ABIS Energy

Guyana Updates

Exploration & Production (E&P)

Power System incl Gas to Power (GtP)

June 2022

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Guyana E&P - Power System Update May 2022

Introduction

ABIS energy has been involved with Guyana and the Oil and gas story since 2018. Our initial engagement was with the Guyana High Commission in London, the then High Commissioner Hamley Case. We sponsored the twinning of the cities Aberdeen and Georgetown, partnerships between the city chambers, educational links and we have longstanding relationships with XOM and the Global Supply Chain. We are members of the Caribbean Council and engage with UK and International Agencies.

It is now the end of May 2022; Guyana sits with proven resources of 10bn boe and counting.

This has been a good news story, a USD $3,6bn economy dominated, as it was then, by Mining, Services and Retail is in the process of transforming itself into a Petro Economy, the Guyana GDP is projected to trend around USD $4.50bn in 2022,

ABIS Energy in partnership with Energy Voice published the Guyana Playbook Q1 2021. We are publishing an E&P update Q2 2022

The publication of the Guyana E&P update is timely. Whilst Offshore Guyana is the global E&P hotspot, elsewhere in the globe there is anything but certainty.

To date, Transition and Net Zero have bypassed Guyana, all the focus is on E&P. This is unlikely to continue indefinitely.

The global energy economy has struggled with the loss of demand during the COVID epidemic. Coming out of COVID, the lack of capacity and resources in the developed economies has meant that demand is hit and miss.

The Russian invasion of Ukraine has severely disrupted the downstream energy markets, particularly the gas market. In addition to Net Zero and Transition there's a new kid on the block. Energy Security has become the principal source of concern for developed economies.

Investment in Oil & Gas in 2014 was $800bn pa. In 2020 it was $400bn pa. Securing international investment for O&G projects against a backdrop of planned reduction in hydrocarbon reliance and the firming up of transition targets should be a matter of concern.

Guyana; Transition Net Zero Energy Security

The commitments made by many Governments, to the Energy Transition and Net Zero require major reductions in the oil and gas consumption. Organisations such as the International Energy Agency (IEA) have projected dramatic decreases with the consequence that future oil and gas prices would fall very substantially.

Currently power generation and distribution in Guyana is deconstructed. The most significant development for the near future is the Liza Gas to Power Project. This project has the capacity to integrate offshore production, product processes, transport and products to power.

Investors in long-term projects in Guyana need to consider the risks. Environmental issues relating to climate change are likely to become increasingly important. Risks relating to security of supply will be important in the short- and medium-term. Investors have to demonstrate that they are being proactive in pursuing projects in the oil and gas sector, in renewables and CCS.

F J Kiernan

June 2022

Guyana E&P
Update May 2022

News

ExxonMobil has received approval for four projects;

Liza Phase 1 is producing approximately 130,000 bpd FPSO Liza Destiny

Liza Phase 2 is producing working towards its capacity of 220,000 bpd FPSO Liza Unity

Payara is scheduled to begin production at the end 2023 with a capacity of 220,000 bpd FPSO Prosperity FPSO (under construction)

Yellowtail production capacity 250,000 bpd FPSO ONE GUYANA expected to come on line 2025.

Latest discoveries

Exxon's new discoveries were made at the Barreleye;

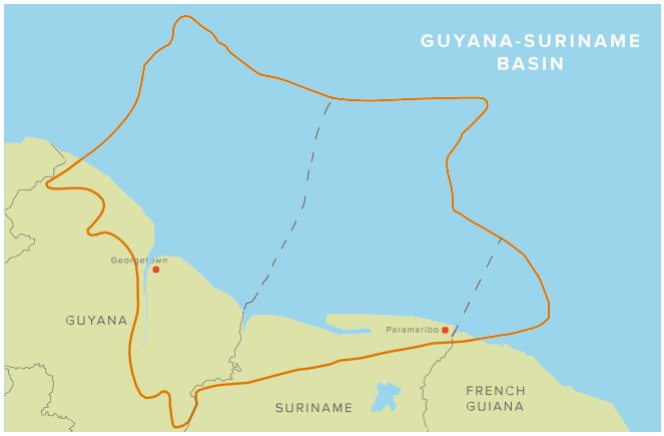
The Barreleye-1 well encountered approximately 230 feet (70 meters) of hydrocarbon-bearing sandstone drilled at 3,840 feet (1,170 meters).

Patwa-1, encountered 108 feet (33 meters) of hydrocarbon-bearing sandstone drilled at 6,315 feet (1,925 meters).

Lukanani-1 well encountered 115 feet (35 meters) of hydrocarbon-bearing sandstone drilled at 4,068 feet (1,240 meters).

Guyana E&P Update

Geology

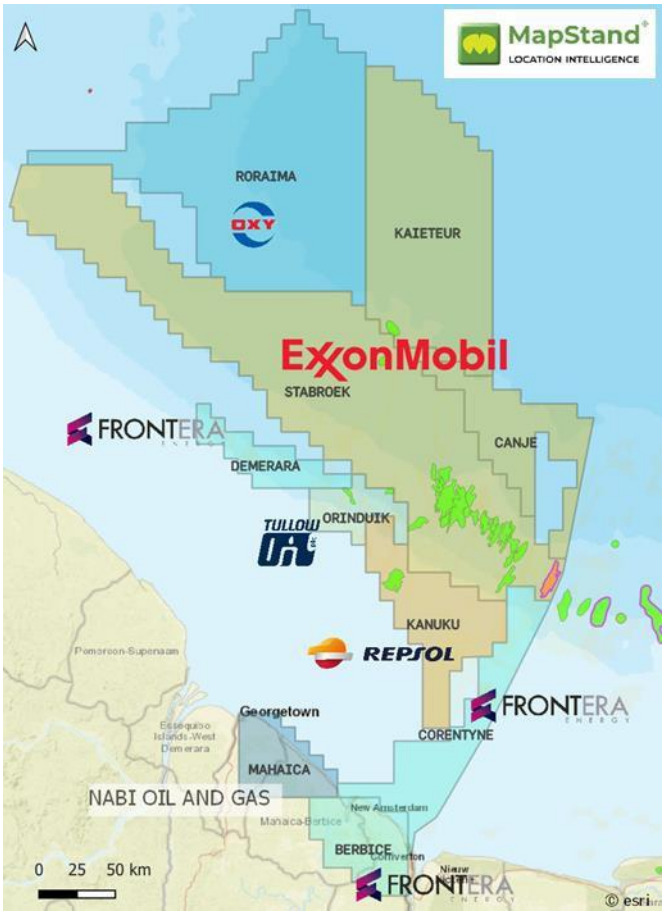


Although oil companies have been searching for hydrocarbons in Guyana since 1916, and offshore since the late 1950s, exploration efforts widely disappointed until 2015, when ExxonMobil made its world-class deepwater Liza discovery. Liza paved the way for a string of subsequent finds, both in Guyana and in neighbouring Suriname, who share the Guyana-Suriname sedimentary basin within which the discovery sits.

The Guyana-Suriname Basin is a circa 350,000 km² half-graben Atlantic-margin basin, geologically analogous to offshore West Africa. The Canje formation, which provides the basin's principal source rock, is in a mature position. The main reservoir targets are Upper Cretaceous and Lower Tertiary basin floor fans, shelf- margin deposits and turbidites directly overlying the source.

The basin had been known to be petroliferous for many years despite the lack of commercial discoveries, and the USGS, in its 2000 World Petroleum Assessment, rated it as the second most prospective unexplored basin in the world. Its latest undiscovered resource assessment, carried out in 2012, estimated the basin contained 13.6 bn barrels of risked, technically recoverable conventional oil, 32 billion cubic feet (bcf) of gas (around two-thirds associated), and 863 million boe of natural gas liquids (NGLs). S&P Global Platts had reported that the agency expected to re-evaluate the basin's undiscovered resource estimate in 2020, but that now appears to have been delayed.

Guyana has a separate, smaller sedimentary basin onshore – the Takutu graben basin – which has been barely touched since the early 1990s.



Key Players

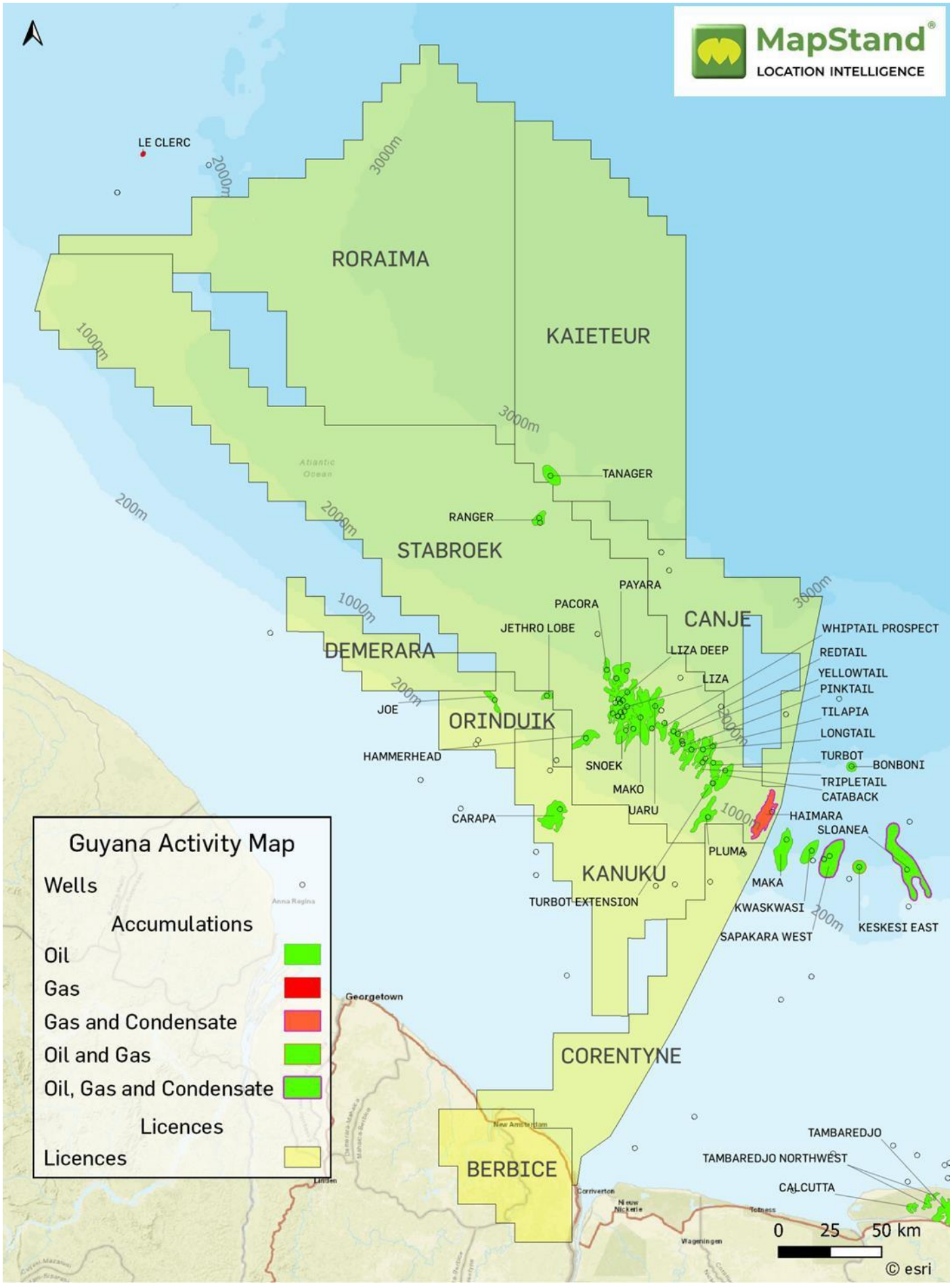
Guyana's offshore exploration picture is dominated by a handful of companies with overlapping interests and partnerships, spanning both sides of the Guyana-Suriname border.

The Guyanese half of the Guyana-Suriname Basin is dominated by ExxonMobil, which is highly active and has operator rights on the majority of the country's deepwater and ultra-deepwater acreage across three blocks – Stabroek, Kaieteur and Canje. It is partnered variously with Hess, CNOOC, Total, Ratio Energy, Cataleya Energy, JHI Associates and Mid-Atlantic Oil and Gas.

Tullow Oil is operator on the Orinduik Block, which sits on the continental slope, and a partner in the neighbouring shallow water Kanuku Block, where Repsol is operator. Total has stakes in both, in addition to its share in ExxonMobil's Canje block. Eco Atlantic has a stake in Tullow's Orinduik block. It was reported in July 2019 that Qatar Petroleum had acquired a 40% stake of Total's interest in the Orinduik and Kanuku blocks, although the new government is still in the process of approving the change.

CGX Energy is operator on the Demerara and Corentyne blocks (partnered with Frontera), and on the onshore Berbice block (via ON Energy), while Occidental (previously Anadarko) has the ultra-deepwater Roraima block – although CGX has not drilled any wells since 2012 and Anadarko paused all activity in 2013.

Discoveries



Stabroek Block (ExxonMobil)

Announced	Discovery	Drillship	Water Depth (m)	Total Depth (m)	Net Pay (m)	Reservoir Type	Play Targeted
20-May-15	Liza	Stena Carron	1,743	5,433	90	Sandstone	Cretaceous
12-Jan-17	Liza Deep	Stena Carron	-	-	-	-	Cretaceous
12-Jan-17	Payara	Stena Carron	2,030	5,512	29	Sandstone	Cretaceous
30-Mar-17	Snoek	Stena Carron	1,563	5,175	25	Sandstone	Cretaceous
05-Oct-17	Turbot	Stena Carron	1,802	5,622	23	Sandstone	Cretaceous
05-Jan-18	Ranger	Stena Carron	2,735	6,450	70	Carbonate	Cretaceous
28-Feb-18	Pacora	Stena Carron	2,067	5,597	20	Sandstone	Cretaceous
20-Jun-18	Longtail	Stena Carron	1,940	5,504	78	Sandstone	Cretaceous
30-Aug-18	Hammerhead	Stena Carron	1,150	4,225	60	Sandstone	Tertiary
03-Dec-18	Pluma	Noble Tom Madden	1,018	5,013	37	Sandstone	Tertiary
06-Feb-19	Haimara	Stena Carron	1,399	5,575	63	Sandstone	Cretaceous
06-Feb-19	Tilapia	Noble Tom Madden	1,783	5,726	93	Sandstone	Cretaceous
18-Apr-19	Yellowtail	Noble Tom Madden	1,843	5,622	89	Sandstone	N/A
12-Aug-19	Jethro	Stena Forth	1,350	4400	55	Sandstone	Tertiary
16-Sep-19	Tripletail	Noble Tom Madden	2,003	N/A	33	Sandstone	N/A
16-Sep-19	Mako	Noble Don Taylor	1,620	N/A	50	Sandstone	N/A
16-Sep-19	Joe	Stena Forth	785	2,175	14	Sandstone	Tertiary
23-Dec-19	Mako	Noble Don Taylor	1,620	N/A	50	Sandstone	N/A
27-Jan-20	Uaru	Noble Tom Madden	1,933	N/A	29	Sandstone	N/A
08-Sep-20	Redtail	Noble Don Taylor	1,878	N/A	70	Sandstone	N/A
17-Nov-20	Tanager	Stena Carron	2,887	7,633	70	Sandstone	Cretaceous
07-Oct-21	Cataback	Noble Tom Madden	1,806	N/A	74	Sandstone	N/A

Kaieteur Block (ExxonMobil)

Announced	Discovery	Drillship	Water Depth (m)	Total Depth (m)	Net Pay (m)	Reservoir Type	Play Targeted
17-Nov-20	Tanager	Stena Carron	2,900	7,633	16	Sandstone	Cretaceous

Orinduik Block (Tullow Oil)

Announced	Discovery	Drillship	Water Depth (m)	Total Depth (m)	Net Pay (m)	Reservoir Type	Play Targeted
12-Aug-19	Jethro	Stena Forth	1,350	4,400	55	N/A	Lower Tertiary
16-Sep-19	Joe	Stena Forth	780	2,175	14	N/A	Upper Tertiary

Kanuku Block (Repsol)

Announced	Discovery	Drillship	Water Depth (m)	Total Depth (m)	Net Pay (m)	Reservoir Type	Play Targeted
02-Jan-20	Carapa	Valaris EXL II	68	3,290	4	N/A	Cretaceous

Stop Press

28-Jul-21	whiptail	Stena Drillmax	1,795		75	Sandstone	N/A
05-Jan-22	Lau Lau	Noble Don Taylor	1,461	5,504	78	Sandstone	N/A
05-Jan-22	Fangtooth	Noble Don Taylor	1,838		50	Sandstone	Cretaceous
26-Apr-22	Barreleye	Noble Don Taylor	1,170		70	Sandstone	N/A
26-Apr-22	Lukanani	Noble Tom Madden	1,240	N/A	35	Sandstone	N/A
26-Apr-22	Patwa	Noble Sam Croft	1,925	N/A	33	Sandstone	N/A

Block Developments

Operator	Block	Overview
ExxonMobil via **Esso Exploration and Production Guyana Ltd (EEPGL)**	**Stabroek Block** ExxonMobil 45% Hess 30% CNOOC 25% Deepwater and Ultra-deepwater	• Significant and repeated successes in the Stabroek block have single-handedly spurred the current interest and optimism surrounding the Guyanese oil industry. • The Liza discovery there (in May 2015) was the first of the modern exploration era in Guyana. ExxonMobil and its partners have since made a further 17 discoveries in the block, drilling just two dry wells in the process. • ExxonMobil's latest recoverable resource estimate for discoveries on the block is 8 bn boe (excluding the 2020 Uaru, Yellowtail-2 and Redtail discoveries), with an 80:20 oil to gas ratio. • Most of the discoveries have been in the Cretaceous play and comprise light, sweet oil. The Haimara discovery near the Suriname border was gas-condensate. • The partners have approved three projects to date – Liza Phase 1 (120,000 bpd, production started December 2019), Liza Phase 2 (220,000 bpd, first oil planned mid-2022, on schedule) and Payara (220,000 bpd, first oil planned 2024). At least two more will follow, to meet a 750,000 bpd output target for 2026. • Liza production has fluctuated during 2020 because of technical challenges regarding the platform's gas reinjection system. Output fell to an average 63,000 bpd in Q3 2020, but is expected to hit its 120,000 bpd peak in December. • The block's PSA was renegotiated under the previous government in June 2016, but is still generally considered favourable. The government receives a 2% royalty on sales and a 50% take on profits, adjusted for recoverable costs. The partners pay a $1m annual licence rental charge.
	Kaieteur Block ExxonMobil 35% Ratio Petroleum 25% Cataleya Energy 25% Hess 15% Ultra-deepwater	• A 3-D seismic survey covering an area of 5,750 km^2 was completed in 2017, with several prospects identified. • The first of these to be drilled was the ultra-deepwater Tanager-1 well in the south of the block in August 2020. In water depths of around 2,900m, it is Guyana's deepest well to date. • ExxonMobil revealed in November that Tanager-1 had struck hydrocarbons, but that it did not appear to be financially viable on its own.
	Canje Block ExxonMobil 35% Total 35% JHI Associates 17.5% Mid-Atlantic Oil and Gas 12.5% Ultra-deepwater	• A 3-D seismic survey covering an area of 6,100 km^2 was completed in 2016. • The partners have not yet drilled any wells on the block, but aim to drill the Bulletwood prospect in the north-west of the block this year. • Jabillo, nearby, and Sapote, in the east of the block near the Suriname border, may follow in 2021.

Tullow Oil	**Orinduik Block** Tullow 60% Total 25% Eco Atlantic 15% Variable Water Depths (70-1,400m)	• Tullow and its partners drilled their first two standalone prospects on the block in 2019 – Jethro and Joe. • Both wells targeted the Tertiary play, despite most of ExxonMobil's finds on the neighbouring Stabroek block being in the Cretaceous. • The Hammerhead discovery on the Stabroek block (also Tertiary) likely extends into the Orinduik. • Jethro encountered more oil than previously expected, but oil from both discoveries was heavy and sour. Neither discovery is currently commercial. • The partners have already met all commitments under their 2016 PSA for work on the block to 2026. • Tullow has turned its attention to Suriname for now, and will drill the Goliathberg-Voltzberg North well in Block 47 there in early 2021.
Repsol	**Kanuku Block** Repsol 37.5% Tullow 37.5% Total 25% Shallow Water	• Repsol and its partners drilled the Carapa prospect in late 2019, soon after Tullow's uncommercial discoveries in the neighbouring Orinduik block to the north. • Unlike Jethro and Joe in the Orinduik, Carapa targeted the seemingly prolific Cretaceous play. • The well encountered light, sweet oil (27° API, <1%sulphur), but volumes were well below pre-drill estimates (only 4m net pay) and reservoirs were poorly developed. The partners have plugged and abandoned the well. • The block's PSA was signed in May 2013 and revised in May 2016, ahead of 3-D seismic in 2017.
CGX Energy	**Corentyne Block** CGX Energy 66.7% Frontera Energy 33.3%	• CGX originally acquired the block in 1998 and drilled two disappointing wells – Horseshoe West in 2000 and Eagle-1 in 2012. • Since then, drilling has been delayed repeatedly, although funding for a well has reportedly been secured. • Most recently, CGX renegotiated a commitment to drill by 27th November 2020, pushing it back by a year to 27th November 2021. • The partners' current focus is on a relatively small area (582 km^2) in the north of the block, closest to ExxonMobil's discoveries, where they completed 3-D seismic in November 2019. Preliminary evaluation of that data has reportedly identified two highly prospective prospects in the area.
	Demerara Block CGX Energy 66.7% Frontera Energy 33.3%	• CGX originally acquired the block in 2001, and had a new exploration license issued in 2013. • It shot 3,100 km^2 of 3-D seismic in 2014 and identified four main prospects. • But the company is currently renegotiating a commitment to drill its first well on the block by 12th February 2021.
	Berbice Block (Onshore) ON Energy joint venture CGX Energy 62% Local, Private Investors 38%	• CGX originally acquired the block in 2003, and drilled three dry wells in 2005 and 2006. It had a new exploration license issued in 2013. • The company is renegotiating commitments to complete a seismic survey by 12th February 2021 and drill an exploration well by 12th February 2023.
Occidental (Anadarko)	**Roraima Block** Occidental (Anadarko) 100% Ultra-deepwater	• Work has been suspended on the block since 2013, when the Venezuelan navy detained a ship conducting a 2-D seismic survey for Anadarko in contested waters.

E&P Outlook and Opportunities

Production outlook

ExxonMobil's most recent recoverable resource estimate, made in January 2020, stands at 8 bn barrels of oil equivalent (boe). This estimate will certainly rise as this year's Uaru, Yellowtail-2 and Redtail discoveries are added, and as further discoveries are made.

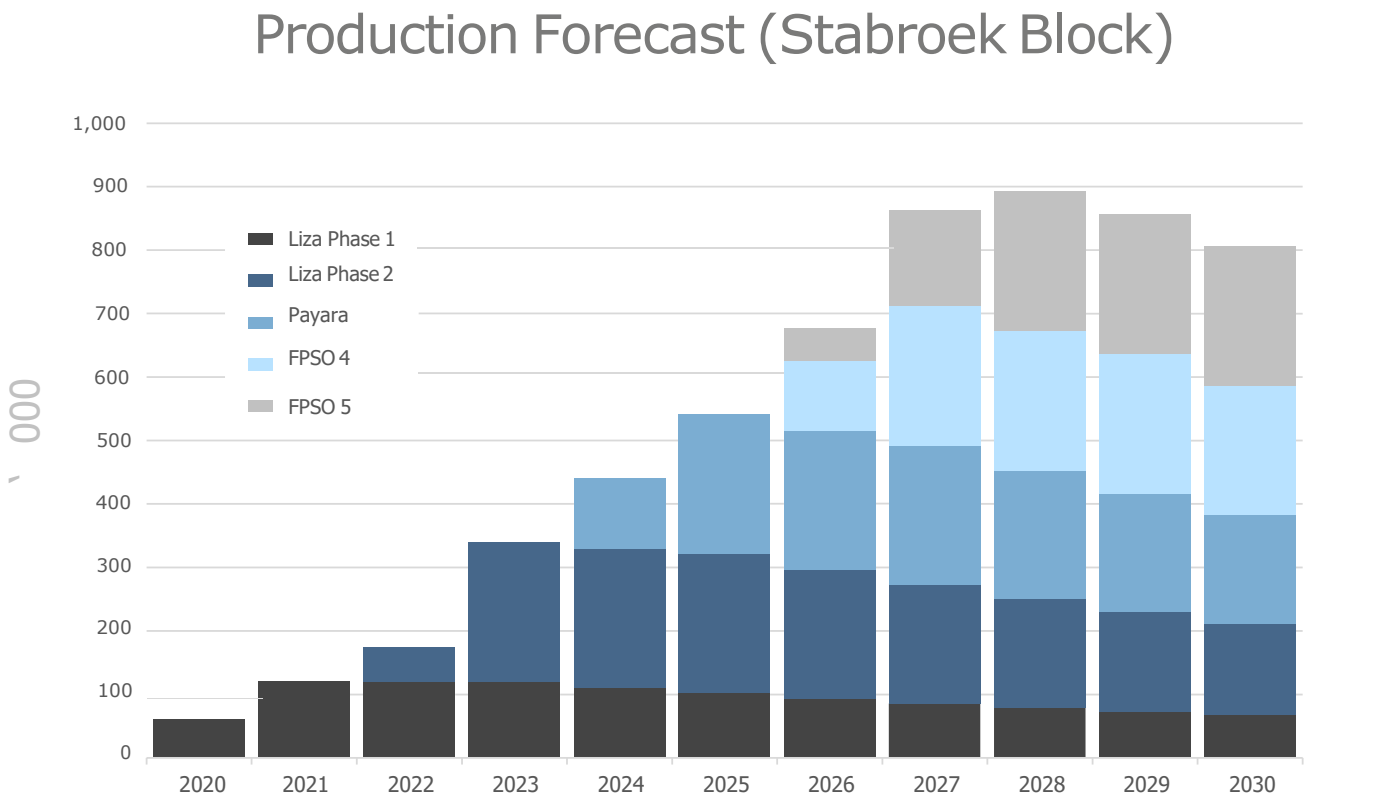
The company and its partners have targeted 750,000 bpd from five FPSOs on the Stabroek block by 2026. With Liza Phase 1, Liza Phase 2 and Payara all expected to be online by 2024, two more projects will need to be approved over the next year or two to meet this target. Hammerhead is understood to be one of the next in line after Payara. Longer-term, production from the Stabroek block could be approaching 900,000 bpd by 2028, representing around 1%of the global oil market. Close to 200 production wells could to be drilled by 2030, and production from Guyana as a whole could be closer to 1 million bpd.

The pace of exploration and development activity in Guyana has already been affected by coronavirus (COVID-19) related logistical constraints, and will be further hit by the stresses currently being felt in the global E&P business environment. Upstream companies are moving quickly to pare discretionary capital spending (in many cases led by deep cuts to exploration programmes) to survive these challenges.

ExxonMobil's capital commitments, however, appear firm. Despite cuts elsewhere, the company has said it is committed to a 10-year plan in Guyana, including a capex spend of $35bn to build, install and produce from five FPSOs. In this spirit, the company and its partners approved the $9bn Payara project as recently as September 2020.

The impact of capex cuts will more likely be felt elsewhere – particularly among those that are less advanced in their exploration/appraisal work. Tullow, for example, has said that it is unlikely to drill in Guyana in 2020 or 2021, following disappointingresults bothinsideandoutsidethecountry–although it will drill in Surinameearlynextyear. CGX, meanwhile, has been renegotiating its commitments in all three of its blocks, ostensibly due to COVID.

The core reality is that Guyana's world-class offshore oil and gas resources require considerable exploration and appraisal budgets, and only major IOCs, national oil companies (NOCs) or first-tier independents can afford the requisite level of exposure to contingent developments. Companies with available resources – including Total, which is partnered with several different operators both in Guyana and across the border in Suriname — could seize the opportunity to move more aggressively in the basin.



Market for Oil and Gas Produced

Crude oil from Liza, the only field currently online, is produced via the Liza Destiny FPSO vessel and offloaded directly onto VLCC tankers for global markets. Associated gas will be reinjected for enhanced oil recovery (EOR) once the Liza reinjection system has been fully commissioned later this year – although there are longer-term plans to bring Stabroek gas ashore. Liza crude oil has been exported, in million-barrel consignments, to China, Aruba and the US, among others.

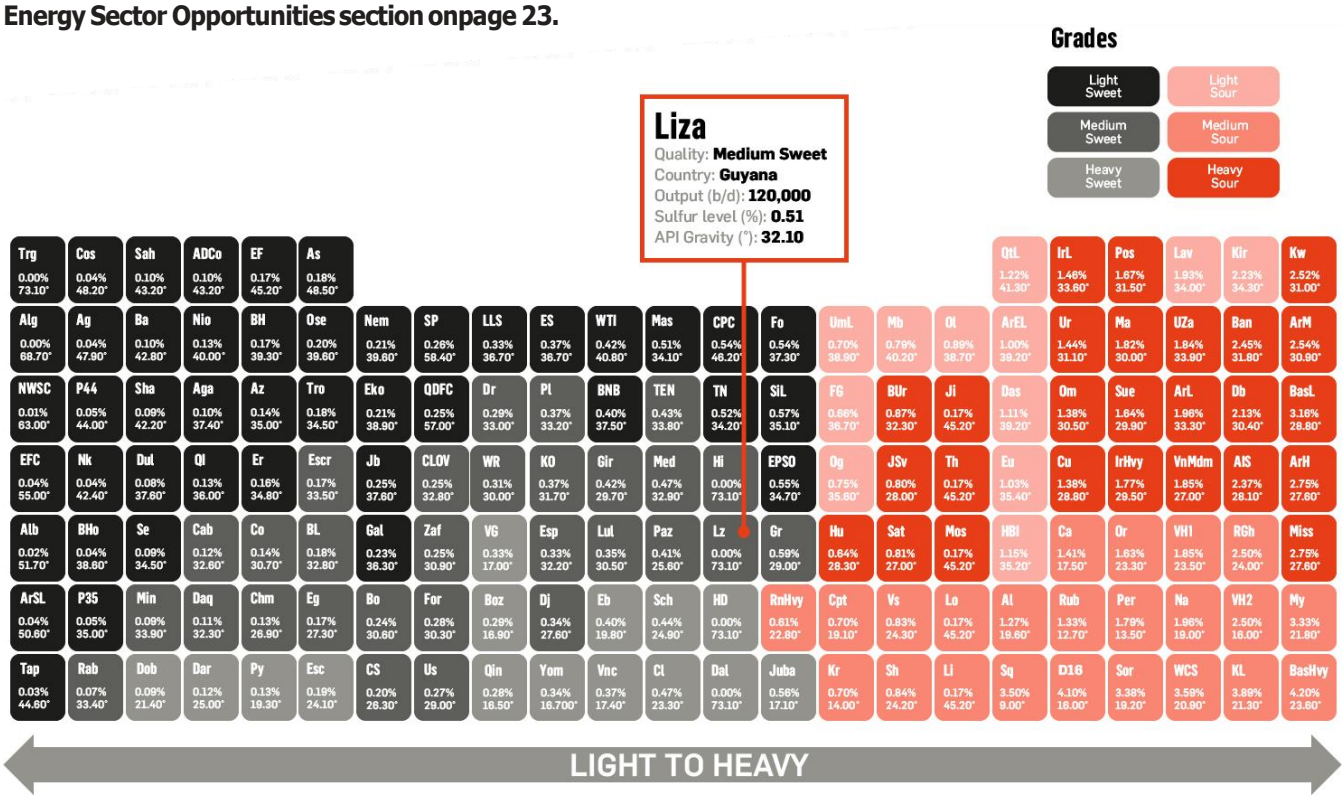
The consortium partners market their crude under separate trading arrangements, which are subject to transportation and lifting schedules. In 2019, ExxonMobil sold its first three cargoes to Royal Dutch Shell via tender. Likewise, CNOOC has been selling its cargoes separately, as is Hess and the Guyanese government's stake. In August 2020, Guyana sold its third million-barrel cargo through a contract with Shell Western Supply and Trading Ltd, according to media reports. A fourth million-barrel cargo is expected in mid-December and the government is currently reviewing bids from 29 companies tomarket that and future cargoes.

Liza crude is light and sweet, with an API gravity of 32.1° and a sulphur content of 0.51%, according to assay information published by ExxonMobil. This makes it very attractive for refineries in Europe, China and wider Southeast Asia and the US Gulf Coast. Guyanese crude seems particularly well placed to replace relatively costly West African sweet to medium sour crudes in US Gulf Coast refineries. West African crudes with an API gravity range of 28-36° have decreased in the US by 60% since 2016 owing to dearer freight rates, according to IHS Markit analysis.

The vast majority of discoveries in Guyana fit this broad profile and will find a market – but not all. The heavier, sour crudes that Tullow recovered from the Jethro and Joe discoveries in the Orinduik block are not currently commercial, although it remains to be seen whether a gap in the market will emerge for heavier crudes over the medium term.

Itis possible that, as production grows, Guyanese crude could one day berefined locally. However, the business case for a local refinery seems tenuous, and the focus is likely to remain very much on crude export markets. More information on potential refining and natural gas opportunities can be found in the Other Energy Sector Opportunities section onpage 23.

Liza crude competes favourably with global crudes



Source: Adapted from Platts Periodic Table of Oil (2020)

Future exploration, bidding rounds and farm-in opportunities

Exploration has continued in 2020 – albeit at a slower rate than planned, owing to the challenges of rotating crews during the COVID-19 pandemic. Although there is likely to be a longer-term impact on exploration as E&P budgets are reined in, drilling programmes have not been cancelled and ExxonMobil has reconfirmed its commitment to the basin.

Since the Guyana-Suriname basin remains prospective, it would benefit from further exploration efforts in the form of more advanced geophysical surveys and holistic reinterpretation of the resource potential. Onshore exploration/ appraisal could be feasible for smaller energy companies, including domestic Guyanese enterprises.

To date, exploration contracts have been awarded on an ad hoc basis. Under the previous government, production agreements were signed, amended or renegotiated for the Stabroek, Orinduik and Kanuku blocks. The most recent PSAs in all of Guyana's blocks have tended to take the form of an initial four-year licence period with two subsequent three-year renewal periods. In broad terms, contracts have tended to stipulate that 3-D seismic be carried out and 2-3 wells be drilled over the 10-year period.

The previous government's renegotiation of ExxonMobil's Stabroek block PSA in 2016 has met with some criticism from both inside and outside the country from observers that believe it to be somewhat generous, considering the scale of resources discovered. Under that renegotiated contract, Guyana receives a 2% royalty on sales and a 50%take on profits, adjusted for recoverable exploration and production costs.

The newgovernment has indicated that there will be no immediate renegotiation of contracts signed under the old regime. But it is highly likely that any future contracts will contain improved fiscal terms for the state, reflecting not only the political mood but also the improved prospectivity of the basin and lower risk for IOCs. This will be particularly relevant when the government starts adopting open competitive bid rounds for the award of oil blocks, or if any acreage becomes fallow or is relinquished and is re-allocated. A large part of Guyana's seemingly most prospective acreage has already been leased – but most of the PSAs require the partners to relinquish 20% of the blocks' acreage at the start of the first and second renewal periods (ie after four and seven years). Repsol, for example, relinquished part of the Kanuku block when it entered its second extension period earlier this year, and CGX has recently submitted applications to relinquish parts of the Demerara, Berbice and Corentyne blocks.

In the meantime, the basin is highly likely to witness farm-ins and merger and acquisition (M&A) activities over the next five years. These will be driven on the one hand by operator cost reduction considerations and on the other by the inability of smaller independents to raise the necessary financing to carry out or meet their contractual work obligations/requirements – a trend likely replicated across a post-COVID-19 world. Given the largely deep and ultra-deepwater nature of Guyana's most prospective exploration areas, any such M&A activities there are likely to favour the major IOCs or NOCs, with the deep pockets necessary to carry out extensive exploration activities.

> **It is highly likely that future contracts will contain improved fiscal terms for the state.**

Guyana Power System

Guyana Power System

The power system of Guyana is largely supplied by fossil fuel-based power stations using heavy fuel oil for electricity generation and is the most fuel import-reliant economy in the Caribbean region, importing 90% of the required energy from abroad.

90 per cent of the Guyana's energy consumption goes to the electricity sector, industry and mining.

The Guyana Power and Light Inc., a state-owned company, is the main energy provider for the country, and is greatly supported by the current energy legislation, being the only company allowed to provide electricity in the country, having the first right of refusal to any request for distribution to any new area.

Aged transmission and distribution lines throughout the country causes a great loss in the loss of generated power. The development of microgrids and localized power stations localized in the hinterland villages are foreseen as a solution for the abovementioned problems.

Unstable power supply and power cuts are still common in many areas or the country. Although Guyana has significant potential for hydropower generation, this is an undeveloped resource for the country.

All in all there is a real need for new energy sources development in Guyana, and in the last years the Guyana Power and Light state company has put in place tenders in order to develop renewable energy power centrals.

Guyana Gas to Power

The most significant development on the horizon for the Guyana Power System is the Gas to Power Project

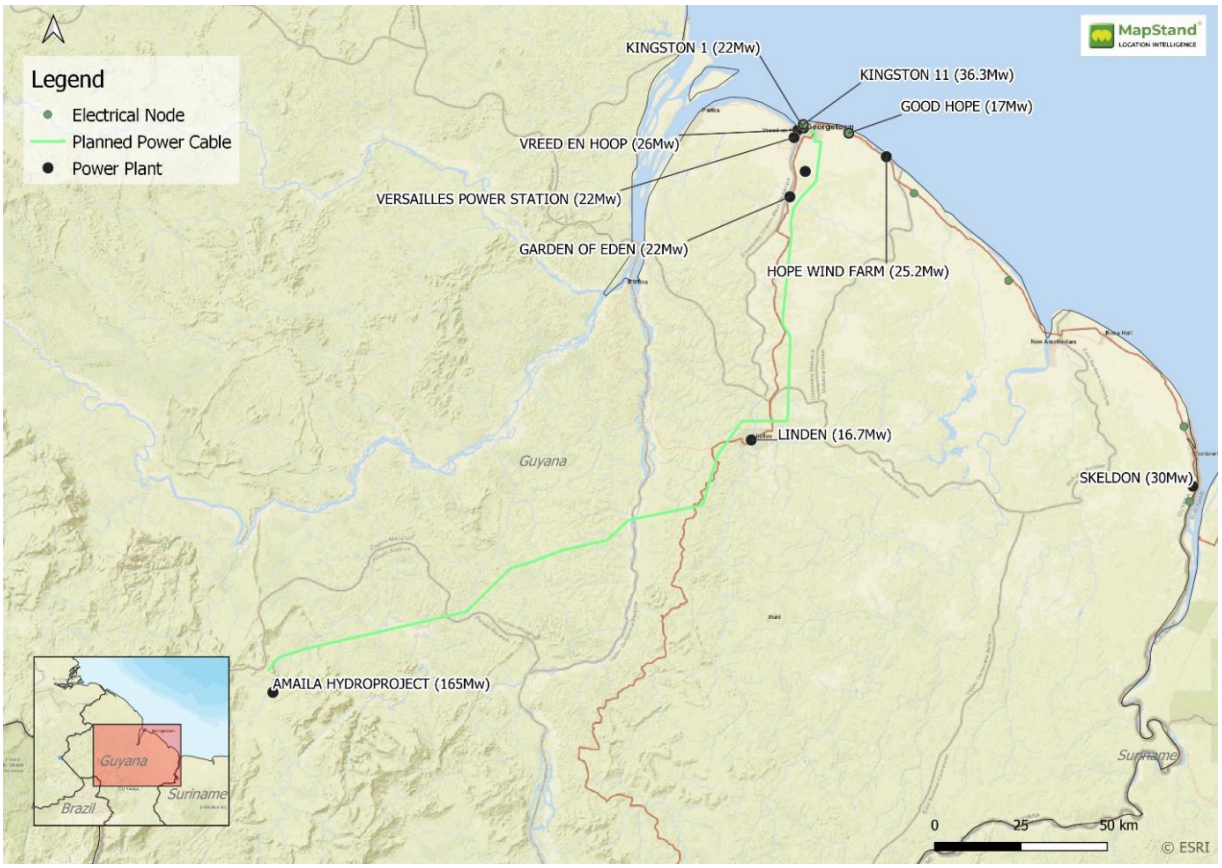
The scope of the project includes a combined-cycle, multi-fuel power plant to generate up to 300MW of electricity. The project will also feature an NGL Fractionator and harvest downstream products such as Ethane Propane and Butane etc

Gas will be exported from Liza 1 via pipeline and land at the Wales development zone. The pipeline will transport about 50 million standard cubic feet of gas per day.

Affordable and reliable power would open up economic opportunities for more manufacturing, agriculture and mining, vital if Guyana is to develop a diversified economy that can outlast its oil resources.

The Govt of Guyana has a target to reduce energy costs to end users by 50%.

The project is scheduled for construction in 2022 and commissioning in 2024.



Renewable Energy

Tax concessions and capital write offs are already in place for wind and solar investments in Guyana.

The Hope Wind Farm is an example of renewable energy projects taking place in Guyana. It is the first wind farm project in Guyana, planned to be constructed in the fourth quarter of 2021. Wind Farm commissioning is scheduled for August 2022. HOPE ENERGY DEVELOPMENT INC is the company developing the project, which will hold 6 wind turbines distributed along the coast, providing with 22.5 Mw of energy nearby communities.

Solar energy is the most widely used renewable energy in Guyana, commonly used by residents to generate electricity for water pumps, and lighting and powering household systems.

Village	Region	No. of households	No. of connections	Average connection capacity (kW/connection)
Santa Rosa	1	1000	29	0.41
Mabaruma	1	500	360	1.39
Port Kaituma	1	432	370	0.59
Lethem	9	500	400	1.25
Mahdia	8	410	n.a.	n.a.

Source: UAEP Hinterland Electrification Study Final Report, Projekt-Consult GmbH

Electricity Supply by Mini-Grids in Selected Communities

International funds are developing renewable energy centrals in Guyana, such as the Mahdia, Bartica, and Lethem solar farms under construction, and two mini hydropower stations. A range of projects have been approved in recent years to develop both the country legislative fabric, as well as the national infrastructure.

Guyana -Renewable Energy (2021). Available at: https://www.trade.gov/country-commercial-guides/guyana-renewable-energy(Accessed: 1 December 2021).

Projects Search | IADB (2021). Available at: https://www.iadb.org/en/projects-search?country=GY&sector=EN&status=&query= (Accessed: 2 December 2021).

(2021) App.mapstand.com. Available at: https://app.mapstand.com (Accessed: 1 December 2021).

(2021) Biblioteca.olade.org. Available at: http://biblioteca.olade.org/opac-tmpl/Documentos/old0073.pdf (Accessed: 2 December 2021).

Guyana -Renewable Energy (2021). Available at: https://www.trade.gov/country-commercial-guides/guyana-renewable-energy(Accessed: 1 December 2021).

Projects Search | IADB (2021). Available at: https://www.iadb.org/en/projects-search?country=GY&sector=EN&status=&query= (Accessed: 2 December 2021).