored by growth in the emerging markets with 2.5 bn people lifted out of poverty and a global middle class of 5 billion.



Global energy demand projected to increase (1.3% p.a.) more slowly than before due to increases in energy efficiency. India will become the largest growth market for global energy. Global automobile liquids demand essentially flat, due to increased efficiency and EV.



GLOBAL ENERGY OUTLOOKS (2/2)





Per BP and Shell (2019) Gas is generally expected to increase in demand around 2% p.a. with LNG expected to increase by around 4% p.a., with LNG representing 80% of the demand increase in long distance gas trade.

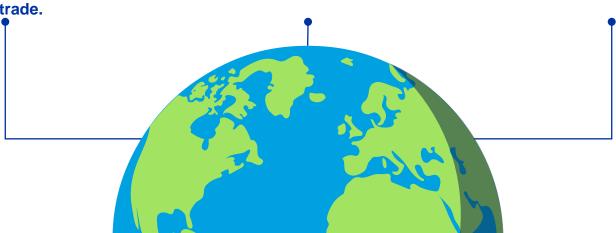


Consequently, the IEA expects gas to overtake coal by 2030 to become the world's second leading fuel.



In passing, Africa's demand for energy is expected to increase at around 4% p.a. hence the growth in Africa's own energy requirements is also exciting.

Feel free to chat to Standard Bank about this



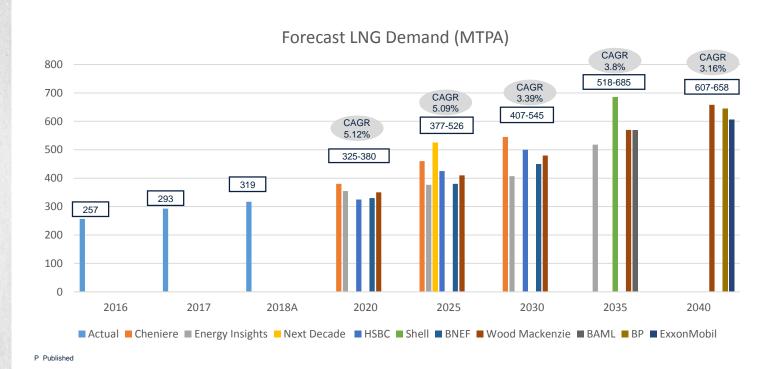
LNG DEMAND COMPARISON



Eleven independent LNG demand forecasts outlined from 2020-2040:

- 1) 2016&2017: Actual International Gas Union 2018 Edition
- 2018A: Shell LNG Outlook 2019 P (Feb'19)
- BAML: P (July'17) Bank of America Merrill Lynch FLNG Overview*
- Bloomberg New Energy Finance (BNEF): P (Mar'18) Global LNG Outlook 1H2018
- 5) BP: P (Feb'19) Energy Outlook 2019
- 6) Cheniere: P (Dec'18) Corporate Presentation
- Energy Insights: P (Sept'18)
 Analysis, Energy Insights Gas
 Intelligence Model
- ExxonMobil: P (Feb'18) Energy Outlook 2040
- HSBC Global Research: P
 (Mar'18) Global LNG: The glut
 abates, the crunch awaits
- Next Decade: P (Oct'18)
 Corporate Presentation
- Shell: P (Feb'19) LNG Outlook 2019 (319 MTPA)
- Wood Mackenzie: P LNG Tool 2018

Summarised by Standard Bank

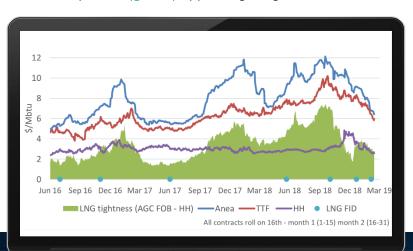


Demand is expected to increase from 319 MTPA to 632 MTPA (average) from 2018-2040 using leading industry players forecasts

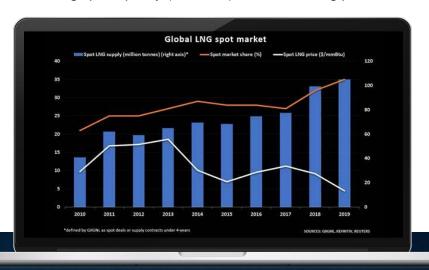
GLOBAL LNG PRICES



LNG spreads (green) appearing range bound



Increasing spot liquidity (blue bar) and decreasing prices



Left hand chart shows "LNG Market Tightness". As US LNG can be moved globally, green shows Argus Gulf Coast LNG FOB minus Henry Hub (relative to global gas prices). Low spreads show global pricing convergence. Higher spreads indicate a need for global Final Investment Decisions ("**FIDs**")

Right hand chart shows increasing LNG spot volumes. Blue bars are spot volumes in MTPA, red line is % market share and white line USD MBTU. Major increases in spot liquidity as new plants completed promotes lower spot prices and increased demand

Gas share **BCM** 12% 300 9% Chinese 200 6% Government policies 100 3% target 2020 2010 2018 (Taraet) ■ Gas demand → Gas share



CHINESE LNG DEMAND





As policy, China is **switching from coal to gas** ("Make Our Skies Blue Again") with **all sectors showing increased demand**.



In 2018, **LNG imports grew 41%** year on year (IGU 2019 World LNG Report), following a **47% increase** in 2017.



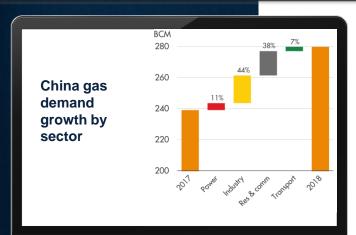
Example of **President Xi commitment to air quality:** http://www.chinadaily.com.cn/a/201805/19/WS5b0006b2a3103f6866ee96c9.html



In June 2018, the "Blue Sky Defence Action Plan" strengthened with the addition of **28 cities** to various air pollution controls.



The IEA sees China as "The Emerging Giant" of gas demand.



Gas share **BCM** 12% 300 9% Chinese 200 6% Government policies 100 3% target 2018 2020 2010 (Taraet) ■ Gas demand ◆ Gas share



CHINESE LNG DEMAND



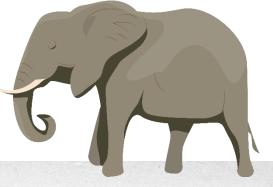
Note a doubling of 2018 Chinese LNG demand:

55 MPTA 🐃





110 MPTA



BCM 280 260 China gas demand 240 growth by sector 220 200

Only represents a 1.3% delta of China's 2018 coal consumption cap. Note this plausible due to storage under construction and planned (Shell 2019).





Section 2 Mozambique – Underlying Documentation

UNDERLYING DOCUMENTATION





The Government of Mozambique ("GOM") launched the 2nd Licensing Round on 15th July 2005 and applications were submitted on 31st January 2006

The core document is the Exploration and Production Concession Contract ("**EPCC**"). Key provisions:



5 year
Exploration
Period (extendable)
and (up to) 5 year
Appraisal Period (for
non-associated gas)



Development & Production Concession granted to Concessionaire (from Plan Of Development ("POD") approval).



2% PPT/Royalty

Note there is no other EPCC Domgas, Domestic Market Obligation or Regional Obligation.

Cost Gas

Concessionaire entitled to recover Cost Gas of up to **[65%/70]%** Disposable Petroleum (net of PPT) (depending on Area)

Profit Petroleum

Sliding scale allocation depending on cumulative returns and can be taken in cash or kind by GOM.

The EPCC was supplemented by the "Decree Law" in 2014 which in essence allows a "world-scale LNG project financing" along typical LNG industry norms to fit within Mozambican law.

In addition, various other Agreements are required. For example, Profit Petroleum cannot be taken in kind by GOM if it would impede LNG Sale & Purchase Agreements ("SPAs")





Section 3 Mozambique – LNG Projects & Implications

MOZAMBIQUE SNAPSHOT



Found **150-200 Tcf** since 2010 offshore northern Cabo Delgado, equivalent of **26-36 bn bbl.**



Fifth licensing round now signed and **sixth licensing round** reported to be launched next year.



Young country. **Independence 25 June 1975.**



Civil war 30 May 1977 - 4 October 1992, with Cabo Delgado hit hard.



Producing **onshore gas** since 2004, through Sasol.

Geography





2,800km long

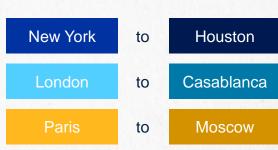
Afungi site is

2,750km

from capital city (Maputo).



Same distance as....



One of world's poorer countries.

Debt to GDP around 100%. In sovereign default since 2016, official debt recently rescheduled with unofficial debt still in default.

FLNG

- Coral FLNG (3.4 MTPA)
 - FID June 2017, First Gas June 2022

OUR COUNTRY LNG HYPOTHESIS

Onshore

- Mozambique LNG (12.9 MTPA)
 - FID targeted 18 June 2019, Fully Commissioned 2024
- Rovuma LNG (15.2 MTPA)
 - FID 3Q 2019, Fully Commissioned 2025

- Unitised Trains (15.2 MTPA)
 - FID 2024, Fully Commissioned 2029
- Prosperidade LNG (12.9 or 15.2 MTPA)
 - FID 2024, Fully Commissioned 2029

Domgas Projects

 Expected - Gas to Liquids ("GTL"), Fertiliser, Independent Power Projects ("IPPs"), Small-Scale LNG ("SSLNG"), LNG Bunkering, Methanol to Olefins ("MTO")

The 30 year EPCC term is limited and includes, through the Decree Law, a tight interim deadline (all PODs must be submitted by December 2023, 10th anniversary of EPCC Commercial Assessment Period). This means Sponsors must use it or lose it. Can the country's execution capacity match this market obligation?

AREA 1 - MOZAMBIQUE LNG







Our current understanding of Mozambique LNG is as follows:



On 8 May 2019, Anadarko publicly committed to an FID of the 12.88 MTPA project on 18 June 2019.



Since 2017, significant progress has been made:

- "Marine Concessions" agreed, finalising the marine facilities.
- The site resettlement process kicked off in November 2017 and joined by Area 4.
- In February 2018, the Council of Ministers ("COM") agreed Area 1's POD
- In November 2018. Technip/VanOord were selected as offshore EPCI contractor



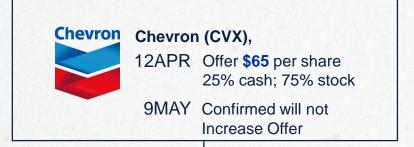
Anadarko publicly stated in June 2018 that they have sufficient customers to declare FID subject to firming up SPAs for such customers.

Subsequently, signed SPAs have been announced with Bharat. CNOOC, EDF, Pertamina, Shell, Tokyo Gas/Centrica and Tohuku



The first two trains will also provide 100 MSCFD of Domgas which will contribute towards the supply for the three Initial Domgas projects selected by the GOM (GL Energy -IPP; Yara - fertilizer and Shell – GTL). We envisage developing Domgas projects at Afungi will likely require bespoke port and access arrangements.

AREA 1 - ANADARKO OFFERS





Occidental (OXY),

24APR Offer \$76 per share

50% cash; 50% stock



Berkshire Hathaway

30APR BM conditionally

commits to \$10bn investment in OXY



Total 5MAY

Offer now 78% cash; 22% stock. Total

conditionally commits to buy APC African Assets for \$8.8bn (inc Area 1). **23%** of 6MAY

APC market cap



Anadarko Petroleum Corporation (APC)

11APR **\$46.80** per share



AREA 4 - ROVUMA LNG











Coral FLNG achieved FID in June 2017 and is under construction.

Our current understanding of Rovuma LNG is as follows:



Initial technical work assumed Rovuma LNG was 10-12 MTPA. Area 4 now plans to develop Rovuma LNG through "Mega-Trains" (first outside Qatar), with a target plant capacity of 15.2 MTPA and Standard Bank assumed cost of around USD [30] bn. The POD was submitted in July 2018.



An increased capacity means significant onshore and offshore technical work is needed. We expect finalized EPC bids in 2Q 2019. Noting this, we would expect FID in 3Q 2019.



In December 2018, Area 4 confirmed it has secured commitments (TBA MTPA) to sell output to affiliates, subject to documentation and approval by the GOM. This is likely to increase the speed of executing RLNG's targeted project financing.

Separately, a **key issue** to negotiate with the GOM will be the **volumes (and price) of Domgas** RLNG **will voluntarily provide** to supply new Domgas-fed industrial projects.

STANDARD BANK ECONOMIC STUDY



https://www.exxonmobil.co.mz/en-mz/company/about/project-lng#/section/3-economic-benefits



Rovuma LNG will be the largest Project in Africa's history



Standard Bank has prepared an independent Macroeconomic Study upon Rovuma LNG. We have previously analysed Mozambique LNG (2014) and Afungi GTL & Power (2018)



We envisage Rovuma LNG will take a FID in mid-2019 and reach Financial Close in 2019.



The Project will be a 15.2 MTPA, USD 27bn (Low Capex) - 32bn (High Capex) Project which will monetize 2.6 Bcf/d of Mozambique's offshore resources.

ROVUMA LNG - HIGH CAPEX & REINVESTMENT SCENARIO

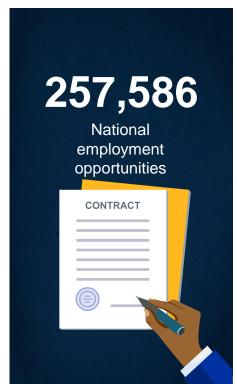


Key Project benefits include:















ROVUMA LNG - LOW CAPEX & REINVESTMENT SCENARIO

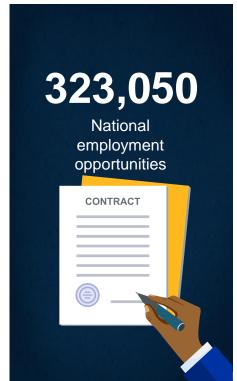


Key Project benefits include:















ROVUMA LNG - KEY OPPORTUNITIES AND CHALLENGES





In 2017, China **changed its energy policy** to promote coal to gas switching. Standard Bank considers Mozambique can become to China for LNG, as Australia is for minerals and New Zealand food.

Multiple mega-trains promptly developed allows the maximum amount of LNG sold to increase national prosperity, develop local content (USD 3bn commitment) and facilitate Domgas.



We are aware of **Domgas' importance.** Rovuma LNG has offered 75 mscfd per train Committed Domgas Volumes for Phase 1 and 350 mscfd long-term Domgas to the Aggregator, to help **kick-off Mozambique's Domgas projects.** As well as Domgas projects already tendered, we believe Mozambique can develop new industries such as MTO, SSLNG, LNG Bunkering and indigenous LPG. This will help GOM achieve a "Domgas Vision", where Domgas promptly follows LNG.

AFUNGI & RAS LAFFAN (QATAR) PARALLELS







Qatar entered into production **77 MTPA** of **onshore LNG** between **1997 – 2010**.



Public domain, Mozambique will enter into production 28.1 MTPA between 2023 - 2025 (at the same site, per Curtis Island (Australia) and Ras Laffan). Mozambique will be building onshore LNG more intensively than Qatar and we expect it to continue given the limited 30 year EPCC term



Standard Bank envisages the Afungi site will ultimately be able to host (with Mega-Trains), over 90 MTPA of LNG production plus a Domgas Industrial Park (most likely to the North West of the LNG trains).

"AS IT STANDS" PROJECT TIMETABLE





By 2024, Mozambique should have operational 4 onshore LNG trains and 1 FLNG ship. We expect 4 additional onshore LNG trains could be operational by 2029/2030, partly driven by the underlying **EPCC/Decree Law** requirements. This will trigger a second wave of Domgas projects.

Source: Standard Bank

"AS IT STANDS" PROJECT TIMETABLE



Key				
		Sovereign Credit	All-In	
Name/Key Sponsor	Industry	Implications	USDbn Capex	2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032
Coral South FLNG (Area 4)		USD inflows (moderate)		
		USD inflows (major)		
Rovuma LNG (Area 4)		USD inflows (major)	30	
				110D 400 L'III'
Pande, Temane, Inhassoro (Sasol)		USD inflows (moderate)	1	USD 128 billion
				USD IZO DIIIOII
SSLNG & Power (Various)			1	
		USD inflows (major)		FID by 2025
				I ID by ZUZU
		USD inflows (moderate)	2	
Next Two Rovuma LNG Mega-Trains (Area 4)		USD inflows (major)	21	
		USD inflows (major)	20	
Additional Golfinho Train (Area 1)		USD inflows (major)	7	
			-	
		USD inflows (najor)	5	
Total Capex			128	
			120	

By 2024, Mozambique should have operational 4 onshore LNG trains and 1 FLNG ship. We expect 4 additional onshore LNG trains could be operational by 2029/2030, partly driven by the underlying **EPCC/Decree Law** requirements. This will trigger a second wave of Domgas projects.

Source: Standard Bank





COMMERCIAL OBSERVATIONS 1/2





South Africa ("SA") has purchased natural gas (through Sasol) from Mozambique since 2004. Note a piped gas deal for what would otherwise be "stranded gas" is significantly different from a LNG project (for which there is a USD-denominated, largely oil-linked, increasingly liquid, global market).



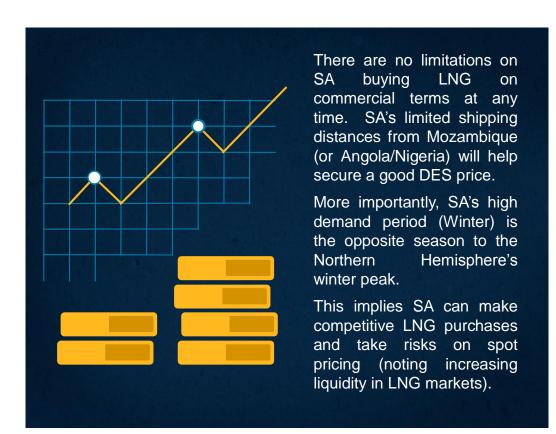
The Decree Law does not discuss regional (non-Mozambican) natural gas export projects. Clause 9.4 favours industrial projects in Mozambique (national benefication), with Fertiliser, GTL, IPPs, MTO etc expected to receive Domgas.

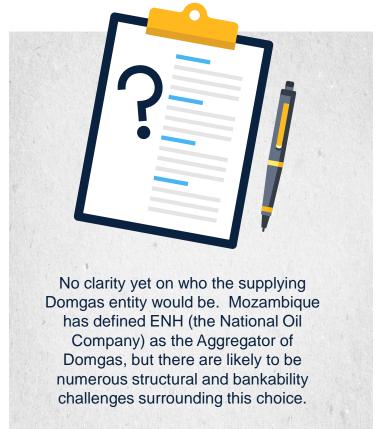
GOM does not own the gas. It is owned by the Concession for the EPCC term. GOM entitlement is: PPT; negotiated Domgas; and in the future (e.g. after 7 years or so), Profit Petroleum. The latter can be taken in kind per the EPCC but will be limited by project SPA commitments under long-term SPAs.



COMMERCIAL OBSERVATIONS 2/2







DISCUSSION SA DELIVERED EX SHIP ("DES") LNG PRICING





Audience – multiply oil USD bbl * 17.4% for gas equivalent, or multiply USD MBTU by 5.75 for bbl price.



US LNG can be delivered to SA at USD 37 BOE. Assuming Crude Oil (Brent) is USD 70 bbl, Importing Diesel to SA costs USD 77-80 bbl

US LNG (USD MBTU)

Upstream 2.75 (2.50 Henry Hub ("HH") * 115%). HH 2.53 and falling as Permian increasingly pipe connected

Liquifaction 2.50 Shipping 1.25

Total 6.50 (add 0.60 Regas so total 7.10 for gas to power ("GTP"))

Mozambique (USD MBTU)

LNG FOB 6.82 (10.5% Brent at USD 65 bbl, centred upon Asian destinations)

Shipping 0.25

Total 7.07 (0.60 Regas so total 7.67 total for GTP

One uncertainty is the **5.2 MTPA Angola LNG's commercial position** assuming **long-term adequate feedstock**, with a SA shipping distance **little more than Mozambique**. The **22 MTPA** Nigeria LNG also has a shorter shipping distance than USA. Given Atlantic Basin competition, SA is not likely to be **the first market of choice for Mozambique's LNG**

PIPELINE DISCUSSION



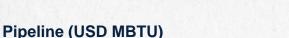
Distance between Rovuma Basin and SA (Gauteng/Richards Bay) is **c 3000 kms.**



Initial combined PPT and Domgas (c 350 MSCFD) likely to be consumed by Domgas projects located in Mozambique. Next LNG trains unlikely to be online until 2029 or so, with associated higher Domgas that could supply SA.



Piped gas is higher credit risk than LNG (tramline nature) and needs to be competitive for Seller and Buyer with the alternative of importing LNG (recall, SA is an export destination from Mozambican perspective who could be sold LNG)



Upstream 4.42

Pipeline 2.68 (20% premium to LNG Canada pipeline)

Shipping/Regas 0.00 **Total 7.10**



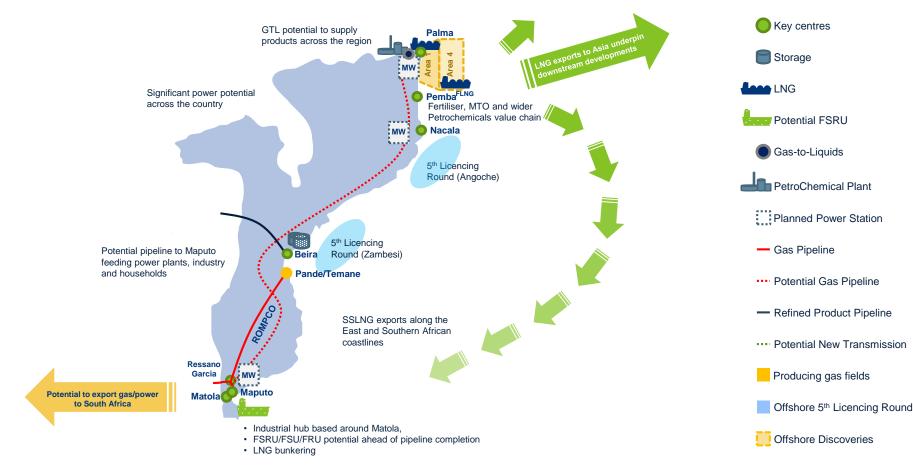
As example, a crucial question is whether the Concessionaires would **sell deep offshore natural gas targeted for SA** at **USD 4.42** when they can sell the same quantities as LNG for **6.82** (in this example). 1 Bcf/d = 1000 MW CCGT = 1 LNG train.

Who is **funding** an **USD 6-8bn pipeline?**

Further, Mozambique will drill exploration wells in the **Angoche and Zambesi basins c 2020,** both of which are significantly nearer to SA and the existing ROMPCO pipeline. **What happens if they find gas?**

POTENTIAL DEVELOPMENTS FUELLED BY LNG & DOMGAS









KEY NUMBERS (1/2)





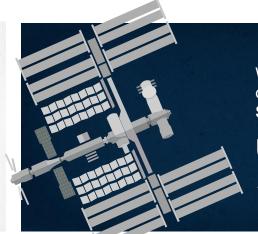
USD 65bn

of **FIDs** by 3Q 2019 in a **USD 14bn GDP** (with 100% external debt to GDP)

World's most expensive object: **Gorgon LNG**



USD 54bn



World's most expensive object *ever*. **International Space Station**

USD 100bn

...but it is in the sky



From 2019, the **Afungi site, with**

USD 55bn FIDs

will be the world's most expensive real estate since time began, and will be a building site for the next decade.



The overall

USD 128bn

investment is scheduled to take place in a provincial **GDP** of **USD 550m**.

The only Cabo Delgado parallel we can think of is Guangdong Province, China (USDbn) (13% p.a.)



1978 GDP – 11

2017 GDP - 1,332

KEY NUMBERS (2/2)



Assuming both **onshore LNG FIDs**:



FOLLOW-ON OPPORTUNITIES (1/3)

This feeds onto major opportunities across the:



Power & Infrastructure



Consumer



Agricultural



Industrial



Services



Transportation

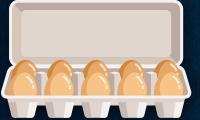


Financial Services





A major greenfield value chain must be created in a remote area from a standing start. As one example, to build four (4) LNG trains in parallel needs among others:



2 million

eggs a month to feed the workers, thus



60,000

(not for eating) chickens laying **1.2 eggs** per day

FOLLOW ON OPPORTUNITIES (2/3)





Despite the distance to Cabo Delgado, SA is Mozambique's neighbour and has an **established and deep trading relationship**, with a shared struggle heritage. There multiple direct flights between Johannesburg and Mozambique as well as good road connections to Maputo. There is also **significant existing investment by SA into Mozambique**.

The scale of the LNG / Domgas opportunity offers many opportunities for SA business:



1. **SA exports of goods and services**. For example, the SA ECIC is involved in the MLNG financing and SA DTI has been closely involved in the process. Why? A USD 128bn capex spend over a decade is a major opportunity for SA business to physically supply the projects (and associated investments).



2. **SA investors forming Mozambican companies** (including joint ventures with Mozambique nationals) to invest in, contract for and supply the LNG/Domgas investments and ensuing expenditure. Public domain, MLNG has a local content spend of USD 2.5bn and RLNG USD 3bn. Extrapolated forward, the long-term LC number could be USD 20bn (across LNG and Domgas projects).



3. **SA Human Capital** working on the LNG projects and ensuing Domgas investments, as employees, contractors, manufacturers, service providers, consultants etc.

FOLLOW-ON OPPORTUNITIES (3/3)

From a human perspective,



a Mozambican child born in

2015



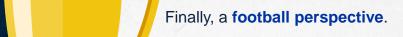
will have a completely different life opportunity than one born in

1975





From a country perspective, there are also **regional geo-political** and **commercial implications**, in terms of Mozambique's relations with its neighbours.



In 2022, Qatar will host the World Cup, 26 years after First Gas, awarded only 14 years from First Gas.

Will Mozambique apply for the World Cup in the mid 2030s and host it in 2046 or 2050?

BUILDING A PARTNERSHIP





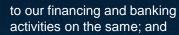
Standard Bank believes it has an unrivalled client and country understanding and industry and banking skill set to help you as the Mozambican LNG, Gas and wider economic opportunity evolves.



As evidence, we quote our **Mozambique LNG**, **Rovuma LNG** and **Afungi GTL Studies** (landmarks in African economic development); our leading involvement in Coral FLNG and current LNG project banking and financing involvement

Through the below pictures, we would wish to evidence how:

Standard Bank links our Macroeconomic Studies to clients' projects;







in turn their surrounding communities, where as an African universal financial services organisation we serve their needs.





Thank You

paul.eardley-taylor@standardbank.co.za

+27117217829