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A publication of the Energy Chamber of Trinidad and Tobago

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Energy Chamber encouraged by positive response to onshore bid round

The Energy Chamber of Trinidad & Tobago was encouraged by the positive response to the onshore bid round. Eight of the eleven blocks on offer received at least one bid, with a total of sixteen bids from eight different companies.

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Energy Chamber encouraged by positive response to onshore bid round

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(continued)

While the Trinidad and Tobago onshore province represents very mature acreage, the recent exploration success of Touchstone shows that it is still possible to make new finds and develop new fields in this mature setting. Onshore production in mature provinces will typically attract attention from smaller producers, rather than major oil and gas companies, which was the case in this bid round.

The company bidding on most blocks (five) was Primera Oil and Gas, a subsidiary of Touchstone Exploration, which has bid for blocks in central and southeast Trinidad closer to the existing Coho gas field and their Cascadura development. The St. Mary's block, covering over 10,000 hectares across south

Trinidad, received the most bids. The biggest block on offer, Guayaguayare Onshore, covering 30,000 hectares of southeast Trinidad, also received multiple bids.

The sole offshore block offered did not receive any bids, and neither did the two small Cory D and F blocks (which had active oil operations back in the 1930s and 1940s).

The adjustments made to the tax regime by the Minister of Finance in the 2022 national budget and codified in the Finance Act (2) that came into effect this month would have helped make these blocks more attractive to bidders. These were changes which the Energy Chamber has pushed for many years, and we continue to believe that reforms

to the taxation system will help make acreage more attractive and encourage further activity.

This is especially the case as the blocks offered in this bid round are being offered with exploration and production (E&P) licenses, rather than the production sharing contracts (PSCs) favoured in offshore bid rounds. The reduced rates of supplemental petroleum tax (SPT) for new fields and for smaller producers would have positively impacted the projected economics of any oil find in this acreage.

The Energy Chamber takes pride in the fact that our advocacy work on fiscal terms seems to be having a positive outcome on investment levels. Onshore oil and gas exploration, development

and production creates more jobs per unit of oil or gas produced than offshore fields. It also typically has higher levels of local content, meaning that while the total amounts invested are much lower than a big offshore project, a higher percentage of the investment into these developments circulates in the local economy. This also creates economic opportunities for local contractors and local people in rural communities with high levels of poverty.

The tax system is, however, just one variable among many that would have been considered by companies bidding for this acreage. The significant technical work undertaken by the Ministry of Energy and the quality of the data available to bidders

would also have had a positive impact. Finally, the existence of significant markets for natural gas—an unmet demand—is attractive to any explorer who finds gas rich resources.

The Minister of Energy has promised that the licences for these blocks will be issued as early as April 2023. This would represent an accelerated approval process and would be a very welcome development. As the Energy Chamber has repeatedly emphasised, the clock is ticking and we should develop all of our resources as quickly as possible while there is still a market for oil.

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Touchstone announces execution of asset exchange agreement

Staff Writer | Energy Chamber

Touchstone Exploration has announced that its indirect wholly owned Trinidadian subsidiary, Primera Oil and Gas Limited, has entered into an Asset Exchange Agreement for the exchange of certain onshore Trinidad assets with Lease Operators Limited, a privately held Trinidadian entity.

The company has agreed to transfer the Fyzabad, San Francique and Barrackpore blocks, which currently produce aggregate crude oil volumes of approximately 130 barrels per day (bbls/d), in exchange for the Rio Claro, Balata East and Balata East Deep Horizons blocks, which offset the Ortoire block and currently produce aggregate crude oil volumes of approximately 35 bbls/d.

Transaction Highlights

The transaction contemplates swapping producing legacy crude oil fields, which are considered non-core due to limited scalability, in exchange for highly prospective exploration and development acreage contiguous to its Ortoire block.

Acquisition of approximately 28,000 working interest acres, directly offsetting the Ortoire block, allows it to significantly expand development prospects adjacent to our Cascadura and Royston discoveries

The Balata East block has a liquids facility that may potentially be used as a delivery point for future liquids volumes produced at Cascadura and Royston.

The transaction also provides Touchstone access to an 18-kilometre oil pipeline that transects the Ortoire block.

Future potential production from the Rio Claro block is not subject to the current Ortoire block natural gas sales agreement with The National Gas Company of Trinidad and Tobago Limited, with any potential discoveries subject to separate product marketing arrangements.

Transaction Details

Under the Agreement, Touchstone has agreed to swap its operated 100% working interests in the Fyzabad, San Francique and Barrackpore producing blocks for the

counterparty's working interest in the Rio Claro, Balata East and Balata Deep blocks for no cash consideration, with the swap becoming effective upon closing. The Agreement remains subject to certain closing conditions, including receipt of applicable regulatory approvals and an extension of the Rio Claro Exploration and Production (Public Petroleum Rights) Licence (the "Rio Claro Licence"), and is expected to close prior to the end of 2023.

The 100% working interest Balata East block is governed by an Enhanced Production Service Contract with Heritage Petroleum Company Limited ("Heritage") in the shallow horizon that is effective through June 30, 2030. The Balata Deep asset is a 100% working interest in the area identified in the Balata East block from a depth of 5,000 feet downwards with no limit. The Balata Deep block is governed by an Exploration and Production (Public Petroleum Rights) Licence with the Trinidad and Tobago Ministry of Energy and Energy Industries ("MEEI"), where

the initial exploration period expires August 13, 2025. The Rio Claro Licence with the MEEI is currently expired, and an extension through August 2025 is a condition precedent for closing. The Rio Claro Licence is for an 80% operated working interest, with Heritage holding the remaining 20% working interest.

Paul Baay, President and Chief Executive Officer said, "The proposed exchange of assets further high-grades our portfolio as we focus on the Herrera turbidite fairway directly offsetting our Ortoire block in close proximity to our Cascadura discovery. With the technical data that we have reviewed on the three licences, we have identified numerous drilling opportunities that can be incorporated into our infrastructure currently being constructed. A revised map reflecting the proposed transaction can be found in our updated corporate presentation available on our website."

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Increasing gas production and maximising export revenue

Staff Writer | Energy Chamber

In May 2022, the Energy Chamber officially launched a six-point plan to secure new natural gas supplies and maximise exports from Trinidad and Tobago.

Each of the six points represents a major area for action by policymakers and the industry. One major thrust of our advocacy work has focused on pushing forward action in all of these areas. The two other major thrusts are on regional energy services integration and on promoting safety.

Over the past seven months, since we released our six-point plan, we have seen significant progress in all of these areas, though in many cases these are just the first steps in a long journey.

Speed-up the bid round and approval process

The 2022 Trinidad and Tobago deep water bid round was closed at the T&T Energy Conference in June 2022. When the boxes were opened, there were single bids from a consortium of bp and Shell for 4 blocks out of a total of 17. Speaking on a panel immediately after the announcement of the outcome of the bid round, Minister of Energy, the Hon. Stuart Young committed to moving these bids through the assessment process as quickly as possible. At the close of 2022, the Minister announced that the Ministry of Energy would be entering into detailed negotiations with bp and Shell during January 2023 to try to quickly come to an agreement on the production sharing contracts.

The Ministry of Energy also launched an onshore bid round in July 2022, with 10 onshore blocks and one nearshore block on offer. This bid round closed on 9th January 2023, with the Ministry of Energy saying that their aim is to award blocks by April 2023. If this target is achieved, it will represent a much faster approval process than in past bid rounds.

From many public statements made by the Minister of Energy in recent months, speeding up the rate of the approvals process is something that is at the top of his mind.

In 2019, the Energy Chamber commissioned a study on the entire approval process from bid round to first gas. The study revealed that significant value is lost by delays in the process and that a faster approval process could significantly add to the net present value of potential projects. Many of the processes involved are sequential and involve decisions or approvals having to be taken across many different agencies and Ministries. The report of this study was publicly shared at the 2020 T&T Energy Conference and we have remained in dialogue with the Ministry of Energy on this topic. We also discussed this study with the Minister of Finance in October 2022 and pointed out that speeding up the approvals process would create additional value that would in

turn result in increased revenue to the State.

The Energy Chamber continues to encourage the Government to dig into the details of the approvals process and make improvements to the processes, all with the objective of shortening the time taken to get to first gas.

Reform the upstream tax system to incentivise investment

In order to attract much-needed investment in both oil and gas production, Trinidad and Tobago requires a competitive upstream taxation system. This is especially the case with increased competition within major oil and gas companies for capital for projects, in a context where there is uncertainty about long-term demand.

In 2020, the Energy Chamber established a Fiscal Reform Taskforce, headed by Peter Inglefield. The Taskforce conducted a thorough review of the fiscal terms under which the upstream companies operate and identified some key areas in which changes were needed to make the overall system more attractive. The focus was especially on making changes that would help attract new investment to maintain or increase production, and also create much needed activity in the services sector.

In 2021, the Taskforce submitted a detailed report to the Ministry of Finance and the Ministry of Energy, which outlined the major recommendations for change. The Supplemental Petroleum Tax (SPT) is one of those fiscal measures which the Taskforce highlighted as needing major revisions, as it acted as a disincentive to new investment in oil production.

In the 2022 Budget, Minister of Finance, the Hon. Colm Imbert announced some important changes to the SPT regime, with a focus especially on the rates applicable to new oil wells and new fields. He also extended previously implemented changes for small onshore producers, which had been introduced in 2020 in response to specific advocacy from the Energy Chamber. The changes were legislated and came into law at the beginning of 2023. These have been welcomed by the industry, though there is a need for continued dialogue on exactly how the new legislation is implemented. The Taskforce has also submitted further detailed recommendations to the Minister of Finance and the Minister of Energy on some specific issues about how the new regime is applied.

The Minister of Finance has indicated on several occasions that there will be continued collaboration with the private sector through the Energy Chamber on fiscal changes, all with a focus on increasing investment while continuing to deliver revenue to the State.

Divert gas from domestic electricity generation through energy efficiency and renewable energy

In Trinidad and Tobago, almost 100% of electricity is generated using natural gas. Because natural gas is in such short supply

at the moment (compared to demand), the national priority must be to use the gas in activities that generate the most amount of value to the country (in hard currency)—in other words, in the petrochemical and LNG industry and not in the electricity sector.

The Energy Chamber has set up a Decarbonisation Taskforce, which has been tasked with improving the uptake of renewable energy in T&T and also reducing the demand for electricity through energy efficiency.

The Taskforce has highlighted areas where the Government has significant losses in revenue through the electricity sector, and how the use of natural gas for power hampers the ability of the National Gas Company to recover the full value from the power sector.

Through the Taskforce, led by Dr. Dale Ramlakhan, the Energy Chamber has continued to promote the need for renewable energy and has worked closely with the Ministry of Energy and the Ministry of Public Utilities to ensure that the first large-scale solar project would become a reality. In December 2022, agreements were finally signed by the Government and a consortium of bp, Shell and Lightsources bp to develop two solar facilities in T&T, which would generate 112MW of electricity. The project will be the largest of its kind in the Caribbean and a major step forward.

The Energy Chamber also regularly contributes to committees and consultations held by the Ministry of Planning and Ministry of Energy in pursuit of attaining the national goals set under the Paris Agreement.

Invest in reducing the carbon intensity of operations and products

Establishing renewable energy generation is critical to kickstart reducing the carbon intensity of other areas *within* the energy industry in T&T.

The petrochemical industry is a major contributor to emissions in T&T, however, plants are already designed to be as efficient as possible and in many cases further efficiency gains would require significant capital investment. There are some areas, however, where emissions can be avoided. One area that has received attention over recent years is the use of green hydrogen, which would allow the petrochemical facilities to use hydrogen without CO₂ emissions, or blue hydrogen where CO₂ emissions are captured and stored in depleted oil reservoirs.

The Energy Chamber has played a major role in promoting the development of the hydrogen industry in Trinidad and Tobago over many years. In late 2022, the Energy Chamber was very excited with the launch of the report into a Green Hydrogen industry, developed by National Energy with the support of the InterAmerican Development Bank. We were also delighted to welcome the major French investor, HDF Energy, as a member of the Energy Chamber and to see their investment into the NewGen project

to create green hydrogen; a project that was born out of the work of the Decarbonisation Taskforce.

Secure cross border supplies of natural gas

In addition to securing new investment into natural gas production in Trinidad and Tobago, there is potential to import gas by pipeline for processing and re-export as LNG or petrochemicals. In the medium-term, the most obvious source of natural gas is our neighbour Venezuela, with huge untapped gas resources and lots of gas that is flared in its oilfields (with disastrous climate change implications).

Importing natural gas from Venezuela has been discussed for many years, but the US sanctions regime has meant that this initiative has not been able to progress in recent years.

The Energy Chamber has kept open lines of communication with a number of important stakeholders, both governmental and private-sector, on this issue, and we have promoted the economic opportunities that could be available to Trinidad and Tobago if we were able to import gas from Venezuela. The first option is the obvious one where there are known gas fields which straddle the border of Venezuela and T&T. There are opportunities to develop the T&T side of those fields, however, the real prize would be the opportunity to develop both sides and tie into existing gas infrastructure in T&T's waters.

The other opportunity is the capturing of flared or vented gas from onshore oil fields in Venezuela. These oil fields currently flare significant amounts of natural gas, also leading to astronomical CO₂ emissions. Capturing this would lead to significant volumes of natural gas and also reductions in CO₂ emissions.

Continuing to advocate on issues that impact our members

In conclusion, the Energy Chamber continues to work to serve our members by working toward a robust and sustainable energy sector, not ignoring any opportunities for the development of the industry. This work on securing the future of the gas industry is important to all of our members. We also continue to place a major emphasis on the issue of regional energy services integration and the opportunities that can be created for our service company members.

We have continued to work on the development and enhancement of the Local Content Management System (LCMS) and on addressing issues that work against the maximization of local value retention in the industry. In 2023 we also plan to place a new emphasis on process safety and asset integrity, to complement the work we have done for many decades on contractor safety management.

We look forward to working with all our members and stakeholders in the year ahead and to communicating further on all of our advocacy work and other activities.

Peterson achieves carbon neutral status across global operations

Staff Writer | Energy Chamber

International energy logistics provider Peterson has announced it has been awarded carbon neutral status across global operations under the PAS 2060 accreditation scheme from National Quality Assurance certification body.

The carbon neutral certification covers Peterson's 34 sites across seven countries with operations in the Netherlands, England, Scotland, Trinidad & Tobago, Guyana, Qatar and Australia.

Sarah Moore, Chief Executive Officer at Peterson, said: "We're proud to announce we've been awarded global carbon neutral status, marking a significant milestone on our sustainability journey, and moving us closer to reaching net zero by 2025."

"As one of the first energy logistics companies to achieve carbon neutrality, we are committed to playing our part in the energy transition, supporting clients with their sustainability targets and making a real difference by investing in a greener future."

Keith Dawson, Director of HSEQ at Peterson, said: "We're absolutely delighted to be certified as a carbon neutral business and lead by example as we aim to contribute towards global net-zero targets."

"This achievement reflects the ambitious sustainability plans set out by our leadership team and is testament to the fantastic collaborative effort from everyone at Peterson. We look forward to continuing to make progress on our sustainability journey."

Since 2017, Peterson has improved its energy efficiency by 12% and reduced total energy usage by 35% at all sites. The company has seen its total emissions fall by 42% and aims to be net zero by 2025.

Some of Peterson's initiatives include the use of increased electric forklift trucks replacing existing diesel trucks, the use of environmentally friendly fuels in cranes and trucks, the purchase of new electric vans with zero tail pipe emissions, and the use of advanced technologies to achieve optimal planning into the supply chain to minimise the movement of goods across locations.

Clients now benefit from the assurance that Peterson's logistics services are carbon neutral certified and will receive consistent and accurate carbon data to support their scope three emission targets. Peterson also provides advice and support in developing a carbon management system for clients and will soon offer a carbon neutral consultancy service drawing on its recent success and experience.

Earlier this year, Peterson won the Supplier Sustainability Award in the Net Zero Energy Transition Awards hosted by Scottish Renewables. The award recognised the significant progress Peterson has made on its sustainability journey, leading the way in reducing carbon emissions by achieving carbon neutral status by the end of 2022 and net zero by 2025.

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Peterson's Office at Crews Inn, Chaguaramas

Subsea 7 awarded contract for bp Cypre project

Staff Writer | Energy Chamber

Subsea 7 has announced the award of a contract to Subsea Integration Alliance to support the development of bp's Cypre project, a gas development located offshore Trinidad and Tobago. Subsea 7's scope of the awarded Subsea Integration Alliance contract is substantial.

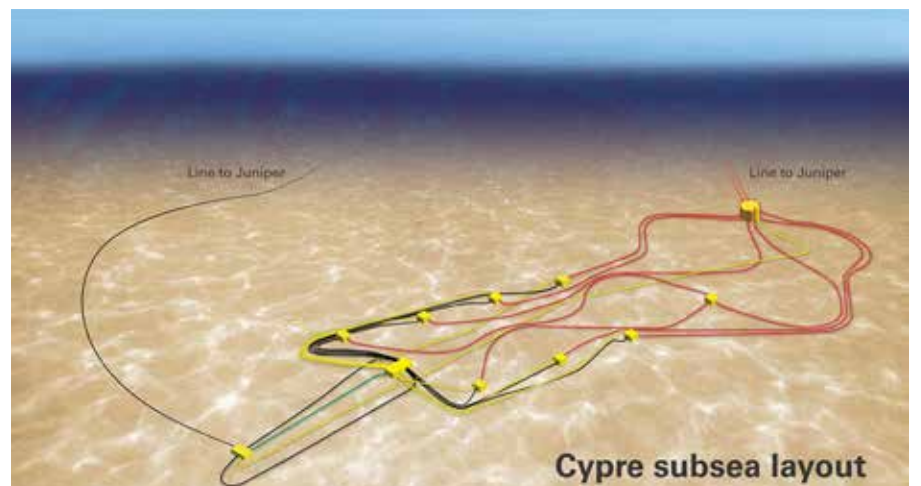
Subsea 7's scope covers the concept and design, engineering, procurement, construction and installation of a two-phase liquid natural gas tieback to the Juniper platform through dual flexible flowlines and a manifold gathering system, along with topside upgrades.

Design, engineering, and project management will commence immediately at Subsea 7's offices in the USA, with offshore installation planned for 2024.

Craig Broussard, Vice President for Subsea 7 US, said: "We have been working closely with bp and our suppliers at the earliest possible stage to help develop and deliver an integrated SPS and SURF solution that optimises cost and efficiency, to accelerate first gas."

Olivier Blaringham, CEO for Subsea Integration Alliance said: "bp's Cypre project is a prime example of our ability to harness the key strengths of Subsea Integration Alliance; Subsea 7 with its expertise in executing complex EPCI projects, and OneSubsea's fast-track distribution of subsea production systems. Combined, we are delivering a refined solution which enables early first gas."

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Cypre project

Energy Minister reviews Heritage's 2022 results and 2023 business plans

Staff Writer | Energy Chamber

The Chairman of Heritage Petroleum Company Limited (Heritage) Michael Quamina, Deputy Chairman Reynold Ajodhasingh and the Executive Leadership of Heritage met with the Honourable Stuart Young, Minister of Energy and Energy Industries, and the Permanent Secretary in the Ministry of Energy and Energy Industries Penelope Bradshaw-Niles, at the Heritage Corporate Office, Port of Spain, to present the company's 2022 results and 2023 plans and strategy.

Heritage reported a strong performance in 2022 and demonstrated its consistent delivery in the area of revenue generation. In 2022, the company embarked upon an aggressive drilling and workover programme, with ten wells drilled on land and one offshore, while operating 22 rigs. In 2023, the focus continues on drilling another ten wells on land and five wells in the Soldado field offshore. This is in addition to Enhanced Oil Recovery and integrity projects that are currently underway.

The Minister reiterated the important role that Heritage plays in the revenue generation for the country as the company contributed a significant percentage of the National GDP in 2022. He reminded Heritage of the need "to continue producing oil as efficiently and as safely as possible and to maximise financial returns for the country's energy reserves", while continuing to be a sustainable and resilient business. He also emphasised the need for "nimbleness" to respond to the volatile geopolitical forces in the world that impact the oil and gas industry.

In addition to the company's focus on the exploration, development and production of crude oil, Heritage was also able to demonstrate to Minister Young its work with its stakeholders, the private sector, and neighbouring communities. In 2023, Heritage will continue to support its fenceline communities through a host of social sustainability programmes that are designed to empower the society, such as the provision of scholarships, IT



From: <https://heritage.co.tt>

training and agricultural entrepreneurship programmes.

At the close of the meeting, Minister Young, in expressing his support to the Board and Leadership of Heritage, advised that the company should "continue to identify opportunities to grow the

business". He also reiterated that Heritage "should seek to always narrow the gap between their plans and execution, and deliver on its promises."

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Hess says production in Guyana could reach 1.2 m barrels per day by 2027



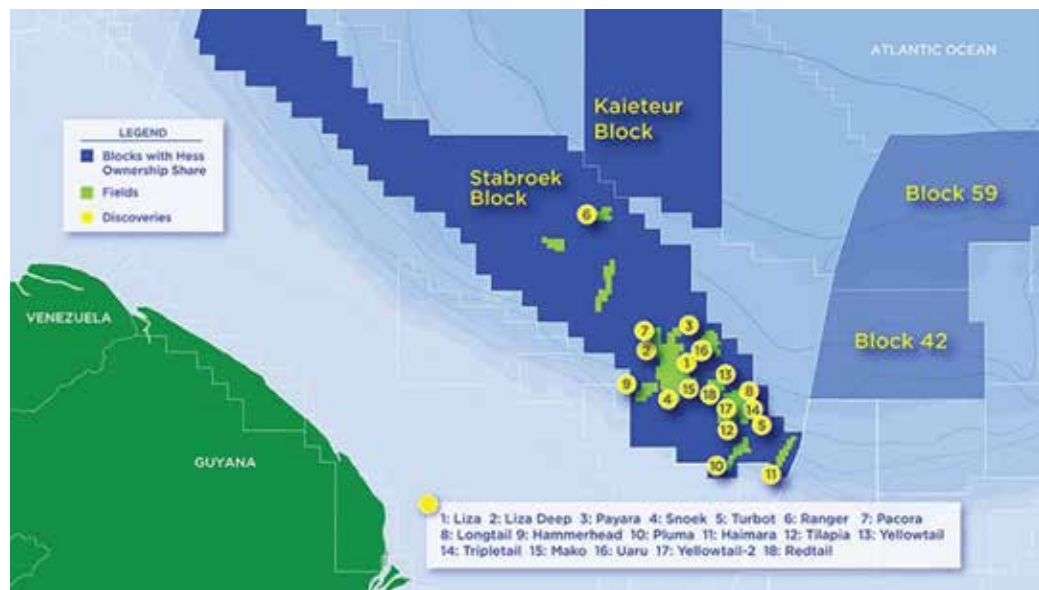
Staff Writer | Energy Chamber

Speaking at the Goldman Sachs, Global Energy and Clean Technology Conference, CEO of Hess Corporation John Hess stated that the official figure for crude oil production from Guyana is estimated to reach 1.2 million barrels per day by 2027, an upward estimate from the previously reported 850,000 barrels per day.

This steady production will be supported by six floating production vessels (FPSOs).

Hess, with partners Exxon and CNOOC, has had 30 major finds offshore Guyana, 9 of which have been in 2022. Presently, Guyana has two FPSOs in operation, producing about 360,000 barrels per day.

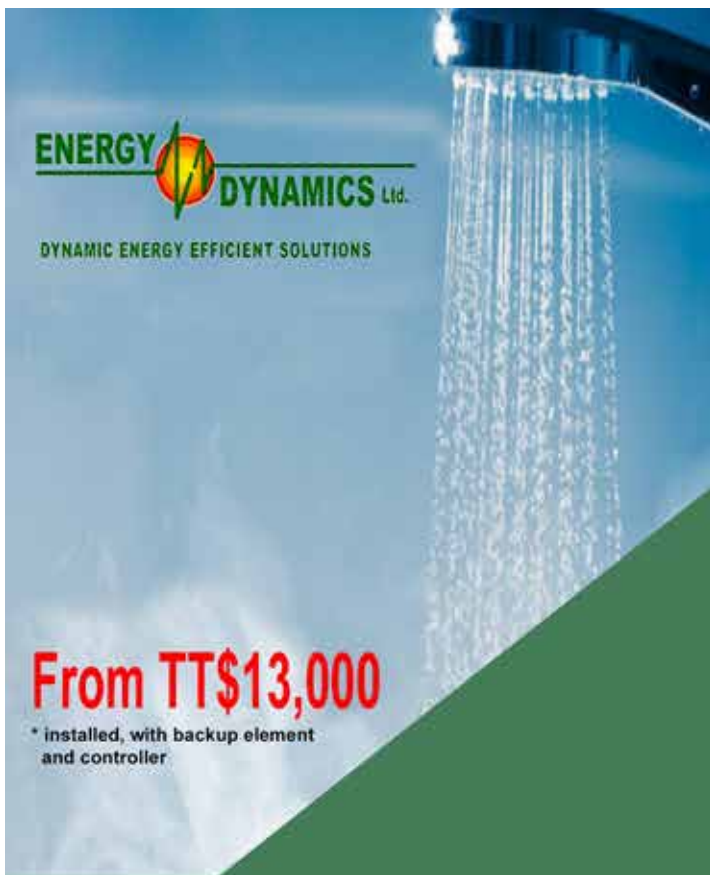
Hess noted that based on the recent appraisal of the Fangtooth well, the company may require a dedicated production unit for itself, which could mean a seventh FPSO.



From: <https://www.hess.com>

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BARBADOS OFFSHORE LICENSING ROUND 2022

Barbados postpones bid round to Q1 2023

Staff Writer | Energy Chamber

The Ministry of Energy and Business of the Government of Barbados announced the postponement of the Barbados 2022 Offshore Licensing Round. The bid round was originally scheduled to commence on December 1, 2022.

The Offshore Licensing Round will now be launched in Q1, 2023.

The Ministry indicated that several companies have requested additional time to evaluate acreage and data. In response, the Government of Barbados made the difficult decision to postpone the licensing round for this short period to satisfy those requests, and to complete critical amendments to the legislative and licensing frameworks that will allow the country to improve efficiency and ease of doing business within the sector.

In a release, the Ministry of Energy and Business said “Barbados continues to be encouraged by the sustained interest shown in its offshore acreage and remains staunchly committed to partnering with industry pioneers to realise its offshore petroleum potential.

The Barbados government has apologised for any inconvenience caused and welcomes further engagement, collaboration, and discourse with the industry on matters relating to the licensing round.”

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Barbados and Trinidad and Tobago's Unitisation Agreement

Navigating at speed

editorial

IN MANY OF his recent public statements, including at the launch of the major grid scale solar project, the restructuring of Atlantic and the opening of bids for the onshore bid round, the Minister of Energy, the Honourable Stuart Young, has made impassioned pleas for the pace of delivery to be accelerated. The need to speed up the pace of approvals was the first point in the Energy Chamber's six-point plan for the future of the gas industry released in June 2022. And past Minister of Energy, Kevin Ramnarine, has also made a similar point in a recent media interview. So, this is one point on which everybody seems to be aligned.

Given that this is an objective to which everyone seems to be committed, why is it proving difficult to achieve? One reason might be the sheer number of different agencies and Ministries involved in the approval process. The Energy Chamber-commissioned study on the approval process of upstream gas projects, released in 2020, showed that there were numerous separate approvals needed across numerous different agencies in numerous different Ministries. As many of the decisions have to be taken in series, rather than with processes working in parallel, people working in a specific agency may not appreciate how a small delay from them can have a cumulative impact and cost the country hundreds of millions of dollars in lost revenue.

Speeding up the approval process will involve detailed process improvement work in all of the agencies. The devil is in the detail. The robustness of the approval process must not be compromised while this effort to shorten timeframes takes place. It is about making sure that the right approval process is conducted quickly, not about removing necessary oversight and protection for the environment and for people.

Improving the process is also about getting alignment between various agencies. It is important that agencies outside of the Ministry of Energy also understand how their decision-making (or lack thereof) has impacts on the energy sector. Delays mean lost value to the people of Trinidad and Tobago, and everyone involved in all steps of any approval process need to understand that delaying a decision has a serious cost to the country (not just a cost to the multinational operator company).

While the project conducted in 2020 by the Energy Chamber identified the process to approve major upstream offshore gas developments, there is also a need to speed up investments in new renewable energy and other decarbonisation projects. The first major grid scale solar project needed two years of negotiations post the announcement of the winning tender, from the bp, Shell, Lightsource consortium. As the Minister of Energy made clear, that is just too slow, and this delay will have cost Trinidad and Tobago hundreds of millions of dollars in lost export earnings, with lots of natural gas having to be sold to electricity generation rather than coming from solar, if the original timelines had been met.

At this year's Energy Conference Kenesjay Green and the NewGen project will be hosting a workshop to investigate the approval process for new decarbonisation projects. The plan is that the output of that workshop will be used to map out improvements that can be made to speed up the process.

The Energy Chamber remains committed to working with all stakeholders to improve and speed up the approval process. We have a complex future to navigate but we need to be able to do that navigation while moving at top-speed. If we do not, we could find ourselves stranded and counting the costs.

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The T&T Energy Conference – navigating a complex environment

THE ENERGY CHAMBER'S flagship Trinidad & Tobago Energy Conference kicks off on the 23rd January 2023 at the Hyatt Hotel, Port of Spain. This is our first return to our traditional pre-Carnival slot since the pandemic and I am very excited about the conference this year, which looks like it is going to be one of the biggest and best attended editions ever, with a good number of new international visitors registering to attend. I always look forward to the Energy Conference and it is something in which I take great personal and professional pride.

In the early days, the event was small, held in an auditorium in Gulf City, San Fernando. Today, it is the biggest energy conference in the Caribbean, certainly in terms of delegate numbers. Over time, we have seen the conference grow and develop along with the development of the industry. In the early days of the conference the focus was very much on the oil sector, with the very successful lease-out farm-out programme for idle onshore acreage coming directly out of recommendations made at the first two editions of the event.

When I took over the running of the event in 2003 the focus was still mainly on the upstream, though with natural gas obviously playing a crucial role. Then, as the Trinidad LNG and petrochemical industries took off in the first decade of this century, there was increased discussion and focus on the mid and downstream gas industry. In the past decade, we have slowly but steadily increased the focus on decarbonisation; first with a focus on energy efficiency, then a push on renewables, and now we are seeing a merging of focus into greener fuels and greener petrochemicals.

After we switched venues to the new Hyatt Hotel, we put a lot of effort into building a successful tradeshow to run alongside the Conference. This has created a whole new stream of activity, with a focus on the energy services sector who especially welcome the chance to network and meet with potential customers and partners. For many of our visitors, the trade show is now the main event, rather than the presentations and panel discussion on



I always look forward to the Energy Conference and it is something in which I take great personal and professional pride.

the stage.

The global pandemic had a major impact on the Conference, as it did for all in-person events. We were fortunate that in 2020, the Conference took place early in the year, while Covid was still mainly restricted to east Asia. In 2021, in the midst of the pandemic and with shutdowns in effect across the region and travel severely restricted, we had a fully virtual event.

We learnt a lot from that experience. And in 2022, when we returned to a face-to-face Conference (taking place in June rather than our usual pre-Carnival January/February slot) we managed to incorporate a lot of lessons from that virtual experience and to offer a true hybrid package, with content being delivered both in the room and virtually. We have been careful to make sure that the virtual offering is not just a "webcam pointing at the stage" and that virtual delegates get a full conference experience, including the chance to interact with other delegates and tailored online content.

Despite the high commodity price environment of the past 12 months, business conditions are still tough for many of our service company members. But we are getting a strong sense of excitement and anticipation for the event this year and at the time of writing we have seen strong registration numbers.

Learn more and have your say online:
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Today for tomorrow – preparing for the future of energy

Mark Loquan | Contributor

Conversations about the future of energy invariably evolve into conversations about climate action and adaptation.

We have heard in many permutations of language, on many platforms, that our planet stands on the precipice of climate chaos. However, unlike in cinematic scenarios, we cannot expect some deus ex machina to pull us back from the edge at the last second. Instead, our hope for salvation lies in our own collective determination not to fall, by making the necessary adjustments to our energy diet (inter alia).

That said, though we know what is at stake and are already seeing the climate chaos unfurl, why has it been so difficult for us to galvanise forceful and meaningful action against climate change? Particularly within the energy space, why is it so difficult for the world to curb the runaway emissions problem? As climate lobbyists tell it, is the need for decarbonisation not sufficiently urgent to justify hard limits on further fossil fuel development?

Making changes requires time

Though it seems a simple enough choice—adjust or face perilous consequences—the truth is that making the changes we need to make in our energy mix and consumption practices requires time, and alignment among stakeholders with often competing priorities. How do you convince billions of people around the world who depend on coal and oil for power generation and heat that they need to accelerate a shift to alternative energy sources that could be less reliable, more expensive, or logistically challenging to integrate in the short- to medium-term? The immediacy of hunger and poverty will always obscure the long view. For countries that have just begun to develop hydrocarbon reserves and generate wealth for their people, how do you say “your growth is inconvenient”?

The reality is that we cannot dismantle fossil fuel-based energy systems overnight. Not only is it infrastructurally infeasible, but attempting to quit fossil fuels without proper planning will destabilise economies and societies.

This is not to say that pressure to transition quickly is not needed. Certainly, every day of inaction brings us closer to the edge. However, even in countries where decarbonisation of energy is high priority, **the systemic overhauls required to make the transition will realistically take time to realise.** For



The systemic overhauls required to make the transition will realistically take time to realise. For that reason, even as we push to harness renewable sources of energy, we need to seize every low-hanging opportunity to lower our net carbon output in the interim.

that reason, even as we push to harness renewable sources of energy—which we are doing aggressively—we need to seize every low-hanging opportunity to **lower our net carbon output in the interim.** At its core, this is fundamentally a sustainability challenge: finding a way to meet our energy needs today in a way that does not make life more difficult for us tomorrow.

For one, this means capitalising on transition fuels such as natural gas, which has the lowest emissions profile of the fossil fuels and a healthy market supply. This is one reason why The NGC Group has been assessing options to support micro-LNG projects across the Caribbean, which can potentially displace some of the crude oil from the regional energy mix. It is also a reason to welcome the progress that has been made on restructuring Trinidad and Tobago’s LNG production business. A more streamlined Atlantic will strengthen the country’s LNG export capacity, and by extension, our ability to help fuel the global energy transition.

Find solutions that can reduce the carbon output from the gas value chain

Of course, we harbour no delusions that natural gas is 100 percent clean. It is equally important to find solutions that can reduce the carbon output from the gas value chain today. One approach is to ensure as much of it stays in the pipeline as possible, by focusing on asset integrity and leak detection and repair. For us at NGC, methane mitigation is a priority focus of our business, because we understand its climate impact. For those emissions we cannot avoid, we need to compensate with offsets so that net emissions can remain low. One mechanism is to invest in carbon sequestration projects, whether by creating artificial sinks (e.g. injection wells) or natural carbon vaults, as NGC did with our large-scale reforestation programme.

Even as we take action today to change the current and future global emissions profile, we must confront our ghosts of emissions past. We cannot soon escape the cumulative impact of carbon emitted since the age of industrialisation, so **we need to build a strong defense through climate change adaptation strategies.** The meteorology of our planet is changing rapidly, with concerning implications for agricultural cycles and soils, the biosphere, human settlement patterns and the integrity of our built environment. While we work in earnest to prevent further deterioration of climate stability, we need to start adapting our habits and habitats, so we can build more resilient societies and continue to meet our basic human needs for food and shelter in a warmer, wetter world. This is one reason behind NGC’s recent investments and partnerships around food and nutrition security, green infrastructure and sustainability education. Over the coming months, we will intensify our focus on these and other adaptation strategies.

Forecasting the future of energy is a complex exercise

Given energy’s many intersections with other development and sustainability challenges, forecasting the future of energy is a complex exercise. One need only look at the impact of the war between Russia and Ukraine to appreciate that future energy markets can be influenced by factors beyond our control. How will political and cultural priorities shift in the coming years? Will technology deliver the anticipated acceleration in the transition to renewables? Will promised financing for green projects be readily available? Will countries be willing to forego immediate development aspirations and value clean over cheap and fast? And of course, the biggest question: how will climate change shape our energy needs and markets?

Navigating those uncertainties will be challenging, no doubt, but hearteningly, our domestic energy sector has demonstrated malleability in the past few years. We have advanced solar, wind, green hydrogen and biofuels projects, even as we work to strengthen our natural gas sector. Come what may, our people are resourced and driven enough to guide us through change. Importantly, The NGC Group and other leading energy companies have had the climate-awareness and foresight to begin diversifying, to ensure Trinidad and Tobago has a long and *sustainable* future in energy.

We are determined not to give up.



How the European Union can avoid natural gas shortages in 2023

Staff Writer | Energy Chamber

The European Union faces a potential shortfall of almost 30 billion cubic metres of natural gas in 2023—but this gap can be closed and the risk of shortages avoided through stronger efforts to improve energy efficiency, deploy renewables, install heat pumps, promote energy savings and increase gas supplies, the IEA says in a new report.

The report, “How to Avoid Gas Shortages in the European Union in 2023”, sets out a suite of practical actions that Europe can take to build on the impressive progress that has already been made in 2022 in reducing reliance on Russian gas supplies and filling gas storage ahead of this winter. The report cautions that 2023 may well prove to be an even sterner test for Europe because Russian supplies could fall further, global supplies of liquefied natural gas (LNG) will be tight—especially if Chinese demand for LNG rebounds—and the unseasonably mild temperatures seen at the start of the European winter are not guaranteed to last.

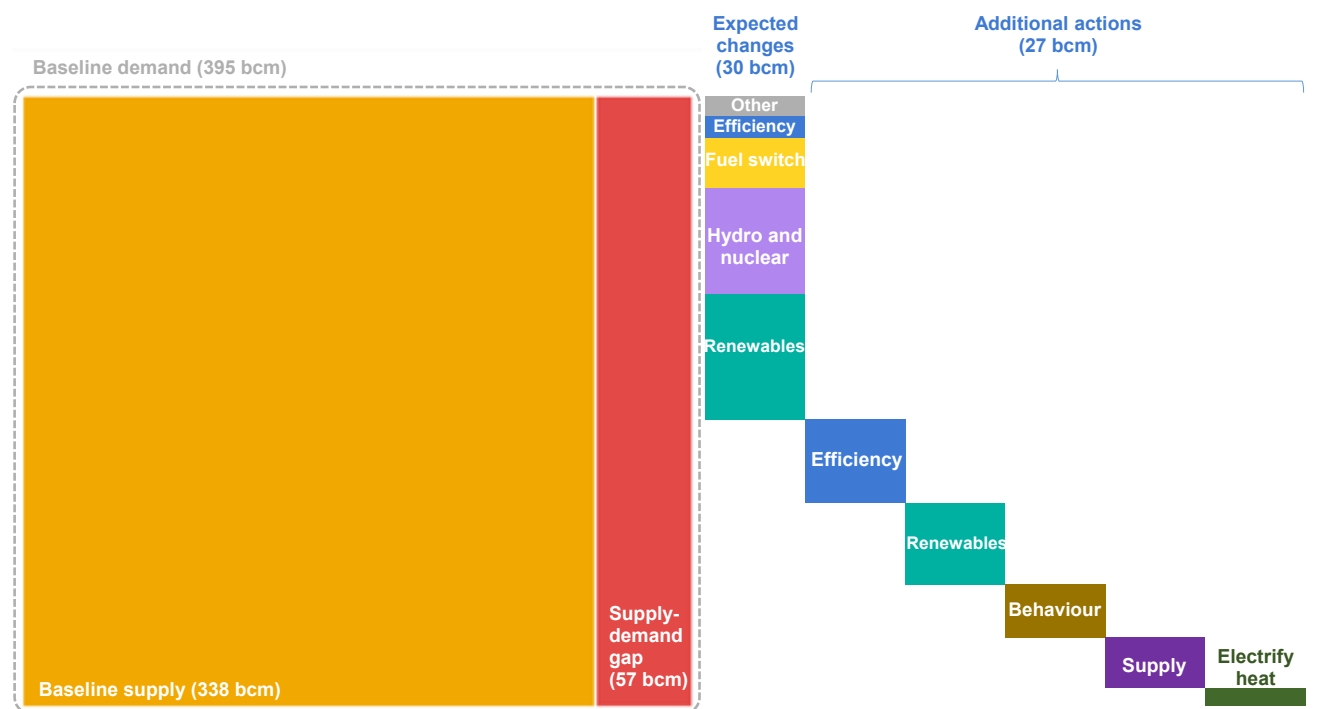
IEA Executive Director Fatih Birol launched the report alongside European Commission President Ursula von der Leyen at a press conference in Brussels ahead of the Extraordinary Meeting of EU Energy Ministers on 13 December and the Meeting of the European Council on 15 December.

“We have managed to withstand Russia’s energy blackmail. With our REPowerEU plan to reduce demand for Russian gas by two-thirds before the end of the year, with a mobilisation of up to €300 billion of investments. The result of all this is that we are safe for this winter,” said European Commission President Ursula von der Leyen. “So we are now turning our focus to preparing 2023, and the next winter. For this, Europe needs to step up its efforts in several fields, from international outreach to joint purchasing of gas and scaling up and speeding up renewables, and reducing demand.”

“The European Union has made significant progress in reducing reliance on Russian natural gas supplies, but it is not out of the danger zone yet,” said IEA Executive Director Fatih Birol. “Many of the circumstances that allowed EU countries to fill their storage sites ahead of this winter may well not be repeated in 2023. The IEA’s new analysis shows that a stronger push on energy efficiency, renewables, heat pumps and simple energy saving actions is vital to head off the risk of shortages and further vicious price spikes next year.”

As a result of measures taken by European governments and businesses

Expected changes and additional actions to close the supply-demand gap in the European Union in 2023



Note: Other = heat pumps and biomethane.

From: *How to Avoid Gas Shortages in the European Union in 2023* by the IEA

In order to incentivise faster improvements in energy efficiency, the report recommends expanding existing programmes and increasing support measures for home renovations and the adoption of efficient appliances and lighting. It also recommends using more smart technologies and encouraging gas-to-electricity switching in industry.

throughout 2022 in response to the energy crisis, as well as the demand destruction caused by huge price spikes, the amount of gas in EU storage sites was well above the five-year average at the start of December, providing an important buffer going into winter. Consumer actions, increased non-Russian gas supplies and mild weather also helped compensate for the drop in Russian deliveries in 2022.

Measures already taken by EU governments on energy efficiency, renewables and heat pumps should help reduce the size of the potential gas supply-demand gap in 2023. A recovery in nuclear and hydropower output from their decade-low levels in 2022 should also help narrow the gap. Despite all of this, the EU’s potential gas supply-demand gap could reach 27 billion cubic metres in

2023 in a scenario in which gas deliveries from Russia drop to zero and China’s LNG imports rebound to 2021 levels, according to the report.

This gap can be closed through additional actions on energy efficiency, renewables, heat pumps, energy savings and gas supplies, the report’s analysis shows.

In order to incentivise faster improvements in energy efficiency, the report recommends expanding existing programmes and increasing support measures for home renovations and the adoption of efficient appliances and lighting. It also recommends using more smart technologies and encouraging gas-to-electricity switching in industry.

To speed up permitting for renewables, the report proposes adding administrative resources and simplifying procedures. It

also proposes more financial support for heat pumps and changes to tax laws that penalise electrification. It also calls for more and better campaigns to get consumers to cut their energy consumption, and details various programmes from a wide range of countries that can serve as best practices.

On the supply side, the report says that while Europe’s options to import more natural gas are limited, there are a handful of countries with spare export capacity who could increase exports by capturing gas that is currently being flared. The report also details opportunities to scale up the production of low-emission biogases.

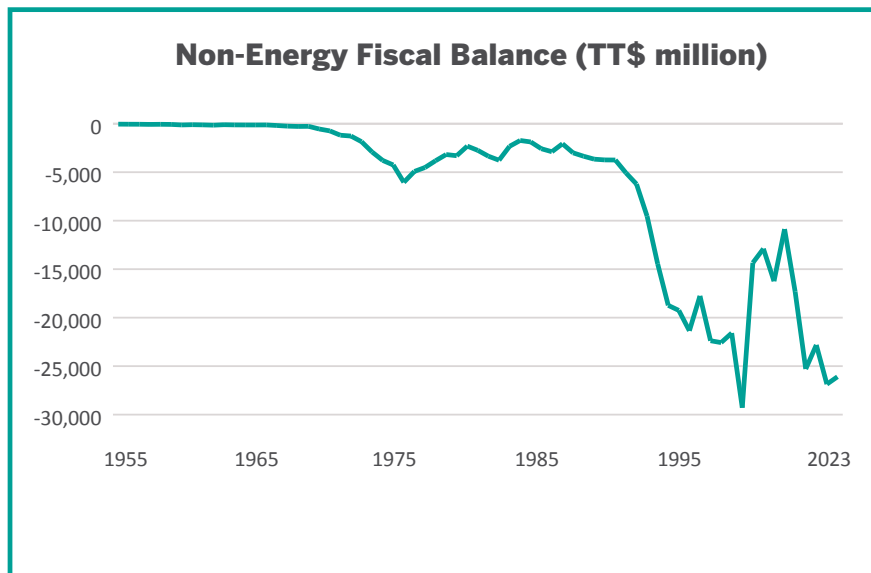
Together, these measures offer a pathway to avoiding price spikes, factory closures, increased use of coal for power generation and fierce international competition for LNG cargoes in ways that are consistent with the EU’s climate goals.

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Three trends of concern as the country navigates 2023

Roger Hosein | Contributor

The non-energy fiscal balance of Trinidad and Tobago is a cause for great concern to me. Specifically, the non-energy fiscal balance has deteriorated from TT\$-3.74 billion in FY 2002 to an expected non-energy fiscal deficit of approximately TT\$-25 billion in fiscal year 2022/23. In recent times, in order to run these huge non-energy fiscal deficits the government of TT have been spending out the revenues it receives from the energy sector in order to create some kind of equilibrium in the overall fiscal deficit. This mode of economic governance is certainly unsustainable, and I urge the government of Trinidad and Tobago to work hard in the corridors of fiscal space to increase non-energy fiscal revenues and to reduce overall total expenditures.



Linked to the above is the country's public sector external debt, which increased from US\$1.32 billion in 2007 to US\$2.53 billion in 2015 to US\$5.2 billion in 2021. The public sector external debt is not a major cause for concern on its own if economic activity is high and rising. However, in the TT economy case, the rise in the public sector debt since 2007 in particular coincides with a period of very little change in real GDP. Specifically, between 2008 and 2021 nominal GDP decreased by 5.6%, although the debt level increased by US\$4 billion or 265%. This should concern all citizens as we plan the outlook for our lives and our communities in the medium-term moving forward.

(continued on page 15)



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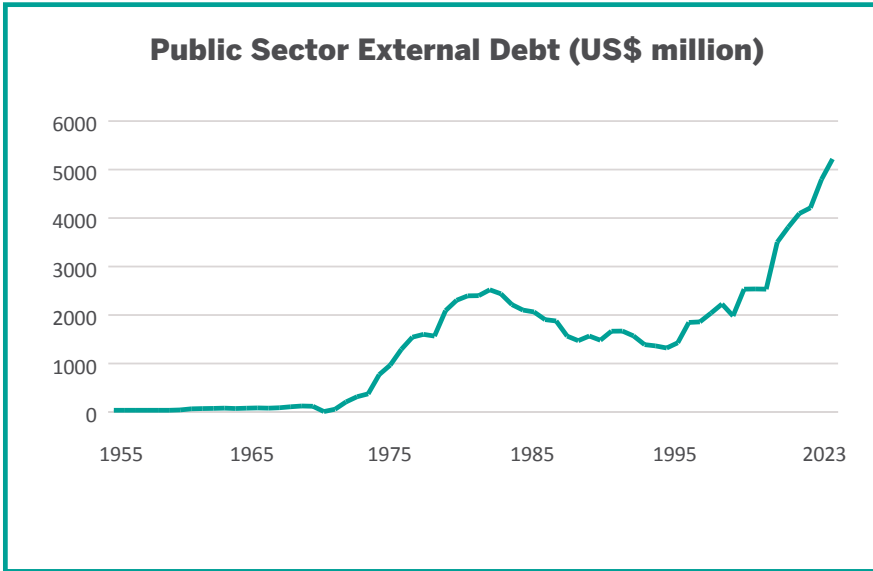




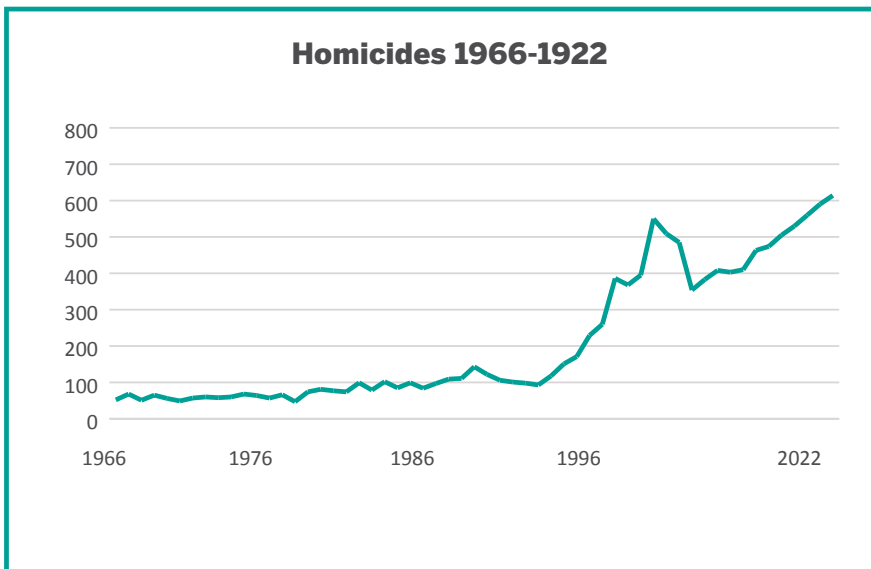



Three trends of concern as the country navigates 2023

(continued from page 14)



The third area I would raise here is the trend in homicides in TT. The rapid increase in homicides in TT is a real cause for concern, and the overall level of homicides escalated from 93 in 1999 to 550 in 2008, although by 2011 it had dipped to 354. After 2011, however, the homicide level in Trinidad and Tobago continued its merry way upwards, and in 2022 the country recorded 614 murders—the highest for the time period 1966–2022. This, to me, is a sharp blow in the ease of doing business process in Trinidad and Tobago, as it likely will place the intentional homicides per capita value in Trinidad and Tobago among the 5 worst-performing economies in the world for 2022. People are living in fear and the extent of crime has, and will continue to have, a negative impact on productivity and output, in my opinion. Urgent policy-making action is required.



Conclusion

The TT economy, using IMF data, is poised to grow in 2023, and this is expected to continue at a slower pace until 2027. The three areas raised above require skillful governance by the government to improve, and I urge policymakers to take a deeper look at the associated trends and to engage in appropriate brainstorming to determine a relevant portfolio of policy suggestions.

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Global stories

Norway:

Five new years with drilling and wells rig alliances

Aker BP has entered into drilling and wells alliance agreements with Noble Corporation, Odfjell Drilling and Halliburton. Through the last five years, the jack-up rig alliance and the semi rig alliance have delivered over 100 wells and world-class drilling operations on the Norwegian shelf. Now the alliance partners up to deliver even more wells in the coming five years. The jack-up alliance comprises Noble, Halliburton and Aker BP. The semi alliance comprises Odfjell Drilling, Halliburton and Aker BP. On 11 January, Aker BP signed new agreements for both alliances with a five-year contract term.

Aker BP awarded 17 licenses in APA 2022

Aker BP has been offered interests in 17 new production licenses offshore Norway, of which nine as operator, through the swards in pre-defined areas (APA 2022) licensing round. Of the 17 production licenses awarded to Aker BP, 13 are located in the North Sea (six as operator) and four in the Norwegian Sea (three as operator).

TechnipFMC wins Dvalin North subsea deal from Wintershall Dea

TechnipFMC has been awarded a significant engineering, procurement, construction and installation contract by Wintershall Dea Norge AS for its Dvalin North project. The contract covers the design, engineering, manufacture and installation of pipe for the Dvalin North field, which will be tied back to the Heidrun Platform via the existing Dvalin field on the Norwegian shelf.

China:

CNOOC Limited announces Its 2023 business strategy and pledges higher output

CNOOC has launched its business strategy and development plan for 2023. In the plan, the company raises its production target and capital expenditure budget for 2023. Net production target is 650–660 million barrels of oil equivalent (BOE), of which production from China and overseas accounts for approximately 70% and 30%, respectively. Net production is expected to reach 690–700 million BOE in 2024 and 730–740 million BOE in 2025. The company's total capital expenditure for 2023 is budgeted at RMB 100–110 billion, of which capital expenditures for exploration, development, production and others will account for approximately 18%, 59%, 21% and 2% of the total capital expenditure, respectively.

In 2023, nine new projects are expected to come on stream during the year, including projects in China such as Bozhong 19-6 Condensate Gas Field Phase I Development Project, Lufeng 12-3 Oilfield Development Project and Enping 18-6 Oilfield Development Project, and overseas projects such as Payara Project in Guyana, Buzios5 Project and Mero2 Project in Brazil.



USA:

Talos makes two commercial discoveries in Gulf of Mexico

Talos Energy has made commercial quantities of oil and gas during sequential drilling operations in the U.S. Gulf of Mexico in Q4 2022. The company said that its Lime Rock and Venice prospects were both commercial discoveries. Talos holds a 60% working interest in the two deepwater discoveries.

Congo:

Perenco installs another self-elevating platform off DR Congo

Perenco has installed its eleventh self-elevating platform system, with a new unit installed by its Congo unit, Perenco Rep. The company installed the system on the Mibalé Field, offshore DRC. The Fololo design, which was initially developed by Perenco for operations in the DRC, comprises lightweight floating pontoons and legs that can be self-elevated to the required height in a super simple, genuine and smart concept developed by the Perenco Group for Perenco Rep.

Egypt:

Egypt makes 53 new oil and gas discoveries in 2022

The Ministry of Petroleum and Mineral Resources, Egypt has reported that the country has witnessed a spike in its energy reserves in 2022. According to a report published by the Ministry, the country saw 53 new oil and gas discoveries. The new discoveries include 42 oil wells and 11 gas wells in the Western Desert, the Suez Gulf, the Mediterranean Sea, and Nile Delta.

Qatar Energy wins working interest in new Brazilian offshore exploration block

Staff Writer | Energy Chamber

QatarEnergy, in a consortium with TotalEnergies and Petronas, has been awarded the Agua-Marinha Production Sharing Contract (PSC), under the 1st Cycle Permanent Offer round, by Brazil's National Agency of Petroleum, Natural Gas, and Biofuels (ANP).

Under the terms of the PSC and associated agreements, QatarEnergy will hold a 20% working interest, alongside the operator Petrobras (30%), TotalEnergies (30%) and Petronas Petroleo Brasil Ltda. (20%).

The Agua-Marinha block has a total area of 1,300 km² and is located in water depths of about 2 km off the coast of Rio de Janeiro in the prolific Campos Basin.

Commenting on this occasion, His Excellency Mr. Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, the President and CEO of QatarEnergy said: "We are pleased to achieve this latest

successful joint-bid, which adds further highly prospective acreage to our upstream portfolio in Brazil, and particularly in the prolific Campos Basin."

His Excellency Minister Al-Kaabi added, "We are delighted to achieve this success with our valued partners Petrobras, TotalEnergies, and Petronas. I wish to take this opportunity to thank the ANP and the Brazilian authorities for this opportunity and for their ongoing support."

The acquisition, which is expected to close in the first half of 2023, further establishes QatarEnergy as one of the leading upstream players in Brazil, where it already holds working interests in two producing fields and numerous exploration blocks.

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Agua-Marinha block (from:)



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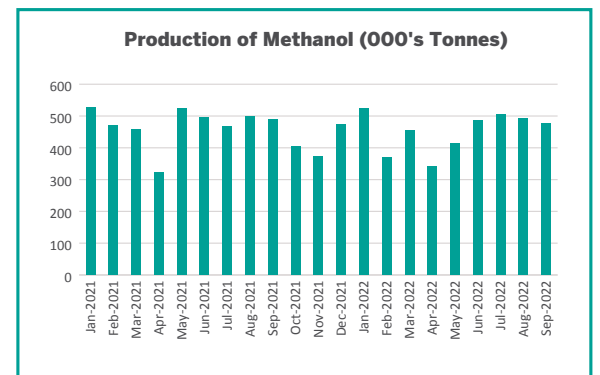
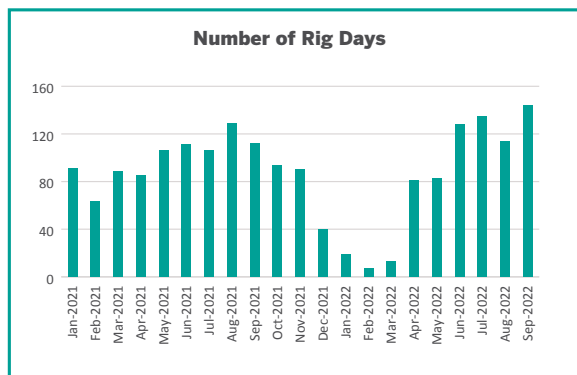
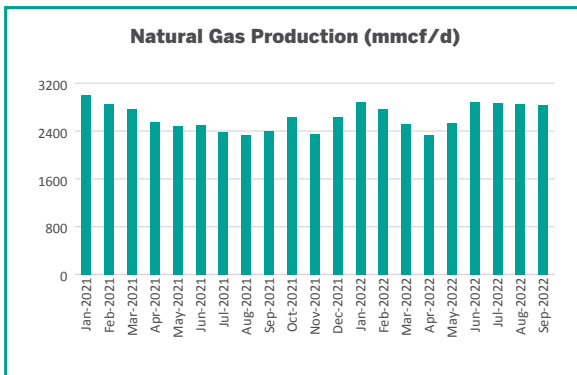
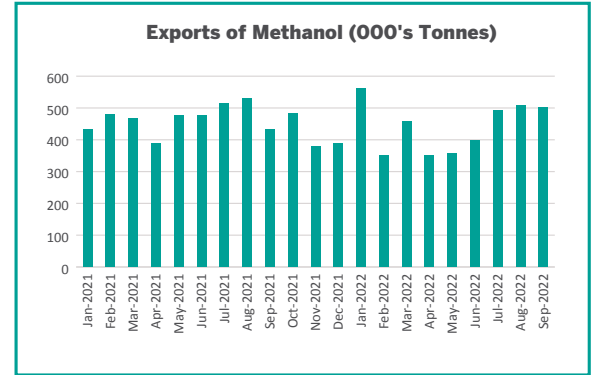
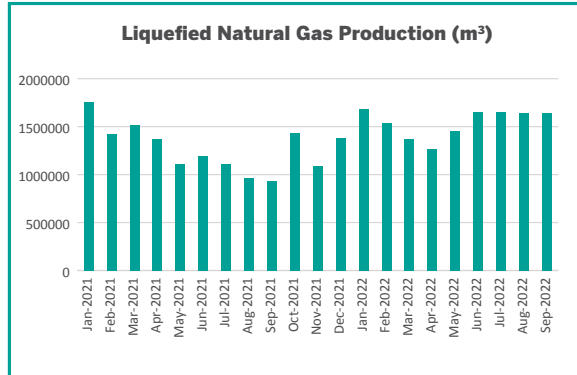
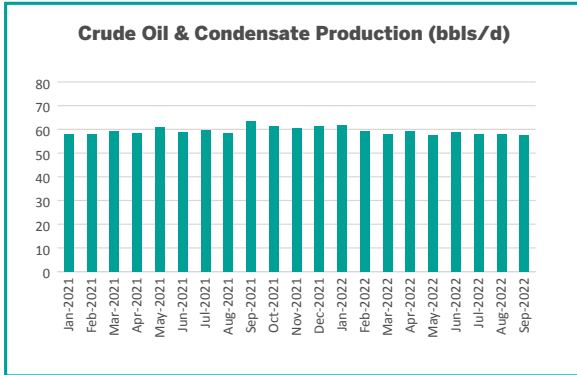
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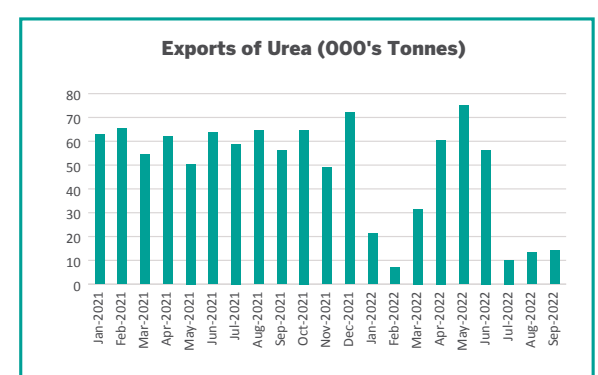
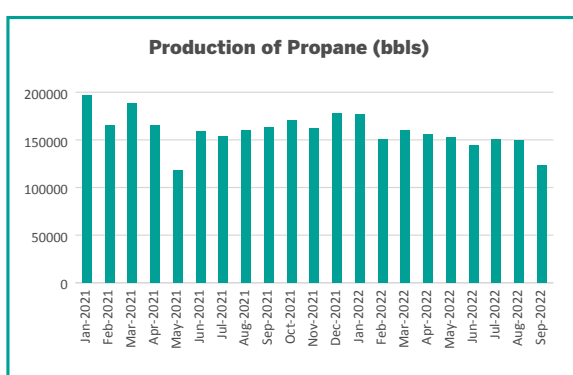
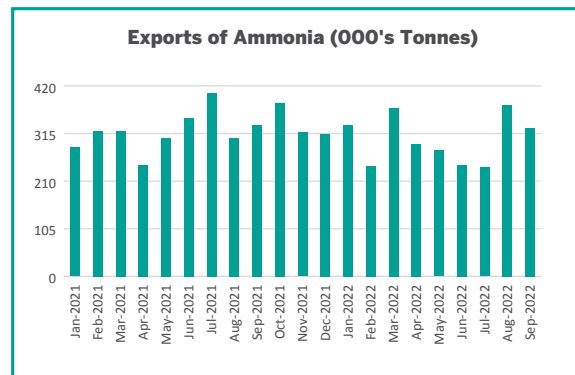
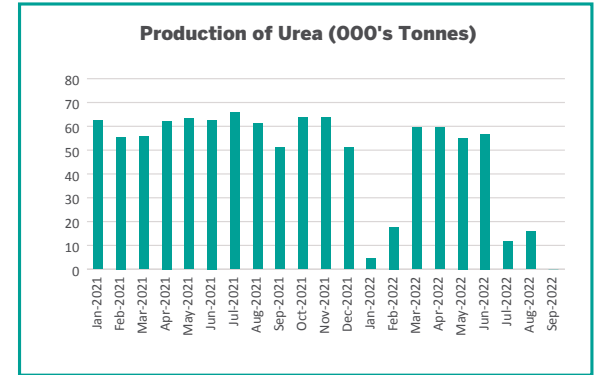
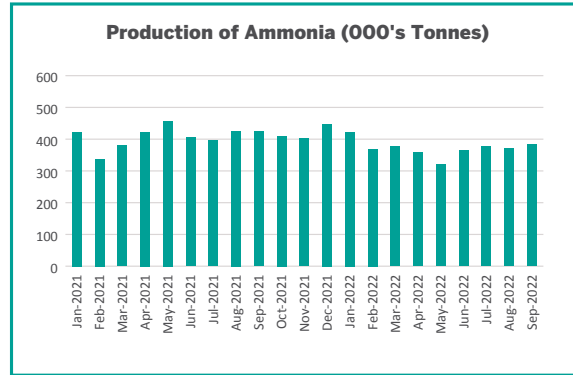
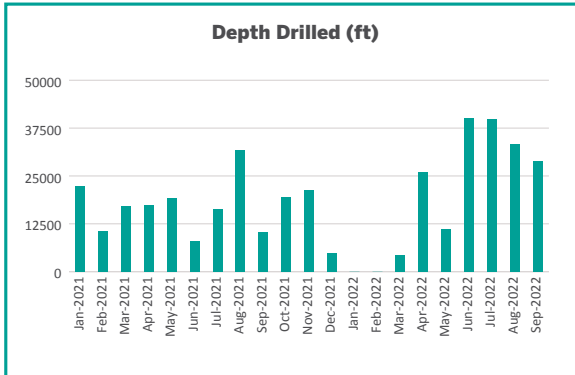
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Process Control Panels. Wellhead Surface and Sub-Surface safety valve control panels, hydraulic units, chemical injection units, flow line pilots, plugs, valves and tubing.

Valve Monitoring Systems. Position monitoring for Rotary Valves, Linear valves, low power control monitors. Networking for Valve Automation.

Hydrogen patents indicate shift towards clean technologies such as electrolysis, according to new joint study by IEA and EPO

Staff Writer | Energy Chamber

Hydrogen technology development is shifting towards low-emissions solutions such as electrolysis, according to a joint study of patents by the European Patent Office (EPO) and the International Energy Agency (IEA).

The report is the first of its kind and uses global patent data to provide comprehensive up-to-date analysis of innovation in all hydrogen technologies. It covers the full range of technologies, from hydrogen supply to storage, distribution and transformation, as well as end-use applications.

“Hydrogen from low-emissions sources can play an important role in clean energy transitions with potential to replace fossil fuels in industries where few clean alternatives exist, like long-haul transport and fertilizer production,” said IEA Executive Director Fatih Birol. “This study shows that innovators are responding to the need for competitive hydrogen supply chains, but also identifies areas—particularly among end-users—where more effort is required. We will continue to help governments spur innovation for secure, resilient and sustainable clean energy technologies.”

“Harnessing the potential of hydrogen is a key part of Europe’s strategy to achieve climate neutrality by 2050,” said EPO President António Campinos. “But if hydrogen is to play a major role in reducing CO₂ emissions, innovation is urgently needed across a range of technologies. This report reveals some encouraging

transition patterns across countries and industry sectors, including Europe’s major contribution to the emergence of new hydrogen technologies. It also highlights the contribution of start-ups to hydrogen innovation, and their reliance on patents to bring their inventions to market.”

The study presents the major trends in hydrogen technologies from 2011 to 2020, measured in terms of international patent families (IPFs), each of which represents a high-value invention for which patent applications have been filed at two or more patent offices worldwide. The report finds that global patenting in hydrogen is led by the European Union and Japan, which account for 28% and 24% respectively of all IPFs filed in this period, with significant growth in the past decade. The leading countries in Europe are Germany (11% of the global total), France (6%), and the Netherlands (3%).

The United States, with 20% of all hydrogen-related patents, is the only major innovation centre to see international hydrogen patent applications decline in the past decade. International patenting activity in hydrogen technologies remained modest in South Korea and China but is on the rise. In addition to these five main innovation centres, other countries generating significant volumes of hydrogen patents include the United Kingdom, Switzerland and Canada.

Hydrogen production technologies accounted for the largest number of hydrogen patents over the 2011–2020

period. While global hydrogen production is currently almost entirely fossil-based, the patenting data shows that low-emissions innovations generated more than twice the number of international patents across all segments of the hydrogen value chain than established technologies.

Technologies motivated by climate concerns accounted for nearly 80% of all patents related to hydrogen production in 2020, with growth driven chiefly by a sharp increase of innovation in electrolysis. The most innovative regions are now competing to host the first industrial roll-out phase, with the data suggesting that Europe is gaining an edge as a location for investment in new electrolyser manufacturing capacity.

Among hydrogen’s many potential end-use applications, the automotive sector has long been the focus for innovation, and patenting in this sector continues to grow, led mainly by Japan. Similar momentum is not yet visible in other end-use applications, despite concerted policy and media attention in recent years on hydrogen’s potential to decarbonise long-distance transport, aviation, power generation and heating. National net zero emissions pledges cannot be achieved without addressing unabated fossil fuel use in these sectors. One bright spot is a recent uptick in patenting for the use of hydrogen to decarbonise steel production—possibly in response to the post-Paris Agreement consensus that the sector needs radical solutions to cut emissions quickly.

For established hydrogen technologies, innovation is dominated by the European chemical industry, whose expertise in this sector has also given it a head start in climate-motivated technologies such as electrolysis and fuel cells. Automotive companies are also active, and not just for vehicle technology. Behind them, universities and public research institutes generated 13.5% of all hydrogen-related international patents in 2011–2020, led by French and Korean institutions, with a focus on low-emissions hydrogen production methods such as electrolysis.

The study finds that more than half of the USD 10 billion of venture capital investment into hydrogen firms in 2011–2020 went to start-ups with patents, despite them making up less than a third of the start-ups in the report’s data set. Holding a patent is a good indicator of whether a start-up will keep attracting finance: more than 80% of late-stage investment in hydrogen start-ups in 2011–2020 went to companies that had already filed a patent application in areas such as electrolysis, fuel cells, or low-emissions methods for producing hydrogen from gas.

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HDF Energy and PetroVietnam Technical Services Corporation (PTSC), PetroVietnam group, to cooperate on green hydrogen projects in Vietnam and the region

Staff Writer | Energy Chamber

HDF Energy has signed a Memorandum of Understanding (MoU) with PetroVietnam Technical Services Corporation (PTSC) to jointly develop, finance and build HDF’s Renewstable® and HyPower® hydrogen power plants in Vietnam. In addition, both parties will explore the potential of producing green hydrogen in Vietnam for the local market and the Asia Pacific region.

Over the past decade, Vietnam has seen rapid economic growth, leading to a substantial increase in energy demand. The majority of Vietnam’s energy today comes from fossil fuels (coal and gas). The Vietnamese government has shown particular ambition to decarbonise its electrical grid and has already made a strong effort to develop renewable energy sources. However, in some areas of the country, it has led to grid integration issues due to their intermittent nature.

PTSC, subsidiary of Vietnam Oil & Gas Group (PetroVietnam - PVN), is a leading company providing technical services for offshore oil and gas, industrial plants and renewable energy in Vietnam and the region. In order to support the country in addressing these economic, environmental, and technical challenges, PTSC has partnered with HDF Energy whose Renewstable® (power to power) and HyPower® (gas to power) multi-megawatt hydrogen power plants can deliver firm, non-intermittent, non-polluting power to the grids, 24/7.

Through this MoU, both parties will be combining their efforts and expertise to develop, finance and implement HDF’s multi-megawatt hydrogen power plant projects. In addition, HDF and PTSC will jointly explore the potential of producing green hydrogen in Vietnam and in other regional markets such as South Korea, Japan and Singapore. They will primarily examine offshore wind projects, through which green

hydrogen can be produced to decarbonise local industries.

These ambitions are in line with the PDP8, Vietnam’s primary energy planning instrument for the period 2021–2030, which states the role that hydrogen can play in the country to reach net zero emissions by 2050.

The MoU was signed in the presence of Le Manh Cuong, President & CEO of PTSC, and Tran Hoài Nam, Vice President of PTSC, and for HDF by Jean-Noël de Charentenay, Deputy CEO, Hanane El Hamraoui, VP Industry, and Tran Khanh Viet, Director Vietnam.

Mr. Geze, HDF’s Director for Asia, declared: “We are glad to collaborate with PTSC and explore synergies with the PetroVietnam group to develop green hydrogen projects in Vietnam. PTSC has demonstrated its technical leadership in managing complex projects in Vietnam and abroad. Combined with HDF Energy’s experience in hydrogen projects, we can offer unique expertise to

hydrogen offtakers and EVN. HDF Energy has started addressing the Asian market in 2021 and this MoU signing with PTSC will accelerate our developments in the region.”

Mr. Le Manh Cuong, PTSC President & CEO, shared: “Entering into this MOU is an important milestone for PTSC’s strategic business plan which includes investment in and development of renewable energy projects. With HDF’s proven hydrogen technology and expertise, I believe that PTSC and HDF together can promote green hydrogen projects in our country and contribute to the Vietnamese government’s commitment to zero carbon emissions in 2050, as announced at COP 26.”

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Shell and Eneco win bid to develop 760 MW offshore wind power in the Netherlands at Hollandse Kust (west) VI

Staff Writer | Energy Chamber

Shell and Eneco have won the tender to build an offshore wind farm at Hollandse Kust (west) lot VI. The project will have an installed capacity of approximately 760 MW and will be located approximately 53 km off the Dutch coast from the town of IJmuiden. The new wind farm will be delivered through a joint venture called Ecowende and is due to be operational in 2026. Shell and Eneco have already taken final investment decision for the wind farm.

Wael Sawan, Director of Integrated Gas, Renewables and Energy Solutions at Shell, said: "With Ecowende, we will take a huge step in growing our offshore wind portfolio while making a positive contribution to biodiversity. Through this project we can profitably accelerate the large-scale rollout of offshore wind in the Netherlands and beyond. This fits well with Shell's Powering Progress strategy to deliver more and cleaner energy to our customers, at home, on the road and at work."

Kees-Jan Rameau, Chief Strategic Growth Officer at Eneco, said: "Together with Shell, we were at the forefront of the development of offshore wind in the Netherlands. We gained a lot of knowledge, also in the area of ecology, and reported on

this. This has contributed to the further development of offshore wind in recent years. It is great that we are now moving into a new phase with Ecowende, with nature as the starting point. This is entirely in line with our ambition to live and act within the natural limits of the planet."

Ecowende aims to set a new ecological benchmark for the development and construction of wind farms in the North Sea and to enable offshore wind farms to have a net positive impact on nature in the future. The design of the wind farm takes account of the natural environment through measures such as: placing wind turbines a greater distance apart to create a corridor for birds to fly through; using innovative foundation techniques that keep the impact on marine mammals and marine life to a minimum; and placing natural reef structures on the seabed to boost biodiversity. More details on the investments, innovations and research programmes will be announced at a later stage.

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Shell to acquire renewable natural gas producer Nature Energy

Staff Writer | Energy Chamber

Shell Petroleum NV, a wholly owned subsidiary of Shell plc (Shell), has reached an agreement with Davidson Kempner Capital Management LP, Pioneer Point Partners and Sampension to acquire 100% shareholding of Nature Energy Biogas A/S (Nature Energy) for nearly US\$2 billion (€1.9 billion). The acquisition will be absorbed within Shell's current capital range, which remains unchanged.

Based in Denmark, Nature Energy is a producer of Renewable Natural Gas (RNG) from agricultural, industrial, and household waste.

By purchasing the shares in Nature Energy, Shell will acquire the largest RNG producer in Europe, its portfolio of cash generative operating plants, associated feedstock supply and infrastructure, its pipeline of growth projects and its in-house expertise in the design, construction, and operation of innovative and differentiated RNG plant technology.

This acquisition will further increase Shell's ability to work with its established customer base across multiple sectors to accelerate its transition to net-zero emissions. It will also support Shell's ambition to profitably grow its low carbon fuels production and customer offering

in its world-leading customer-facing marketing business.

"Shell's competitiveness in low carbon fuels derives from capabilities across the value chain, combining a world-class trading and supply organisation with access to differentiated technology and production assets," said Huibert Vigeveno, Shell's Downstream Director. "Acquiring Nature Energy will add a European production platform and growth pipeline to Shell's existing RNG projects in the United States. We will use this acquisition to build an integrated RNG value chain at global scale, at a time when energy transition policies and customer preferences are signalling strong growth in demand in the years ahead."

The transaction is subject to regulatory approvals and is expected to close in Q1 2023. Nature Energy is cash-generative, and the acquisition is expected to be both accretive to Shell's earnings from completion and deliver double-digit returns.

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IETA's annual report shines a light on carbon market evolution

Staff Writer | Energy Chamber

IETA's 2022 GHG Market Report tracks the evolution of carbon markets through a series of issue-based articles tackling MRV, policy certainty, decarbonisation in emerging economies, scaling carbon markets, and technological innovations.

Carbon Markets 3.0 is structured around the first iteration of carbon markets, emerging ones, and the future of the carbon market. Articles include a reflection on the market's transformation and lessons learned by carbon market pioneer Ken Newcombe, a look at how the EU ETS is reforming for future challenges, how South Korea is using emissions trading to balance a growing population and economy with environmental goals, the carbon pricing landscape in Colombia, and the technology that's shaping the markets of tomorrow.

The report also includes "The Business of Net Zero", a piece produced with Forbes on how businesses are transforming, and a profile of the Climate Action Data Trust, a blockchain-based data initiative from IETA, the World Bank and the Government of Singapore.

"This year has seen a wave of innovations to enhance the carbon market's functioning as the world continues to transition to a net-zero trajectory, while existing markets also work out how they can rise to the challenges ahead," says IETA President and CEO Dirk Forrister. "All of this is captured in this year's IETA GHG Market Report."

"The Paris Agreement includes a place for market mechanisms as they are a critical tool to reach our long-term environmental objectives in a cost-effective and efficient way," he continues. "As technology and science evolves, so too will carbon markets, to ensure they deliver net-zero ambitions and drive the change society needs."

Other highlights include the latest on Article 6, Japan's unique approach to emissions trading, how the voluntary carbon market can be scaled up with integrity, and how China is approaching its data challenges.

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It's time to refresh the Caribbean Energy Security Initiative

David L. Goldwyn | Contributor

Caribbean countries are in the midst of a multi-faceted crisis. The region has long struggled with electricity prices nearly double those of the United States, economic privation from the collapse of international tourism due to the COVID-19 pandemic, and elevated risks from extreme weather and rising sea levels. Today, these challenges are exacerbated by volatility in the price of oil and gas commodities—on which the region is still dependent—as well as disappointment in the Glasgow Climate Pact's failure to materially address the plight of island nations.

The United States has humanitarian, economic and national security interests in stabilising these economies and helping them achieve both energy and climate security. The most effective way to advance these interests would be to revitalise the Obama-era Caribbean Energy Security Initiative (CESI).

CESI was led by then-Vice President Biden beginning in 2014, a priority sustained by the Trump administration which included the Caribbean in its signature America Crece programme, which was designed to spur infrastructure investment throughout Latin America. A CESI "2.0" could represent the strongest virtues of these recent efforts, but in a form tailored to address the region's most pressing challenges today.

CESI 2.0

A CESI 2.0 would incorporate lessons learned about how to advance the energy transition in developing and emerging economies, insulate island states against commodity price volatility, and leverage the recent COP26 commitments by financial and development institutions to support sustainable development finance, such as those committed by the Glasgow Financial Alliance for Net Zero (GFANZ). We learned from the original CESI that success is achieved by partnering with those nations that have the political will to reform their energy systems, providing them with hands-on capacity to redesign their energy frameworks, encouraging them to adopt modern system designs, and assisting them in securing financing support.

Much progress has taken place in the Caribbean energy governance and capacity-building in the past seven years, as the Caribbean Community and Common Market (CARICOM), and many regional governments, have established renewable energy goals. Other established fora like the Caribbean Renewable Energy Forum (CREF) and roadmaps like the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) are intended to support transition efforts. The Dominican Republic and Jamaica, for example, have made significant advancement on decarbonising their power grids by substituting fuel oil with natural gas, as well as adopting new renewable energy systems. Indeed, throughout the region, the business case for renewables remains strong as fuel and power prices remain well above those in the United States.

But many countries in the region are challenged by established incumbents in the energy sector, policymakers' fear of increasing consumer prices, and a lack of technical capacity to implement broad reforms. Changes to the



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energy system tend to be driven by individual projects (for example, a utility-scale power generation plant) in a piecemeal fashion, which is not a scalable way to change a singular country's energy economy, let alone that of a region. The middle-income status of the region has been a serious impediment to securing development finance; all but Haiti are ineligible for US International Development Finance Corporation (DFC) support. Yet China's Belt and Road Initiative has already reached Jamaica and other nations. A core weakness of the proliferation of governmental, multilateral, and nongovernmental institutions focused on Caribbean development is that there is no single external leader (neither the US nor a Caribbean nation) who can call a meeting, drive change, and muster the diplomacy required to effectively pull all the financial and political players together.

During the global pandemic, the need for reform in this region has only grown. The climate risk is becoming more severe, with hurricanes, extreme weather events, and sea level rise making resilience a top-tier issue. New, decentralised approaches to crafting a sustainable future energy system are required.

But opportunity has grown as well. The numerous private sector and philanthropic financial sector pledges publicised at COP26 affirm that there is ample climate finance available for projects, even small ones. Declines in the cost of wind and solar, advancements in battery technology, and development of mini grids make renewable energy solutions more viable and resilient for more economies than ever before.

A refreshed CESI

The keys to a refreshed CESI are to produce country-rooted, country-supported and scalable project investment mechanisms that can attract the enormous amounts of capital now earmarked for renewable energy projects. A new style of development assistance is required, with technically capable specialists embedded with governments to rapidly craft investment programmes. In the Caribbean, putting available funds to use will require a concerted

effort to develop a basic, broadly applicable framework for the region and then identify willing governments. Ideally, these governments would be able and willing to move on a fast-track, energy sector-wide approach to attract the newly available climate investment funds in the next two years. The old system of trying to slowly build capacity, or hand-hold project developers, or persuading governments to reform electricity laws, is too slow and limited.

Once a basic system is developed and viable opportunities are identified, members must graft newer and quicker governmental, intergovernmental, legal, regulatory and investment frameworks onto existing energy governance systems. Such frameworks could take the form of recognised transparent renewable energy auction systems, with provisions (like third country arbitration, guaranteed transmission access, and predictable tariffs) that can quickly attract financing and allow generation to rapidly scale up.

Argentina: RenovAr

Argentina's renowned RenovAr programme is one recent example of such a strategy succeeding, as it managed to attract around \$7 billion in new investment in little more than two years in a country that also had weak credit and high investment risks. According to Greenmap, which helped to design the RenovAr programme, success in Argentina was made possible by a uniquely designed risk guarantee programme facilitated by the World Bank as well as multi-layered financial de-risking mechanisms. A similar proposal could work, albeit at smaller scales, in the Caribbean; a national auction inviting investors to build a network of electric vehicle charging stations, for example, might benefit from multilateral development bank de-risking or first-loss guarantee mechanisms that could convince a private investor to take a chance on investing in a small island nation long dependent on imported gasoline.

After COP26, the United States needs to show that it is serious about mobilising support for island states and move from aspiration to implementation. It can demonstrate this leadership by appointing a senior diplomat to lead CESI 2.0, following the model of the Caspian Basin Energy Diplomacy (CBED) Envoys from the 1990s and 2000s to secure country buy-in, work with available capacity partners, and organise country platforms of appropriate private and public financial institutions (such as the Inter-American Development Bank). Such a programme would be able to muster all the relevant programmes of the US government (such as the US Trade and Development Agency) to deliver on country strategies and rally private sector support for the region. By doing so, a CESI 2.0 can build significantly upon the original CESI by using greater scale and economy-wide approaches that can most readily access the post-COP trove of new climate finance.

SIX-POINT PLAN TO SECURE NEW NATURAL GAS SUPPLIES AND MAXIMISE EXPORTS FROM TRINIDAD & TOBAGO: 2022 – 2030

FAST-TRACK bid rounds & the approval processes



1

Acreege needs to be awarded to competent operator companies for new exploration to take place. Improving regulatory approval processes will reduce the time between the award of new acreage and first gas production. This will significantly improve project economics and make new gas available faster. A one-year reduction in the time taken to first gas has been calculated to create US\$ 120 million in additional net present value for a typical Trinidad & Tobago medium-sized offshore gas field.¹

The current structure of upstream royalties and taxation does not encourage companies to reinvestment in exploration or the development of new fields. The fiscal regime, inclusive of the VAT system, needs to be reformed to unlock new investment.²

2



REFORM upstream tax system to incentivise investment

INVEST in reducing the carbon intensity of operations and products



3

Cross border adjustment mechanisms (CBAM) for carbon taxes pose a threat to exports of LNG, petrochemicals and iron and steel from Trinidad & Tobago, especially to the European Union. If Trinidad & Tobago commodity exports are to be able to sell to higher price premium markets the carbon intensity of production must be able to compete with other jurisdictions. This will require the reduction of CO₂ emissions from operations, reducing methane emissions and flaring, accessing offsets, and the introduction of low carbon molecules into the product mix (including green³ and blue⁴ hydrogen).

Gas for electricity generation is sold at prices far below the market rates for petrochemicals or export markets through LNG, which acts as a disincentive for upstream companies to invest in gas production. Reducing gas going to electricity, though both increased renewable generation and improved energy efficiency (including upgrades towards high efficiency electricity generation and higher reliability in IPP and distribution sectors) will make more gas available for these foreign exchange earning sectors and will improve the profitability of upstream gas developments.⁵ Green hydrogen can also supplement natural gas as a feedstock.

4



DIVERT GAS from domestic electricity generation through energy efficiency and renewables

Encourage innovative approaches to SMALL FIELD DEVELOPMENT



5

As Trinidad & Tobago has matured as a gas province, new fields are often smaller and more difficult to develop. Working with the Ministry of Energy, operator companies need to find new ways of bringing this gas to market making the best use of existing infrastructure.

There are significant gas resources in neighbouring territories, especially Venezuela but also potentially in Barbados and Grenada (in the longer-term). In addition to significant untapped offshore gas fields, more natural gas is flared on the North Monagas oilfields in eastern Venezuela alone than the current shortfall in Trinidad production. Securing these resources for export to Trinidad is politically challenging but has huge potential economic benefits and, in the case of the flared gas in particular, significant climate change benefits as well.

6



Secure CROSS BORDER SUPPLIES

1. Kenesjay Systems Ltd "Project Fast-track" submission to T&T Energy Chamber, November 2019. A reduction in the time taken from bid round to first gas from the current average 5 years to 4 years would represent an increase in the NPV (8%) of a typical gas field in T&T from US\$ 815 million to US\$ 934 million.

2. Energy Chamber's Fiscal Reform Task Force "Final Report" delivered to Government of Trinidad & Tobago, August 2021.

3. Green hydrogen produced from the electrolysis of water or plasmification of waste.

4. Blue hydrogen produced from natural gas with CO₂ captured and sequestered (carbon capture and sequestration).

5. "Draft Energy Conservation and Energy Efficiency Policy Action Plan 2020 to 2024", submitted to Minister of Public Utilities, September 2019.



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