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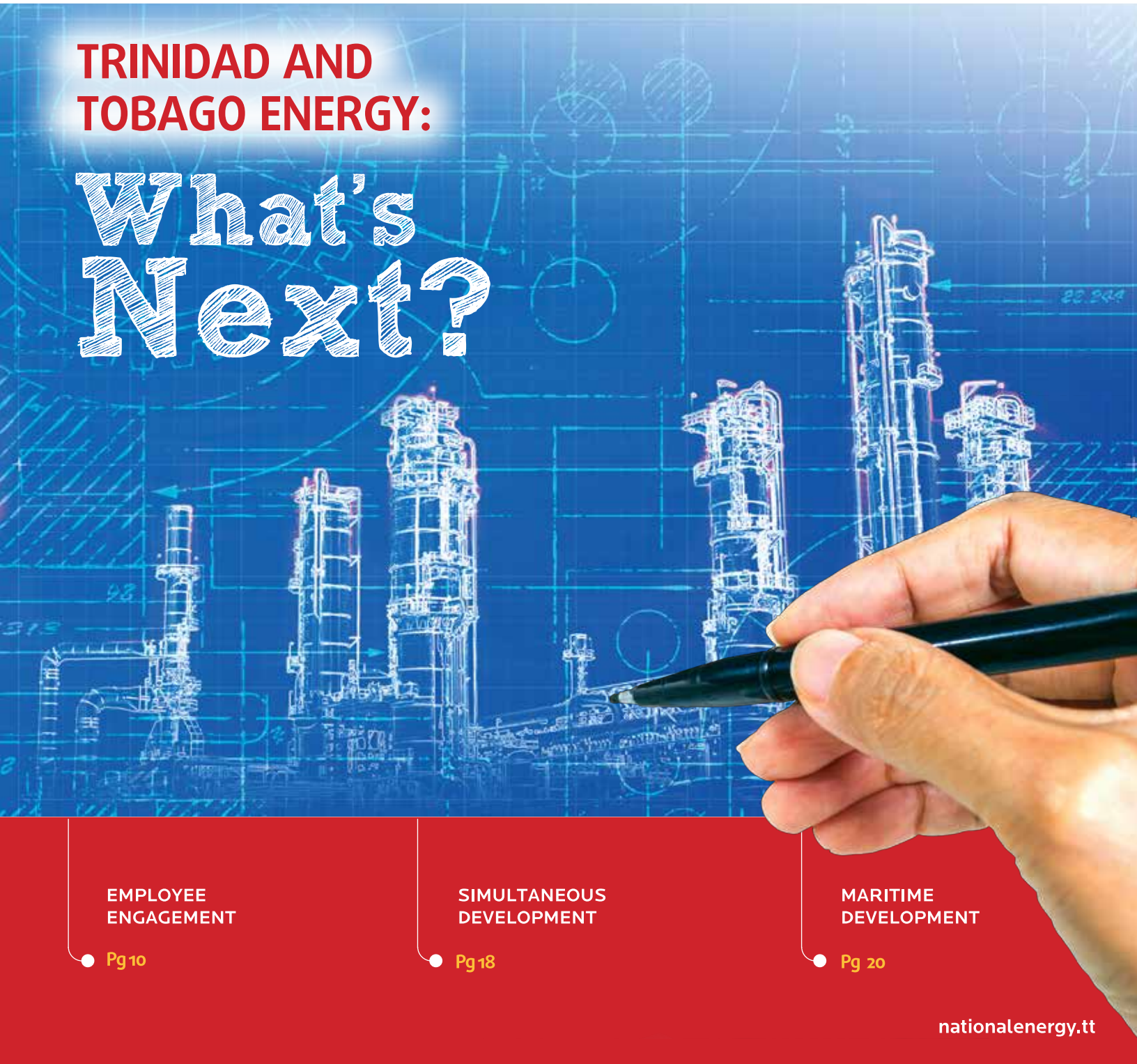
National Energy
CORPORATION OF TRINIDAD AND TOBAGO

PIONEER

BUSINESS | PEOPLE



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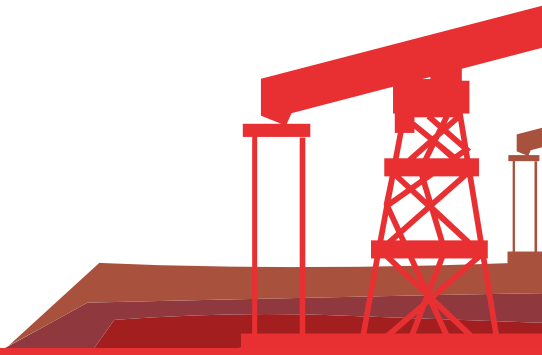
TRINIDAD AND TOBAGO WHAT'S NEXT?



BY: STEPHON JIMENEZ

Trinidad and Tobago, an energy success story

There is little doubt, if any, that Trinidad and Tobago's model of resource-based economic development is a success story. Against all odds, a small country, with a land mass of just 5,000 square kilometres, 1.3 million people, and less than 0.5% of the world's natural gas reserves, was able to position itself as a world leader in ammonia and methanol exports; become one of the top 10 largest producers of LNG; establish a world-scale petrochemical industry with related port and industrial infrastructure; and ultimately, transform its economy from a fledgling agri-based economy in the 1960s, into the energy-driven economic powerhouse.

Success, however, doesn't come without struggle

In the mid to late 1980s however, global forces appeared to have interrupted our country's ambitious plans, as falling crude and petrochemical prices threatened the very natural gas-based economic foundations upon which so much of the country's industrialisation dreams were built. As a result, after 10 years of an aggressive and focused state-led, gas-based development programme, which cost US$3.3 billion, dire economic circumstances forced the then government to divest its downstream natural gas assets. The sector would experience a five-year lull until, in 1991, there was a renewed focus on accelerating growth in the natural gas sector. This new

ENERGY:

period would again see the state take the lead and usher in a two-decade-long natural gas economic golden age, in which over 20 downstream plants and four LNG trains would be established, and the country's Gross Domestic Product (GDP) per capita would rise from US$4,360 in 1991 to a high of US$21,395 in 2008.

As we enter into another period of testing...we examine 'What's next?'

The financial crisis of 2008 would sow the seeds of uncertainty in global economic markets, the bitter fruits of which we are still reaping today. As a result, Trinidad and Tobago, much like in the mid-1980s, would have to weather the storm of falling oil and petrochemical prices. However, this time, we are no longer the emerging natural gas province we were over 30 years ago. Instead, we are by all definitions a mature province, plagued by low reserves-to-production ratios, gas curtailment issues and an ageing infrastructure. Given this situation, the question on many citizens' minds is "What next?" In this issue of the *Pioneer*, we explore this very question by firstly examining the experiences of the past, capturing the lessons learnt and identifying the next steps for the sector. In particular, we will examine the areas of energy investment, resource-based economic development, diversification, natural gas market structure, and culture. These topics however, represent only a fraction of the many issues that need immediate attention at this time. We hope nonetheless that they act as the compost in which the seeds of change can be sown, the fruit of which, future generations would enjoy.

Equipment for the construction of bpTT's Juniper platform is loaded at Berth 3, Port of Brighton

NATIONAL ENERGY: WHAT BUSINESS ARE WE IN?

BY: SHEILA MC INTOSH

In his seminal paper, "Marketing Myopia" (HBR 1960), Theodore Levitt posited that organisations should approach marketing as not merely a means of selling products, but rather as a means of satisfying customers' needs. In so doing, many industries came to view marketing as a strategic function that allowed them to look at the business from wider perspectives. Levitt examined how the then petroleum industry redefined itself as the energy industry, allowing oil firms to capitalise on advances in natural gas technology.

Conversely, the train service failed to define itself in the broader context of transportation and missed out on the opportunity to "get in on the ground floor" of air transport.

In the 37 years since its incorporation, The National Energy Corporation of Trinidad and Tobago (National Energy) has sought to see its role from a wide perspective. The company's vision is to be a global leader in the development of sustainable energy-based industries. In working towards this vision, National Energy has been involved in a wide range of energy-related business activities over the years. These have included ownership and operation of petrochemical plants, investment facilitation, estate and port development, as well as the provision of marine infrastructure and towage services.

The current economic environment, though challenging, is rife with opportunity and potential. But the organisations who will

emerge stronger through this period will be the ones who are able to broaden their visions and see the opportunities within the economic maelstrom. At this critical juncture, we take a glance at National Energy's past in order to revisit the company's business definition. This is aimed at obtaining fresh perspective on the way ahead in the context of The NGC Group of Companies, as well as the current economic realities and state of the local energy industry.

Monetising Natural Gas

The National Gas Company of Trinidad and Tobago Limited (The NGC) was formed in 1975 with the primary objective of monetising the country's natural gas resource which had been mostly flared or utilised in small amounts for electricity generation and plant production. As the demand for natural gas as a feedstock continued to grow steadily in 1979 the government incorporated National Energy to continue the work of the Coordinating Task Force. The mandate was to develop Trinidad and Tobago's hydrocarbon-based and energy-intensive industry. National Energy's role was to bring a strategic and orderly approach to growing the energy sector which had up to that time, developed organically.

In its earliest years, National Energy played a direct role in facilitating the advancement of the petrochemical sector through ownership and operation of Trinidad and Tobago Urea Company (TTUC) and Trinidad and Tobago Methanol Company (TTMC). Confident in National Energy's ability to manage mega projects and to further support the burgeoning natural gas-based sector, government entrusted the company with the construction of the 56-kilometre 30" onshore pipeline from Guayaguayare to Phoenix Park via Rio Claro. The line, which was commissioned in 1984, provided a more reliable supply of natural gas to Point Lisas Industrial Estate.

National Energy engages stakeholders in a business opportunity identification workshop

Among National Energy's many accomplishments was also the construction of multiuser marine terminals at Savonetta, Point Lisas where products would be shipped. The first facility to be built was the 406-metre long Iron and Steel Company of Trinidad and Tobago (ISCOTT) Dock completed in 1981. This was followed by the completion of Savonetta Pier 1 in 1982 for the export of ammonia, methanol and urea. In the same year, the company also invested in towage services, registering its first fleet of tugs – *Errol M, Carlton M, Robert M and Point Lisas M* – named in tribute to some of the country's business pioneers.

In the mid-1980s, National Energy would experience the full brunt of the economic downturn as commodity prices plummeted and the country was faced with a recession. This would result in the divestment of TTMC in 1988 and TTUC in 1990. Ultimately, in 1991, National Energy would be absorbed into The NGC, as this company continued to earn profits and held a growing asset base. National Energy, now a paper company, however retained its infrastructure development portfolio as part of The NGC.

Building the Gas Economy

In 1999, National Energy was reoperationalised as a fully owned subsidiary of The NGC with a directive to continue the development of infrastructure to support the country's expanding gas economy. The company would continue operating critical port and marine assets at Point Lisas including the Savonetta Piers, Point Lisas Channel and Turning Basin and the company's fleet of tugs and workboats. National Energy also had responsibility for managing La Brea Industrial Development Company Limited (LABIDCO) which was jointly

The Errol M*, registered in 1982, was one of National Energy's original fleet of towage vessels*

owned by The NGC (81%) and the Petroleum Company of Trinidad and Tobago Limited (Petrotrin) (19%). The company's mandate was further expanded in 2004 when responsibility for business development was once again given to National Energy. Development and management of the country's newest industrial estate, located at Union Village, La Brea, was also added to the company's portfolio. In reassuming its original role, the staff of National Energy grew to provide the unique skill sets required for evaluation and advancement of investment projects with a heavy focus on downstream development and value creation.

What's Next

As it remains an integral part of the state energy sector and a member of The NGC Group along with Phoenix Park Gas Processors Limited (PPGPL) and NGC CNG, National Energy stands ready to further expand its perspective to meet the demands of a rapidly changing energy environment. We see ourselves as being in the business of economic development for the benefit of the people of Trinidad and Tobago. What this means is that the company's rate of development must match the rate of change in the global economy. We must embrace commercialism and utilise modern marketing approaches to extend the life of, and sustain, the local energy industry. We must develop the skills and ideologies necessary to compete among the larger energy domains and we must do it with confidence.

The Chairman of The NGC, Mr. Gerry C. Brooks, has identified elements of the company's future development strategy including the export of energy expertise, entry into new jurisdictions and development of new services and markets. National Energy is keen to carry out its role in the new era of Trinidad and Tobago energy. The times ahead will be challenging. However, based on our storied past, we are certainly equal to the challenge.

EMPLOYEE ENGAGEMENT:

THE VALUE FROM WITHIN

Ask your employees to accomplish more with less and, if they are disengaged, you are likely to be disappointed. The concept of employee engagement is the subject of a growing body of literature that explores what it is, how it can be fostered and why it is desirable.

Definitions of employee engagement range from those which stress the employee's attachment to the company to those which see it as the outcome of efforts by both employees and organisational leaders. Those who hold the former view regard engagement as the emotional commitment an employee has to the organisation and its goals. When these employees have choices to make about their contribution at work, they will act in a manner that furthers the interest of the organisation. Conversely, others, such as Benefits Consultant, Watson Wyatt, believe that engagement is both employee and employer driven. On one hand, Wyatt emphasises having committed employees who have the innate motivation to help the organisation succeed. On the other hand, he also stresses the need for leaders who provide "line of sight" i.e. the vision, focus and direction employees need from their leaders to help them understand what is required to make the organisation succeed.

All agree, however, that engaged employees provide benefits for their organisations. These benefits range from employee retention to higher profits. Consultant, Kevin Kruse, has designed an "engagement-profit chain" which illustrates how employee engagement leads to superior employee service and retention, customer satisfaction and loyalty, and heightened productivity, growth and profit. One of the most significant outcomes of employee engagement is retention, since organisations require efficiency and stability from human resources in order to work effectively and remain competitive. Employee retention creates cost savings by reducing the amount spent on recruitment and training. It also saves time and resources as new employees need training and acculturation.

Chairman of The NGC Group of Companies, Mr. Gerry C. Brooks, shares a light moment with employees at the Group's Employees Forum

Another major benefit of engaged employees is seen in their use of discretionary effort: that is, the difference in the level of effort an employee brings to excel at a task, and the effort required only to get by or make do. Human Resource Consultant, Curt Wellington of Arthur Lok Jack Graduate School of Business, notes that engagement is not about obedience and hard work but rather, about the opportunity for employees to work meaningfully, adding value to the organisation and its stakeholders.

While the consensus is that engaged employees are preferred, the underlying question is how do organisations get employees engaged? Human Resource Consultant, Brady Wilson, a founding partner of Juice Inc., states that true engagement occurs when employees have a sense of purpose, significance and security; when they feel that they belong to a group, yet have the freedom to work and advance individually. Employees like these achieve fulfilment from their work and are, therefore, more likely to stay with their organisations, and offer discretionary effort. Quantum Workplace, known as the research firm behind Best Places to Work programme, released a list of five key factors that set companies with higher engagement scores apart from others. These factors are:

1. Setting a clear, compelling direction that empowers each employee
2. Engaging in open and honest communication
3. Maintaining a focus on career growth and development
4. Recognising and rewarding high performance
5. Providing employee benefits that demonstrate a strong commitment to employee well-being.

Deloitte University agrees that the employee-work contract has changed and now forces organisational leaders to shape organisations that engage employees as sensitive, passionate, creative contributors. Following two years of research, the university has designed a system of engagement which will create, in their terms, a "simply irresistible organisation." One would expect that by becoming such an organisation, National Energy would be able to extract the latent value within its employees.

TRINIDAD AND TOBAGO ENERGY SECTOR: BUILDING ON OUR SUCCESS

BY: TAMARA GILDHARRY

In 1975, the Government of the Republic of Trinidad and Tobago (GORTT), as a means of cementing its leadership role and effectively controlling the development of the country's gas-based petrochemical industry, embarked upon two initiatives. Firstly, in August of that year, The National Gas Company of Trinidad and Tobago Limited (The NGC) was established to be the sole purchaser, transporter and seller of natural gas in Trinidad and Tobago. In the following month, a Coordinating Task Force was formed to identify and evaluate gas-based industries for development and to undertake the planning, design and development of the industrial site and other infrastructure to support the industries. To continue the work of the Task Force, the National Energy Corporation of Trinidad and Tobago Limited (National Energy), was incorporated in 1979 and is now a wholly owned subsidiary of The NGC. National Energy is mandated by the GORTT to conceptualise, promote, develop and facilitate new energy based and downstream projects.

Historically, the natural gas sector has focused on projects, such as ammonia and methanol, which use natural gas in large quantities as their main feedstock. This has led to Trinidad and Tobago's reputation as a global natural gas player. Considering this high use of natural gas in Trinidad and Tobago, one may want to examine the role this single resource has played in the development of the local economy.

Gas exporting countries such as the United Kingdom, Russia and Qatar have witnessed vast economic benefits from a primarily natural gas economy. Trinidad and Tobago is no different. The manifest effects on the economy range from increased government revenues to job opportunities to community development and these have all had a tremendous effect on the economic growth of Trinidad and Tobago.

According to The Petroleum Act and Regulations, Chapter 62:01, GORTT is entitled to a royalty that is stipulated in the individual licence arrangements between a company and GORTT. For natural gas,

the royalty rate ranges from 0% to 15% of the value of natural gas. This fee is in addition to corporate taxes, the Business Levy, the Green Fund Levy and income tax. For the 2014-2015 fiscal year, the local oil and gas sector of Trinidad and Tobago contributed TT$21.22 billion to the country's Gross Domestic Product (GDP) from these collection measures. This represented roughly 41.6% of total government revenues in 2014. The energy sector is also responsible for approximately 80% of the country's exports. While this revenue may be a drop in the proverbial bucket of the global energy sector, it has sustained the economy of Trinidad and Tobago for over 40 years.

The availability of natural gas has driven wider economic growth by acting as a catalyst for downstream industries such as petrochemicals. The versatility of natural gas makes it an important building block for other industries. The local petrochemical sector depends on natural gas to create process heat or steam and as a raw material. Trinidad and Tobago currently has 11 ammonia plants and seven methanol plants which have led to its status as a global leader in ammonia and methanol exports. Both of these products are primary derivatives of natural gas.

Furthermore, the liquefied natural gas (LNG) industry started with the exportation of LNG from the first train at Point Fortin in 1999. The industry was then expanded in stages during the 2000s making the country one of the world's largest LNG exporters. Natural gas is now also being used as a substitute to traditional transportation fuels such as diesel and gasoline in the form of compressed natural gas (CNG). In Trinidad and Tobago, the CNG initiative aims to reduce the fuel subsidy currently employed by GORTT and reduce carbon dioxide emissions. National Energy's sister company, NGC CNG, a subsidiary of The NGC, was established in 2014 to facilitate this initiative.

TGU Power Plant at Union Industrial Estate, La Brea

Another benefit to a natural gas-based economy is the potential for job creation and development. While direct job creation accounts for only 5% of this country's labour force, the indirect employment through energy services and related sub-sectors is quite significant. The construction of new natural gas-based plants or the maintenance of existing facilities have necessitated a skilled and well-rounded labour force. The high levels of international trade activity because of natural gas has led to the development of several ports and piers, such as the Savonetta Piers at Point Lisas, and in turn employed hundreds of persons over the past four decades.

The local electricity sector depends on gas to produce a reliable power supply. To date, 99% of all electricity generated in the country is from natural gas. According to the Trinidad and Tobago Electricity Commission (T&TEC) Act 54:70, T&TEC can propose new tariffs, but such tariffs can only be implemented through the Regulated Industries Commission (RIC). This combination of an abundance of natural gas and a regulatory body setting the rate allows Trinidad and Tobago to have one of the lowest electricity rates compared to the wider Caribbean region, with an average of US$0.06 per kilowatt hour. This ensures that citizens and investors reap the benefits of a natural gas economy. Conversely, this leads to a lack of residential and commercial energy conservation and makes the Trinidad and Tobago economy vulnerable to changes in the international gas prices.

The local natural gas industry has also helped to develop the communities in which its main operations take place. The Point Lisas Industrial Estate has been booming with activity since the early 1980s. This has in turn developed the surrounding areas of Couva and California. In La Brea, the establishment of energy-based and other new industries at the Union Industrial Estate (UIE) is also contributing to development in that area in terms of community enhancement and employment.

bpTT's Juniper Platform is constructed by TOFCO at Fabrication Yard, Port of Brighton

According to the U.S. Energy Information Administration, in 2015, Trinidad and Tobago had estimated proven natural gas reserves of 340 billion cubic metres (12 trillion cubic feet). This currently ranks us as 35th in the world, above countries such as the United Kingdom and Colombia.

Undoubtedly, Trinidad and Tobago has reaped considerable benefits from its natural resources. Our economy has thrived on the energy sector and continues to depend on its existence for future development. However, more can be done to harness the strengths of the local energy sector to achieve greater value from the development of other economic sectors in Trinidad and Tobago. To this end, National Energy has been involved in the development of several projects including an integrated melamine complex which would provide inputs into the furniture industry thereby creating the linkage and facilitating the development of the manufacturing sector through the energy sector. Other projects involve the production of equipment to facilitate the utilisation of renewable energy. The use of such equipment is being demonstrated in a solar house, constructed in 2015 and the energy of which is being met only by solar energy.

In addition to reducing our dependency on natural gas, we must also increase production. Professor Andrew Jupiter, former President of National Energy and current Chairman of Petrotrin, has highlighted the need to incentivise the development of smaller gas fields by lowering profit taxes, as these fields are often left undeveloped because they are deemed uneconomical. Incentivising these fields could increase the current natural gas availability in the country and in turn, lead to the further development of Trinidad and Tobago.

In the next issue of the *Pioneer*, we will focus on further harnessing the strengths of our lucrative energy sector to advance the development of Trinidad and Tobago's economy.

Repairs to Berth 2 Project

The Repairs to Berth 2 Project at the Port of Brighton continues to progress towards completion in May 2017.

The project entails the repair of the 307m quay wall using the combi-wall method. Installation of tie rods to connect the anchor wall to the main wall was 72% completed as at 30 June 2016.

A key component of the project involves the construction of a heavy loading platform (HLP) which will facilitate loadout of bpTT's Juniper platform in December 2016. Phase 1 of the HLP is 100% completed while the second phase stood at 57% completion at the end of June.

The Repairs to Berth 2 Project is being conducted by international joint venture firm, Soletanche Bachy Cimas and manpower is being employed from the community of La Brea and environs.

Tubular piles for new HLP are installed

Concrete is poured for Phase 1 of HLP

Tie rods are assembled in preparation for installation

Photos supplied by the Infrastructure Planning & Development Dep

2

Installation of formwork for Phase 1 of HLP

3

Steel reinforcement for HLP is put in place

5

Piling for anchor wall commences

6

Piling for anchor wall in progress

8

Precast facia panels are installed at berth face

9

Piling for main wall takes place in the water

artment

SIMULTANEOUS DEVELOPMENT:

IS THERE ROOM FOR MORE AT THE ECONOMIC TOP?

BY: SHEILA MC INTOSH AND CHARLINE NOEL

Chairman of the University of Trinidad and Tobago (UTT), Dr. Kenneth S. Julien T.C. (Professor Emeritus), in his opening remarks at the UTT Distinguished Lecture and Panel Discussion on "The Future of the Energy Sector," indicated that the university embraces the concept of diversification. He explained that even though UTT, which was preceded by Trinidad and Tobago Institute of Technology (TTIT), had its primary focus on building capacity in the energy sector, the university understands the need to simultaneously build the non-energy sector. According to Dr. Julien, this understanding led to the formation of the academies for Arts, Performing Arts, Fashion and Design and Sport at UTT.

In examining the question of economic sustainability for Trinidad and Tobago against the backdrop of the harsh global economic climate, the *Pioneer* will be looking at diversification, which has emerged as an ongoing theme in the national conversation surrounding the country's financial future. We will examine what is currently being done to develop non-energy industries and how synergies, if any, between the energy and non-energy sectors can be identified and maximised.

Taking our point of departure from Dr. Julien's remarks, the *Pioneer* sat down with Dr. Hollis Liverpool, Programme Professor for Arts, Letters, Culture and Public Affairs at UTT to learn how culture can contribute towards

Dr. Hollis Liverpool, Programme Professor for Arts, Letters, Culture and Public Affairs at the University of Trinidad and Tobago

diversification. Prof. Liverpool, a.k.a. the Mighty Chalkdust, is one of this country's most successful calypsonians, having captured the title of Calypso Monarch on eight occasions. What many may not know about the prolific composer however, is that he holds a Ph.D. in History and Ethnomusicology from the University of Michigan; has authored three books about calypso and Carnival and is the author of the Master of Arts in Carnival Studies at UTT, where he functions as programme professor and lecturer.

We asked the professor to define culture as a point of reference for our interview. He smiled as he recalled the words of anthropologist, Sir Edward Burnett Tylor:

"Culture is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society."

Photo: Blacqbook /Shutterstock.com

Prof. Liverpool explained that culture consists of the things that society accepts as worthwhile including its principles for living and ideologies. He stated, "Culture comes out of society. How the government treats culture is important – choosing the right people to drive cultural activities and development is important." Speaking about the work being done at UTT, Prof. Liverpool echoed Dr. Julien's comments, "We found that too many of our students were graduating with no knowledge of culture. We wanted to show students that education is more than subjects like French, Spanish, and Engineering. Culture would assist them in finding out who they are in the world."

Prof. Liverpool holds the view that there are tremendous social and commercial benefits to be derived from cultural and creative industries. "Cultural people don't commit crime. Culture unifies us." When asked about Carnival as a commercial enterprise, he explained, "At the university, we cannot make entrepreneurs; we provide ideas for entrepreneurship." He outlined many ways in which Carnival has helped create entrepreneurial opportunities in areas such as sound engineering, mas making, catering, event management, transportation, hospitality management, entertainment among others. To illustrate his point, Chalkdust informed us that his record for Carnival 2016 was produced by his students. "They brought their equipment into my office and got it done for much less than a recording studio would cost."

We asked the professor whether there could be synergies between the energy and cultural industries and he replied, "Culture is energy. Unless the culture is animated, it cannot survive. Culture helps to create healthy minds and healthy, satisfied minds buy." He shared his view that culture should be taught more in the nation's schools in order to build a more balanced and sustainable society. He also feels that the private sector, including energy companies, should do more the support the cultural industry.

The performing arts and entertainment industry (including recreation, accommodation and food services) in the United States accounted for 3.8% of that country's GDP in 2014 and value added fr (US Department of Commerce, http://www.bea.gov/). Similarly, the cultural and creative industries in Trinidad and Tobago can contribute to the fiscal well-being of the country in a greater dimension. According to Prof. Liverpool, in order for this to be realised, "Companies must see culture, understand it and invest in it."

MARITIME DEVELOPMENT

BY: SHEILA MC INTOSH AND RHONELDA DANIEL

Trinidad and Tobago is among the world leaders in the production and export of ammonia, methanol and LNG. National Energy's own multiuser marine terminals located at Point Lisas in the Gulf of Paria handled 597 vessel calls in 2014 and 555 vessel calls in 2015. With the large number of ships visiting our ports on a daily basis, the question may arise as to "how many of these ships are owned and operated by local shipping companies?" The answer is, none. Even with a mature energy industry and over 100 years of commercial oil production, Trinidad and Tobago does not currently own or operate its own petrochemical or LNG tankers.

In 2015, approximately 4.9 million metric tonnes of fertiliser (ammonia and urea) and 5.5 million metric tonnes of methanol (Central Bank of Trinidad and Tobago, 2015) were exported from our shores via foreign-owned ships, which means that none of the freight rate was earned by this country. Freight earnings are usually lucrative depending on the shipping routes, seasonality and tonnage capacity. Entering into time charter agreements under which a vessel is hired for a fixed period of time, usually ensures a steady stream of freight income depending on the contract terms for the stipulated period. The premise of ship ownership therefore warrants consideration.

Ship ownership is no new idea to Trinidad and Tobago or to National Energy. In 1981, Marine Services Hamburg completed a

National Energy Explorer *based at the Port of Galeota*

feasibility study commissioned by National Energy on the options for shipping methanol. The study recommended that the company pursue ownership of two medium-sized, specialised methanol carriers and negotiations were completed with Japanese and Korean companies on definitive terms for the supply of two 14,000 DWT ships. The plan was for these ships to be completed by 1982 in order for the vessels to be available when the methanol plant came on stream in 1984. The study indicated that unless vessels of suitable design (for handling high-purity methanol without cleaning delays) could be obtained more economically on long-term charter, ownership of purpose-built carriers would be appropriate. It was also recommended that opportunities for freight rationalisation deals (swapping) be sought for trans-Atlantic backhaul cargoes. (World Bank, 1983).

Vessel loading operations at Savonetta Pier, Point Lisas

SCOTT

The state made an attempt to develop the local shipping industry when the Shipping Corporation of Trinidad and Tobago Limited (SCOTT), which commenced operations in 1981 as a shipping agency, expanded into ship ownership in 1983. SCOTT's initial fleet included the *MV Trinidad and Tobago* (later renamed the *Gulf of Paria*), the *MV Harold La Borde* (later renamed the *Goodridge Bay*.) These tankers, built by Sasebo Heavy Industries of Japan, facilitated the transportation of methanol from the National Energy-managed Trinidad and Tobago Methanol Company. They ensured that methanol produced in Trinidad and Tobago reached its markets in the Americas, Europe and even North Africa. Shortly thereafter, SCOTT participated in the design and construction of two additional vessels; the *MV SCOTT Enterprise* – an LPG carrier – and the *MV SCOTT Unity* – a white oil tanker – providing service to the Caribbean.

Shipping operations did not always prove to be smooth sailing for SCOTT as many challenges were faced, including incidences involving illegal contraband found onboard the company's vessels. The resulting reputational damage, coupled with a management structure which was not organised to deal with certain inherent inefficiencies in the operation, contributed to the corporation's eventual closure in 1995.

Since SCOTT's winding up in 1995, much has happened in the international and local energy industries that would influence an investment decision on whether this country should or should not re-enter the carrier business. Trinidad and Tobago now possesses a mature oil and gas industry with a knowledgeable and experienced labour force in both the energy and maritime fields. Additionally, more trained professionals are entering the industry every day following the advent of academic programmes such as the BSc in Nautical Science/Maritime Operations and Master in Maritime Management at the University of Trinidad and Tobago, as well as the Master in Port and Maritime Management at the Arthur Lok Jack Graduate School of Business.

At present, with low energy prices and consequently, falling commodity production levels, the environment may appear prohibitive for maritime development. However, history has shown that the only constant in the energy business is its cyclical nature. Therefore, energy prices and energy-based production are expected to rebound a few years into the future. In preparation for this future and in an effort to diversify the country's product/service offerings in a deliberate and sustainable manner, entrepreneurial companies may wish to revisit the concept of ship ownership.

The *Pioneer* spoke with some shipping industry practitioners to obtain their views on the potential for ship ownership and operation as an alternative developmental pathway.

Mr. Kurt Duncan, Chief Pilot and former SCOTT employee, expressed optimism that ship ownership can be viable in the Caribbean. He told the *Pioneer*, "Trinidad and Tobago could re-enter the business by purchasing a moderately successful shipping company which trades in the Caribbean, as a going concern. We could partner with other Caribbean nations in its ownership and sell it to the Caribbean shippers as a Caribbean line with preferential privileges. In that way, all monies paid as shipping costs are retained in the region."

This was the case with the West Indies Shipping Corporation (WISCO) which was established to provide intra-regional merchant shipping service between CARICOM member states from the 1970s till the early 1990s. A similar arrangement may be possible again, given the cadre of experienced maritime professionals that now exists in the region.

Mr. Rory Ellis, another Pilot and former employee of SCOTT, agrees that ship ownership can be viable. However, he believes it would only work as a regional joint venture driven by the private sector. "The private sector must drive the initiative and open shareholding to the people of the Caribbean. In this way, they would have a share in ownership of the business." He added, "We could compete on the basis of service to deliver petroleum products such as LPG and refined oil, as well as containerised cargo to the region."

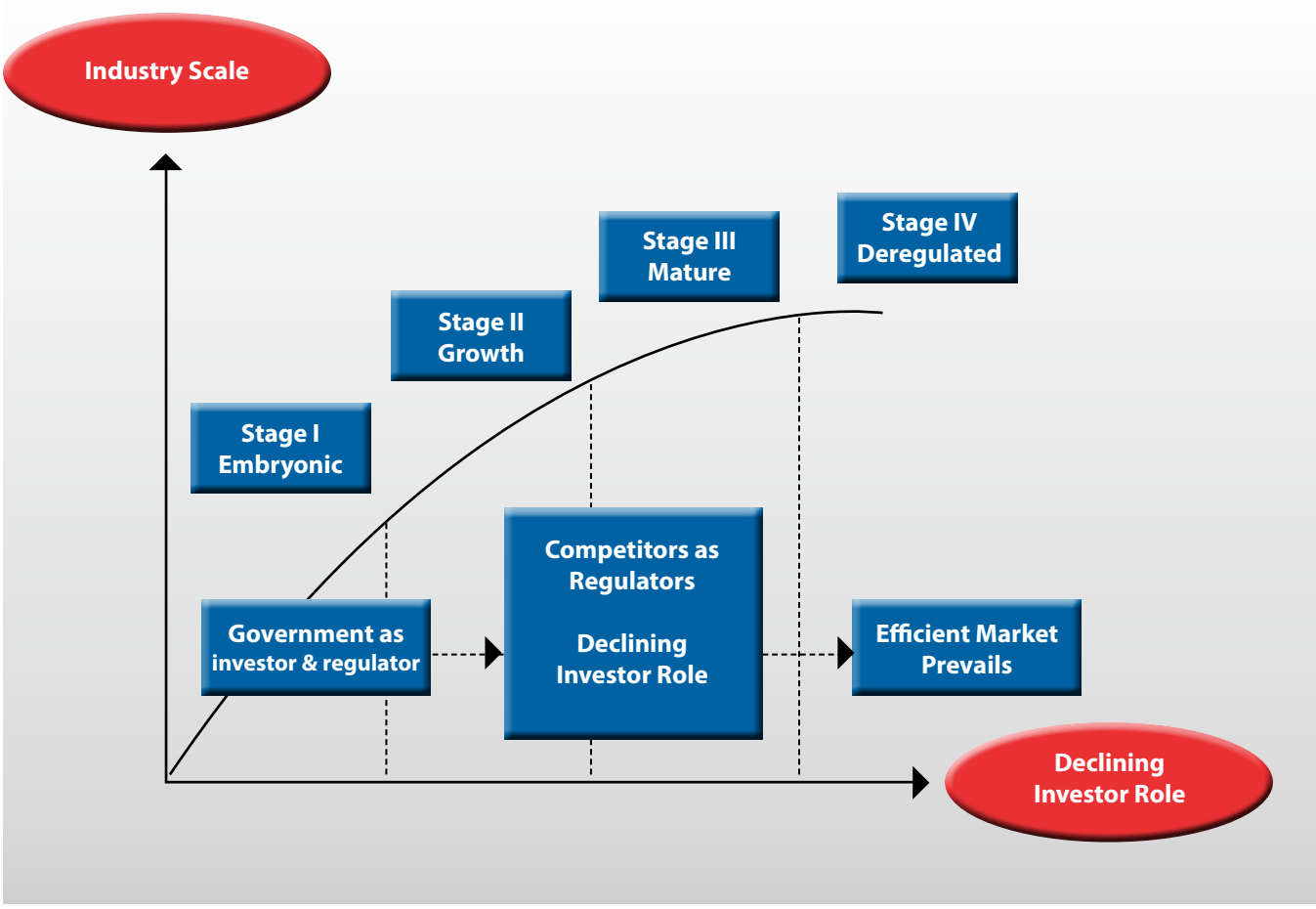
As with any other business opportunity, the commercial and operational indicators must be thoroughly examined. Based on the high level of shipping activity which takes place annually in Trinidad and Tobago and the wider Caribbean, the concept of ship ownership and operation bears revisiting as a possibility in the process of building a stronger, more diverse national economy.

TRINIDAD AND TOBAGO NATURAL GAS MARKET STRUCTURE AND DEVELOPMENT: RELEVANT TODAY?

BY: STEPHON JIMENEZ

All markets have been found to exhibit a natural evolutionary pattern of development as they grow both in terms of scale and maturity. This trend is particularly evident in the context of natural gas markets, where it has been found that the market progressively moves along a path which comprises four stages: Embryonic, Growth, Maturity, and Deregulation/Liberalisation.

This article attempts to very briefly explore the different stages of development along which the Trinidad and Tobago natural gas market has progressed thus far, and using its current stage of development, to determine what is next for the sector in terms of market structure and characteristics.



Aerial view of Point Lisas Industrial Estate

Stage I: Embryonic

The Embryonic period represents the initial stages of the market's development. As such the market is very small in terms of scale, with few participants (creating natural monopolies), heavy state involvement (with respect to investment, price setting, and infrastructure development), a regulatory framework which may be unclear, limited infrastructure, and high commercial risk.

Using the above description in the context of our local natural gas sector it appears that the Embryonic stage may have occurred during the years 1974-1985. During this period, the local natural gas market scale was very small with natural gas consumption for the period ranging between 80 billion cubic feet of natural gas per year (bcf/y) and 216 bcf/y (US EIA 2013). There was also heavy state involvement from an investment standpoint, as close to US$3 billion was spent on the development of energy-based infrastructure and equity investment in gas-based enterprises. There were few market participants in the sector as only one natural gas supplier operated on the upstream end of the market (i.e. Amoco, the precursor to bpTT) The downstream customers were mainly the four ammonia plants: Federation Chemicals, Trinidad Nitrogen Co. Ltd (Tringen I), Fertilisers of Trinidad and Tobago (Fertrin I & II); one Methanol plant: Trinidad and Tobago Methanol Company (TTMC); one urea plant: Trinidad and Tobago Urea Company(TTUC), and one steel plant: Iron and Steel Company of Trinidad and Tobago (ISCOTT). During this early period, there was also limited natural gas infrastructure, for example, only two gas transmission pipelines were in operation (a 16 inch and 24 inch). There was, however, over 800 hectares of industrial estate and a large marine port infrastructure.

Stage II: Growth

The Growth phase of natural gas market development represents a period of rapid expansion in terms of market scale and activity. The number of participants increases and with it, the expansion of the industry's infrastructural base. The regulatory framework begins to become more relevant and facilitative while government participation is more strategic.

The above description appears to match the period of development which occurred in our natural gas market during the years 1985-2007. This period saw exponential growth in natural gas consumption increasing from 216 bcf in 1986 to 1378 bcf in 2007 (US EIA 2013). This was due to the establishment of at least 17 natural gas-based industrial plants over a 22-year period (six ammonia, six methanol, one gas processing plant, and four LNG trains). This took the country's natural gas-based industrial plant number to 26. The state divested its interest in the downstream during the mid-80s and early-90s (by force, due to prevailing economic downturn) and only took strategic investment decisions including the establishment of the Phoenix Park Gas Processing Plant and expansion of the county's natural gas pipeline network. There were also a number of regulatory adjustments during this period, the most significant being changes to the gas-pricing mechanism for petrochemical plants, where a cost plus gas price methodology was replaced with a petrochemical product-linked mechanism

that tied the price of gas to fluctuations in respective commodity prices. On the upstream side of the gas value chain, the supply monopoly enjoyed by Amoco, now bpTT, was broken with the entrance of EOG, BG, and BHP.

Stage III: Maturity

The Mature stage of a natural gas market is characterised by a slowing growth rate as the number of sector participants increases towards the point of saturation, thus limiting opportunities for new growth. Also typical of natural gas markets at this stage is ageing infrastructure, falling production rates in gas producing fields, and a levelling off of natural gas consumption.

There have been many references to the Trinidad and Tobago natural gas market currently being at the mature phase of its development. There is some evidence that points to this as the sector's ageing infrastructure, slowing gas-based industrial development (only one gas-based project between 2007 to present) and falling gas production rates in the upstream all appear to signal, at the very least, possibly the early stages of maturity setting in.

So What Next?

The various descriptions of the first three stages of the Trinidad and Tobago natural gas market development outlined above will help one to recognise the stage the sector may have occupied at specific time periods in the past. Hindsight, however, is always more accurate than future sight. As such, a description of what's next is a game of possibilities; that is, speculating as to possible outcomes that may or may not come to pass. Perhaps the best way of determining what's next for the sector is to envision its ideal form, a utopia of sorts, and working backwards. Looking ahead and developing a vision for the sector gives more perspective to the present versus looking at the present in a vacuum. To know where the present is in the continuum of time, it often makes more sense to try to visualise what the future may/should bring, than to know what the present actually contains. A glimpse into how the sector may look in the future was presented by Professor Andrew Jupiter, distinguished fellow in the Faculty of Engineering, Petroleum Engineering Department, The University of the West Indies, St. Augustine. He opined that we may soon transition into a new natural gas-based economic model that will be based, not on our natural gas mineral deposits underground, but our natural gas knowledge base above ground. Professor Jupiter believes that this transition to a natural gas knowledge base represents a shift from a finite natural gas-based resource to a more sustainable, and potentially infinite, knowledge base resource that we could export in the form of energy services, and also use as leverage to partner with international energy firms in other emerging natural gas producing provinces.

This seems to match with the evolutionary pattern of market development referenced in the first paragraph and appears to suggest that our natural gas market will at some point enter into a transitionary period towards a more open or deregulated/liberalised market. In part two of this article, we will explore what this stage of development would mean for the Trinidad and Tobago natural gas sector. This would be done by exploring the liberalisation experiences of the natural gas sector in other countries, the intended and unintended consequences of this reform, and finally applying it to the Trinidad and Tobago natural gas context.

PIONEER

WINS CARIBBEAN ADVERTISING FEDERATION'S AWARD

National Energy's *Pioneer* magazine was among the winners of the Caribbean Advertising Federation's (CAF) 2015 American Advertising Awards (AAA) (formerly ADDY). The November 2015 issue, themed 'The Technological Edge', received the silver AAA in the category Sales & Marketing, Collateral, Printed Single Newsletter.

The American Advertising Federation (AAF) hosts the advertising industry's most comprehensive and prestigious competition recognising creative excellence in advertising. In 2015, the Caribbean was well represented with entries from 33 different companies representing seven island nations including US Virgin Islands, Barbados, Trinidad and Tobago, Puerto Rico, Jamaica, and Grand Cayman. Competition judges, both former National AAA Chairmen, were Mike Weber owner and CEO of CMR Studios in Tampa, Florida and Tony Pearman, CEO/CCO of ACCESS advertising and public relations in Roanoke, Virginia. Commenting on the CAF entries, Pearman stated, "The work from the Caribbean is exceptional this year – strong concepts, execution and follow through."

National Energy congratulates the *Pioneer* committee and its advertising agency, Lonsdale Saatchi and Saatchi, who worked together to produce the magazine. We also welcome the 2016 *Pioneer* committee which comprises employees from various departments of the company and look forward to building on the high standard achieved by the previous committee.

10 Questions

with Maria Bridgemohan

Can you describe your current position at National Energy?
My position is Head, Corporate Secretariat Services. In this position, there is interaction at all levels of the organisation. Corporate Secretariat Services is responsible for the preparation of board, committee and annual general meetings along with attendance at these meetings to record minutes and ensure that decisions of the board/committees are implemented. This position also entails the maintenance of the company's statutory registers, ensuring compliance with statutory and regulatory requirements and the security of the company's legal documents.

What has been the high point of your career at National Energy?
The high point of my career was when past President, Andrew Jupiter, recommended that I be appointed to the position I now occupy.

What advice would you give to others entering into your field?
Working in this field requires one to be committed and dedicated, with the ability to communicate at all levels, and maintain a high level of confidentiality and trustworthiness.

You will be retiring in 2016. What will you miss most about life at National Energy?
I will certainly miss the camaraderie built up through the years. I always say, "It's easy working with nice people." Over the last 21 years working within The NGC Group, I must say I was quite fortunate to have worked with wonderful people. There are some people who have impacted my life and others with whom I have built lasting relationships.

What is one thing most people do not know about you?
People do not know that I am a very emotional person. My daily interactions at work and with persons are deeper connected to me than just a task. Since I pride myself in my work, that includes quality and timeliness, it becomes personal.

What is your favorite book, and why?
Jane Austen's *Pride and Prejudice* – It is a novel that deals with the issues of manners, upbringing, morality and education. Although set in England in the early 19th century, it retains a fascination for all readers.

What is your pet peeve?
Poor/bad service – Nothing irks me more than this. You go to places where the service providers forget that you are paying for a service and treat with you in a nonchalant manner. People are being paid to provide a service and should make every effort to provide service in a pleasant and timely manner.

Who do you admire most, and why?
I cannot say that I admire one person, there are a lot of people I admire. However, I must mention my late father who has had a very great influence on my life. Growing up, he instilled certain morals and values in me – discipline and gratitude – to name a few. His teachings have made me the person I am today.

If you could travel to any place in the world, where would it be and why?
Although I have been there already, Australia is a place I would really like to travel to and spend some time. It is such a vast place with so much to see and having read a lot about this country, my interest has only developed more. There are still so many places to visit like the Great Barrier Reef in Queensland, the Sydney Opera House and of course, the great outback.

What are you most looking forward to post retirement?
Working in my garden, travelling and spending more time with my five beautiful grandchildren.

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