

The Corporate Quarterly Journal of  
The National Gas Company  
of Trinidad and Tobago Limited  
40TH COMMEMORATIVE EDITION



FROM CORNERSTONE TO MILESTONE



 **gasco**news

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### Produced by

The National Gas Company of  
Trinidad and Tobago Limited (NGC)  
Orinoco Drive  
Point Lisas Industrial Estate, Couva  
Republic of Trinidad and Tobago  
West Indies

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## Chairman's Message

# NGC at 40

## *From Cornerstone to Milestone*



*Gerry C. Brooks,  
Chairman of The National Gas Company of  
Trinidad and Tobago Limited*

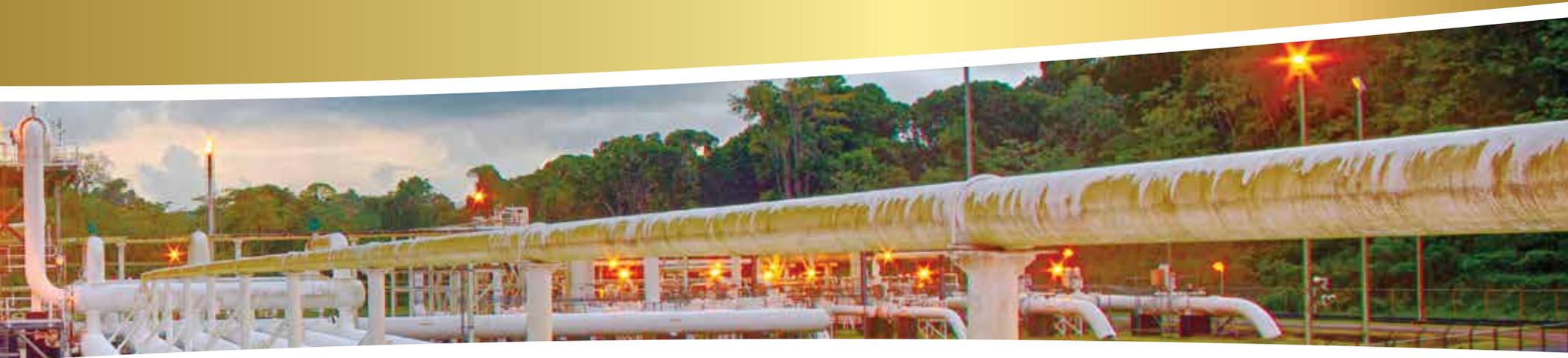
The National Gas Company of Trinidad and Tobago Limited (NGC) celebrated its 40th Anniversary of business operations this year. As the newly appointed Chairman of the Board of Directors of NGC, it is truly an honour to memorialise this milestone achievement with this special commemorative issue of *Gasco News*. It is an undeniable fact that NGC over the last forty years has been, and continues to be, a cornerstone in the development of the natural gas-based landscape.

Prior to my appointment at NGC, I admired the pivotal role NGC played in shaping the natural gas sector over the course of the last forty years. Our Board is committed to furthering the objectives of this esteemed Company as it faces the challenges of the future. That said, there are quite a few variations of an oft-quoted saying by James Baldwin which goes “Know from whence you came. If you know whence you came, there are absolutely no limitations to where you can go.” NGC’s history is one which began with the establishment of NGC as the cornerstone of the then emerging local natural gas industry. At the time, it was envisioned that NGC would be designated as the sole agency to sell natural gas to consumers, and that it would be a ‘competitive enabler’ for wider gas-based industrialisation in the country.

The foresight of that decision is evidenced today by the country’s massive, world-scale natural gas business. Over the period, NGC has substantially contributed to our expanding economy by ensuring that the country’s precious natural gas resource has been utilised in areas that ensure the sustainability of a local, thriving natural gas-based energy sector.

This has brought wealth and prosperity to our society and has allowed our beloved country to become a significant player on the global energy stage.

Indeed, NGC is a world-class enterprise operating an extensive network of pipelines. The Company has made substantial investments in the local hydrocarbon value chain and brought the sister island of Tobago onto the natural gas pipeline grid. It has expanded the sector with a rigorous commercial mindset which ensures that the Company’s shareholder – the Government of the Republic of Trinidad and Tobago (GORTT) – receives significant profits and dividends. In fact, NGC today and the natural gas-based energy sector are the largest contributors to Gross Domestic Product (GDP) and are the most significant revenue generators for the Government of Trinidad and Tobago.



This success allows us to also deliver on our Corporate Social Responsibility agenda, which seeks to strengthen the community from the grassroots to the national level in the areas of Civic Life, Sport and Empowerment. We are not motivated just by profit, but also by the impact we can have on national development. It is not surprising that we have been actively engaged in communities throughout the length and breadth of our twin island nation.

NGC is, in effect, the premier asset in Trinidad and Tobago's arsenal of national resources, and in commemorating NGC's ruby anniversary, we are also recognising forty years of growth in the natural gas sector as a national milestone of great significance.

In highlighting NGC's technical and commercial excellence, it is important, particularly as we reflect on the last forty years, to acknowledge the important role played by a number of pioneers in the natural gas industry. Among them are Mr. Errol Mahabir (the Minister of Petroleum and Mines from 1974-1981) and the many executives and technocrats drawn from commercial enterprise, academia and technical ministries, who 'engineered' the establishment and early development of NGC.

Indeed, their intention was to develop a holistic strategy that could produce maximum value from the gas reserves that had been identified in significant quantities off the south-east coast of Trinidad. Following a historic public consultation in January 1975, which produced the conference document 'The Best Uses of Our Natural Resources', natural gas was earmarked

for use as feedstock and fuel in the creation of key projects, identified then as methanol; urea; ammonia; iron and steel; LNG and aluminium, all of which, it was thought, could contribute to Trinidad and Tobago's transformation into an industrialised economy.

Forty years later, NGC has, without doubt, surpassed every expectation of this early mandate. It would be remiss of me not to mention that while these pioneering leadership efforts were critical, the Company has been built over the years by the work of thousands of dedicated nationals who have served to ensure that its success was truly home-grown. The growth over the last forty years bears testament to the fact that throughout its history NGC has been successful in employing, developing and maintaining a team of local professionals, who have been instrumental in growing this world-class business.

However, such reflection on the past also motivates us to look to the future. Today, NGC is an investment grade company complete with US\$7 billion worth of assets and a brand that is trusted, respected and valued locally. NGC has made strategic investments upstream and downstream so that, even as the Company has successfully carried out its core mandate, it manages a diverse portfolio of business activities. Its subsidiary companies – National Energy, LABIDCO, PPGPL and NGC CNG Company – all play active roles in deepening the country's participation in the local energy sector.

With this portfolio of energy assets and experience, NGC is now working aggressively to become a valued partner in the global energy

market. Indeed, as our energy landscape matures, NGC must seek new frontiers of natural gas reserves, as well as new locations where we can competitively market our competencies.

As we look outward, we are also preparing our internal resources, particularly our human resources, for operations in a globalised environment, as well as strengthening internal processes and policies that govern not just how we do our business locally, but at the international level as well.

It is my wish that this issue of *Gasco News*, which commemorates our milestone, will be kept as a cherished memento. Our journey has been of national significance. We are a beacon that others may emulate; we have created a legacy of financial success which others will aspire to replicate. We have indeed kept true to the course envisaged forty years ago and held our national purpose close to our hearts.

The result has been a strong NGC, enabling a world-class natural gas sector that has generated economic prosperity for Trinidad and Tobago. Let us build on this legacy over the next forty years as we all take immense pride in this remarkable achievement and story of success.

Gerry C. Brooks  
Chairman, NGC



## Anniversary Wishes

### ...from the President of National Energy

National Energy Corporation of Trinidad and Tobago Ltd (National Energy) conveys its warmest greetings and congratulations to its parent company, The National Gas Company of Trinidad and Tobago Limited (NGC), on its 40th Anniversary. We at National Energy are proud to be an integral part of the NGC Group of Companies. We look forward to continuing our critical role in the conceptualisation, development, facilitation and promotion of new energy projects in Trinidad and Tobago, along with the provision and operation of relevant infrastructure to support the energy sector.

In this regard, National Energy, in fulfilling its mandate, continues to focus on the expansion and diversification of the energy landscape in specific areas, which include metal processing, energy-based manufacturing, petrochemicals, plastics, biochemical and specialty products, renewable energy and inorganic chemicals. The provision of related engineering and marine infrastructure is also key to ensuring that there is adequate and long-term support for such activities.

The new business initiatives centre around projects that would allow for new levels of product in ammonia, methanol, urea or iron and steel production. Such initiatives would also propel the energy sector in forging linkages with other sectors in the economy.

Therefore, the next phase of gas-based industrialisation should see Trinidad and Tobago obtaining more value from its natural gas asset and ensuring that a broad range of commercial activities are consequently developed. This strategy is intended to ensure the sustainability of the natural gas-based sector, and by extension the energy sector, well into the future.

National Energy looks forward to forging closer links and building synergies as we partner and grow within the NGC Group of Companies.

Dr. Vernon Paltoo  
President, National Energy



Dr. Vernon Paltoo,  
President, National Energy

## ...from the Acting President of Phoenix Park Gas Processors Limited

Within the past decade, Phoenix Park Gas Processors Limited (PPGPL) has made significant strides to improve its operations and make its systems more efficient. From constructing another gas processing plant to increasing the employee population by 10% and constructing a new administrative office, PPGPL has grown and developed into Trinidad and Tobago's gas processor of choice and the country's number one supplier of Natural Gas Liquids (NGLs) to the Caribbean region.

Throughout these changes, PPGPL has continued to maintain its focus on safety. For the past 14 years, PPGPL has won the Gas Processors Association (GPA) award for 'Accident Prevention Award Division II – International Classification'. These are not just simple accolades, but a true testament of the commitment and dedication that employees make to ensure their personal safety, the safety of their colleagues, and the safety of anyone who enters the compound.

These are key elements that make a company successful and more importantly, sustainable.

Commitment, dedication and loyalty are immeasurable qualities that employees embody to the benefit of the company. These are the qualities that ensure that companies can celebrate forty years in business. So I say congratulations and kudos to The National Gas Company of Trinidad and Tobago Limited (NGC) for the immense contribution that it has made to the economy and people of our country.

Like all milestones, achieving an anniversary of forty years is no small feat. It takes the combined and continuous effort of both management and employees working together to achieve goals, complete projects on time and within budget, and be resourceful when things do not go as planned. NGC has shown its resilience to wider society through uncertain economic times, leadership changes, governmental changes and unpredictability in the energy market. Its steady growth and development is not by chance, but has been achieved through the foresight of its leaders, the unwavering support of the Ministry of Energy and Energy Affairs, and the diligence of its employees.



*Dominic Rampersad,  
Acting President, Phoenix Park  
Gas Processors Limited*

Again, we at Phoenix Park Gas Processors Limited say Happy 40th Anniversary, and we know that we will celebrate more of the Company's anniversaries in the future!



Dominic Rampersad  
President (Ag.), PPGPL



*Curtis Mohammed,  
President, NGC CNG Company Limited*

## ...from the President of NGC CNG Company Limited

NGC CNG Company Limited warmly congratulates our parent company, NGC, on its 40th Anniversary. We are extremely proud to be the latest addition in the growth of this pivotal national institution, which has served our country for four decades. A few years ago, NGC took the bold and decisive move to revolutionise the transportation fuel industry in Trinidad and Tobago by the formation of NGC CNG Company Limited.

While CNG supply and consumption were floundering for years, NGC, as part of its vision, made the unprecedented step to fix the industry. This will lead to significant environmental and fiscal benefits to our twin island republic by using our supply of natural gas. This is the kind of

innovative and visionary leadership demonstrated by NGC that has contributed to its emergence as a model company in the western hemisphere and one of the most profitable corporate entities in Trinidad and Tobago.

Once again, we congratulate NGC and its employees on forty years of helping to build and develop Trinidad and Tobago and we look confidently ahead to another forty years of monetising our natural gas resources and creating a better nation.



Curtis Mohammed  
President, NGC CNG



*NGC's BUD Slug Catcher at Beachfield*

# The NGC Story

The National Gas Company of Trinidad and Tobago Limited (NGC) was incorporated on 22nd August, 1975. But Trinidad and Tobago's natural gas story began much earlier. Whilst the first oil well was drilled locally in 1857, it would take more than half a century for oil exploration and production to begin in earnest. Unearthed during the course of oil drilling activities, natural gas was not seen as valuable and was usually flared (disposed of through controlled burning) or vented (released into the atmosphere). However, there was some small-scale use of natural gas as a fuel for pumping 'crude' to tank farms, instrumentation, and for domestic consumption as cooking fuel in a few communities in south Trinidad.

Natural gas was introduced to the Pointe-a-Pierre refinery during World War II, when Trinidad Leaseholds Limited constructed a gas pipeline between Forest Reserve and the refinery. By the conclusion of World War II, the mandate of the colonial authorities was to stimulate the commercialisation of natural gas via electricity generation. This led to natural gas being made

available as a low-cost fuel for the Trinidad and Tobago Electricity Commission (T&TEC), the islands' power generation provider. Consequently, in 1953, T&TEC adopted natural gas as a fuel for its steam generators at its Penal Power Station.

By the end of the decade, as natural gas was being used in more significant quantities by Trinidad Cement and FedChem in the production of cement and ammonia, petroleum companies constructed pipelines to deliver gas to these users. In the late 1960s, Trinidad was using natural gas in increasing commercial quantities; however, its natural gas reservoirs on land were becoming depleted.

In 1968, there was a discovery of a sizeable offshore gas province by AMOCO Trinidad and Tobago, which occurred at a critical moment to enable the diversification of the oil-based energy sector to include natural gas-based development. The government had in its hands a natural resource and, in the coming years, would give consideration as to how best to utilise this substantial and important discovery.



NGC's Head Office, Point Lisas



One of the two platforms commissioned by NGC for the Flare Gas Conversion Project in the Poui marine field

## Birth of the Modern Gas-Based Energy Sector

The Government of Trinidad and Tobago, led by Prime Minister the Rt. Hon. Dr. Eric E. Williams, held a compelling vision of how the country's oil (and eventually gas) reserves should be utilised. The emphasis was on using energy assets for national development, creating value through downstream processes and changing the 'colony/coloniser' relationship by choosing national investment instead of the export of a raw commodity.

Speaking at the establishment of the Iron and Steel Company of Trinidad and Tobago (ISCOTT) in 1977, Dr. Williams said, "There have been attempts to persuade us that the simplest and easiest thing to do would be to sit back, export our oil, export our gas, do nothing else and just receive the revenues derived from such exports and, as it were, lead a life of luxury – at least for a limited period. This, the Government has completely rejected, for it amounts to putting the entire nation on the dole. Instead, we have taken what may be the more difficult road that is, accepting the challenge of entering the world of steel, aluminium, methanol, fertiliser and petrochemicals. We have accepted the challenge of using our hydrocarbon resources in a very definitive industrialisation process."

These words echoed a defining moment of Trinidad and Tobago's post-independence period. One year after independence (1963), the government established a commission headed by Dr. Baghair Mostofi, an Iranian energy specialist, to look at how best to manage the petroleum sector from legal and operational perspectives, for the maximum benefit of the nation, while encouraging foreign investment and growth. A similar initiative was undertaken in the early 1970s, following the offshore gas discovery.

In January 1975, the government held a public consultation attended by senior government officials, members of the local and international energy and financial communities, the labour movement and The University of the West Indies, to undertake a consultative process to establish a plan for a gas-based energy sector. The policy paper, 'The Best Use of our Petroleum Resources', came out of the conference. Among the priorities for the gas-based energy sector were increased power generation for consumers and industry; chemical feedstock for ammonia, methanol and direct reduced iron (DRI); and feedstock for value-added energy exports such as liquefied natural gas (LNG) and aluminium.

In that same year, government embarked upon three of the major components of its energy strategy. A Coordinating Task Force (CTF), made up of academics and energy professionals, was created to develop many of the initiatives laid out in the conference document. Secondly,

development began on the Point Lisas Industrial Estate, an advanced, gas-based industrial estate and port that would house the country's new heavy industries. Thirdly, the government secured an upstream agreement for the production of natural gas from AMOCO that would ensure only the government or its designated agency would be the seller of gas. NGC was established to fill that role and to act as a trigger for gas-based industrialisation.

## The National Gas Company of Trinidad and Tobago Limited

On 6th March, 1975, Cabinet agreed to the formation of NGC, a state enterprise that would act in the midstream, transporting and selling natural gas to customers in Trinidad. The new entity was a wholly-owned state company registered under the Company's Ordinance with an authorised share capital of TT\$45 million, which would operate as a private company.

NGC's first Board of Directors was made up of:

- Bernard V. Primus – Chairman
- Basharat Ali
- Kamla Bhoolai
- Sam A. Martin
- Dr. Kenneth S. Julien
- Dr. G. Maxwell Richards
- Eldon G. Warner
- Knollys Ahloy



*The 1980s was a decade of growth for NGC as it extended its pipeline network and facilities*

NGC's primary role was to act as an agency for the administration of the contract between the government and AMOCO (the Producer) and to transport and sell the gas commodity to small consumers in the East-West corridor of Trinidad and a handful of large consumers at Savonetta Estate in central Trinidad. In 1975, operating out of its headquarters at 54 Abercromby Street in Port of Spain, the Company earned sales revenue of TT\$180,000 with TT\$19,000 in profits.

A few months into 1976, NGC inherited a disparate number of pipelines constructed earlier by T&TEC, and a number of employees responsible for their operation and maintenance were transferred to the newly established company. NGC therefore took over the T&TEC 16-inch diameter pipeline from Penal to Port of Spain. The Company also assisted in the construction of a 24-inch diameter line from Beachfield in Mayaro to the Picton Valve Station, and a 24-inch diameter marine line, which increased Trinidad's transmission capacity to 400 million standard cubic feet per day (MMscf/d).

Government, seeking to further increase the supply of natural gas, mandated NGC in July

1979 to implement the Flare Gas Conservation Project. The project involved the construction of two offshore compression facilities through which flared gas from the Teak and Poui marine fields could be captured and compressed. The gas was to be used for power generation. By 1982, the commissioning of NGC's compression facilities was completed, providing low-cost natural gas, significantly increasing the natural gas supply and generating considerable revenues. Over a decade later, NGC Teak and Poui provided 19% of the total gas supply of 506 MMscf/d, and up to today, T&TEC's electricity rates per kilowatt hour (KWh) remain some of the most economical in the western hemisphere because of these facilities.

### **Expansion and Investment**

In 1983, Trinidad and Tobago, like most oil-dependent economies, experienced a depression because of the fall in oil prices. The economy contracted by nearly 11% in 1984. This period of negative growth lasted until 1987.

In 1980, gas sales were 192 MMscf/d. However, by the end of 1984, with the coming onstream of the methanol and urea plants, gas sales increased to 343 MMscf/d. The sector had developed from one ammonia plant to four, there was a new

power plant at Point Lisas, a steel mini-mill, and methanol and urea facilities.

An even clearer sign of NGC's strong business acumen was its investment in new technologies, such as the purchase of solar compressors for the Teak platform and other strategic assets. With regard to the latter, NGC purchased a 20% stake in Trintomar, a local marine gas production company; 18% in National Helicopter Services Limited; and a majority shareholding of 51% in Phoenix Park Gas Processors Limited (PPGPL), Trinidad's first gas liquids processing plant.

NGC's growth was also reflected in its operations. In 1980, the Company settled at 134-138 Frederick Street in Port of Spain. By the end of the decade, NGC expanded its company structure from two areas – the Administration Section and the Technical Section – to a more articulated organisation with eight areas, including modern units like Public Relations, Information Technology, Corporate/Strategic Planning and others. By 1990, NGC had over 200 permanent employees.

In the span of 15 years, NGC had increased gas sales from 150 MMscf/d in 1978 to 446 MMscf/d in 1990. The Company's profits grew



*The 56-inch diameter CIP pipeline being lowered*

from TT\$19,000 at the end of its first year to TT\$17 million in 1980 and TT\$112.5 million in 1990. NGC's list of customers at Point Lisas had grown from four heavy consumers and 15 light industrial/manufacturing concerns in 1976 to ten large consumers and 56 light industrial concerns in 1990. 1990 was also the year that NGC moved to its new corporate headquarters at Point Lisas.

### **From Strategic Asset to Strategy Maker**

In 1993, NGC introduced a Commodity Pricing Mechanism to encourage investment in the sector. Previously, the natural gas price was fixed, while the new mechanism pegged NGC's price to the global steel and petrochemical market prices.

NGC continued to be profitable during the period 1993 to 1997, reaching a high of TT\$372 million in 1996, more than double the 1993 figure of TT\$165 million. The Company's asset base surpassed TT\$2 billion, with gas sales averaging 717 MMscf/d by the end of 1997. Though NGC was impacted by the global economic downturn of 1998 and 1999 (investee income experienced a 44% drop in 1998), the Company weathered the storm, partly because of the new pricing mechanism which gave NGC and its customers flexibility.

1992 also saw an evolution in NGC's role in the gas-based sector. NGC became the prime mover in gas-based development. As such, the

Company undertook the promotion of T&T as a premier natural gas-based investment location and became responsible for the development and evaluation of new energy projects. NGC acquired the National Energy Corporation (NEC), which had been established in 1979 to continue the work of the Coordinating Task Force (CTF). Under the umbrella of NGC, NEC continued with its competencies honed in project development, research, infrastructure development and marine construction and management.

With this expanded mandate, NGC embraced and promoted new technologies such as natural gas-fired air conditioning, polyethylene piping and Horizontal Directional Drilling (HDD); successfully attracted interest in the operation of natural-gas intensive projects such as the NUCOR iron carbide plant and Cliffs & Associates hot briquetted iron plant; and diversified upstream natural gas supply by signing contracts with AMOCO, ENRON Oil and Gas and British Gas/Texaco.

By 1996, NGC formulated 'Vision 2001', a strategic plan for the gas-based sector, the emphasis of which was to make Trinidad and Tobago a major player in the global gas business. Vision 2001 forecasted a growth rate in gas demand of 12% per year for the period 1997 to 2001, figures that would make the country the fastest growing gas producer in the region. In response, NGC again invested in new pipeline infrastructure to meet increasing demand from consumers coming on stream.

With its vibrant growth forecast, NGC completed several major projects during the decade. Among them were an initiative between NGC and Cabot, BG and AMOCO to develop a liquefied natural gas (LNG) industry in the country, culminating in the creation of Atlantic LNG in 1995 at Point Fortin; and the formation of the La Brea Industrial Development Company (LABIDCO) to manage the development of an industrial estate in La Brea/Brighton. During the period, NGC officially launched its Community Relations Programme to improve the socio-economies of the communities adjoining its pipeline network and facilities. By the end of the decade, NGC had positioned itself as an investment service provider or one-stop-shop for potential new entrants to the local gas-based sector. NGC had become a gateway for new opportunities in Trinidad and Tobago.

### **Resilience in the New Millennium**

Rebounding from the economic turbulence of 1998-99, NGC's gas sales crossed 1 billion cubic feet per day (Bcf/d) in 2000. By 2003, the Company had achieved the milestone of 100 small customers in the light industrial, commercial and transportation sectors. This uptake in the use of natural gas by the light industrial/commercial sector was in part due to NGC's promotion of gas as cost-efficient fuel in the transportation sector and the availability of the gas from an accessible pipeline network adjoining the manufacturing estates in the country.



*EXPLORING NEW OPPORTUNITIES IN AFRICA: T&T's Natural Gas Model of Development has attracted attention from new petroleum economies such as Ghana: (L to R) Cletus Avoka, Ranking Member, Parliamentary Select Committee on Environment and Science, Ghana; Tickaram Ropchandsingh, VP, GTD NGC; and Dominic Rampersad, Acting President, PPGPL*

In 2003, NGC recorded an after tax profit of TT\$1.2 billion. The figure would be surpassed in 2004, reaching TT\$1.5 billion. Apart from its business practices, NGC benefited from the performance of its investee companies (whose contribution was TT\$438 million in 2004) and the buoyant markets for natural gas, ammonia and methanol.

NGC's successes were not only financial. The Company received the Prime Minister's Award for Innovation and Invention in 2002 for its natural gas pricing system. Less than a year later, NGC implemented polyethylene pipeline technology in the expansion of the gas distribution network. And, in 2004, NGC recorded a 100% reliability record (meaning reliable supply of natural gas in the required volume to its customers). It was the eighth year in which a minimum reliability rate of 99.9% was achieved.

As with previous decades, NGC continued its pipeline and construction projects during the early years of the new millennium. In 2004-2005, two major projects were undertaken: The Cross-Island Pipeline Project (CIPP), which included

a 56-inch diameter landline from Beachfield to Point Fortin, was constructed to provide natural gas to LNG 4, and to any additional trains and industries based at the La Brea and Union Industrial Estates; the Beachfield Upstream Development Project (BUD) which comprised a 36-inch diameter marine line from the Cassia 'B' offshore platform to Beachfield and a new, larger slug catcher.

In securing some US\$200 million from the international banking community for the CIPP and BUD projects, NGC received international investment credit ratings from Standard and Poor's (BBB+), CariCRIS (AAA) and Moody's (A3) in 2005.

Given the continued expansion and complexity of the NGC Group, NEC was given greater autonomy, and reoperationalised, focusing on promoting investment in the sector and industrial site development and marine infrastructure. In 2005, NGC made a strategic upstream investment purchasing a 15% stake in the Teak, Samaan and Poui (TSP) offshore fields that were put up for sale by bpTT. For this new investment, NGC formed NGC E&P Investments Limited.

## 2006 to 2015

In its first 30 years (1975-2005), NGC was on a sustained growth path, increasing its knowledge and experience of the gas business. In 2009, this growth led the Company to re-engineer its **Vision Statement, "to be a valued partner in the global energy business"; and Mission Statement, "to create exceptional national value from natural gas and energy businesses"**.

NGC was now looking outwards and aligning its growth strategies with aspirations to expand domestic production while exploiting new opportunities in external markets, particularly in the new petroleum economies of Africa and Latin America. At the same time, NGC engaged in major expansion projects in anticipation of continued industrial growth in the domestic arena, while pursuing opportunities with prospective investors who were attracted to NGC's T&T Natural Gas Model of Development and the Point Lisas success story. Contributory factors to this model were the governance of the industry, the market-related gas price formula, the natural endowments of gas resources, industrial



*Onshore pipeline construction in progress for the North-Eastern Offshore (NEO) Pipeline Project*

infrastructure such as marine and port facilities, and the country's strategic geographic position with access to American and European markets.

NGC's performance in the period was characterised by unprecedented profitability, growth and diversification, through its acquisitions of new investments and subsidiary companies and a greater focus on global outreach.

## Profitability and Growth

In 2006, NGC issued a bond to finance three major projects – works related to BUD, the acquisition of a Dolphin to Beachfield marine pipeline owned by British Gas, and the repayment of a loan that financed NGC's stake in Atlantic LNG's Train 4. The bond issue attracted major interest from international investors, raising US\$400 million – the largest ever for an issuer from Trinidad and Tobago.

NGC's highest after tax profit figure was TT\$1.5 billion in 2004, a landmark for the group at the time. Growth in profitability remained consistent, rising from TT\$2.175 billion in 2006, to TT\$2.955 billion in 2007, to TT\$3.064 billion in 2008, before NGC felt the impact of the Global Financial Crisis in 2009 and 2010.

The downturn, which resulted in lower commodity prices for ammonia, methanol and oil, contributed to lower profits for the NGC Group – TT\$1.278 billion in 2009 and TT\$2.09 billion in 2010. Yet by 2011, as the international picture began to improve, the group rebounded and saw a profit of TT\$4.6 billion, another new high. Declines in gas availability from upstream suppliers led to a dip in profits in 2012, to TT\$3.9 billion.

There was, however, a dramatic turnaround in 2013 as NGC declared stellar profits of TT\$6.5 billion, over four times the 2004 figure. The contributory factors were three major initiatives: the self-marketing and sale of NGC's LNG cargoes; the acquisition of PPGPL; and the purchase of TOTAL's exploration and production assets in Trinidad and Tobago.

## NGC Commemorates T&T Independence

2012 was a very special year for Trinidad and Tobago and NGC joined in the atmosphere of celebration of the country's 50 years of independence. NGC, as a state company, supported various stakeholders in their efforts to make the historic anniversary truly memorable.

NGC contributed to the following major initiatives:

- Assumed title sponsor of the NGC Bocas Lit Fest
- Collaborated with PanTrinbago for the inaugural SteelFesTT
- Provided financial support to the NGC Couva Joylanders Pan Theatre
- Co-sponsored the NIHERST 'India: A Culture of Science' exhibition
- Signed an historic Memorandum of Understanding (MoU) with the Trinidad and Tobago Cricket Board (TTCB), contributing TT\$10 million in support
- Supported the Trinidad and Tobago Olympic Village at the Tricycle Theatre in Kilburn, London
- Contributed to 'The Independence Film Series' of the Trinidad and Tobago Film Festival, to bring local productions to venues throughout T&T
- Trained communities in Trinidad and Tobago via:
  - Community Emergency Response Team (CERT) modules in Mayaro and Guayaguayare
  - Process Plant Maintenance Scholarship Programme in Tobago in collaboration with Metal Industries Company Limited (MIC)
  - Building Construction Technology (BCT) Programme in collaboration with National Energy Skills Centre (NESC) and the Tobago House of Assembly (THA)
  - Tobago Outboard Boat Engine Repairs Programme in conjunction with NESC and THA



*Aerial view of NGC's Gas Receiving Facility in Tobago*

## Diversification

For much of its history, NGC had pursued a policy of diversification through strategic investments, while strengthening its core operations. This strategy was intensified during 2006 to 2015. NGC sought greater diversification during the period to find new revenue streams, minimise the risk of dependence on its core business and utilise its strong profits through investments. NGC and the government also pursued a policy of strategic acquisitions as a means of new growth and to establish greater control over the sector.

In 2013, the Group made two major acquisitions (as mentioned previously). Firstly, NGC purchased ConocoPhillips' 39% shareholding in PPGPL, giving the Company a 90% stake in the gas processing business. Secondly, NGC made a major upstream investment by purchasing the Trinidad assets of TOTAL SA, a French natural gas and oil producer. TOTAL SA's holdings included two blocks in the Angostura Field. Two new companies, NGC E&P Investments (Netherlands)

B.V. and NGC E&P (Netherlands B.V.), were established to own these upstream assets.

In September 2014, NGC began working with a consultant firm to develop a global investment plan to create and implement an outward investment strategy. This consultation process is still underway at present (August 2015).

## New Projects

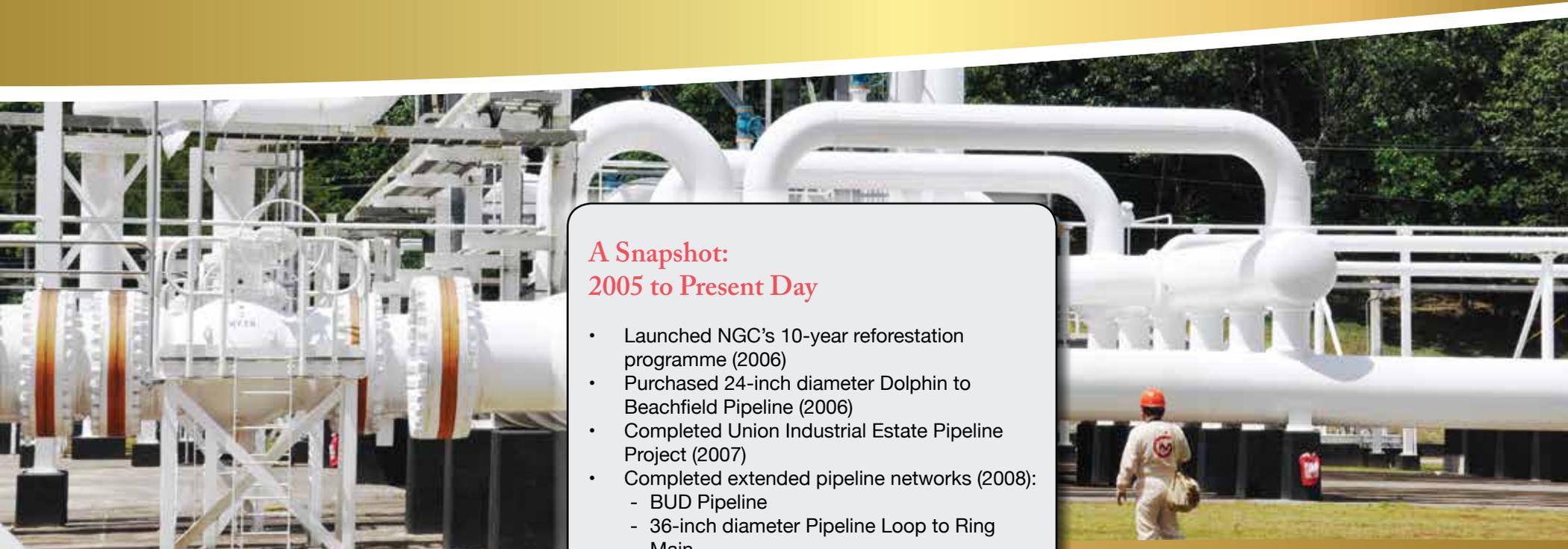
In 2006, Atlantic LNG started its Train 4, the largest LNG train in the world at the time, with a capacity of 5.2 million tonnes per annum. A year before, NGC formed a subsidiary, Trinidad and Tobago LNG Limited, and purchased 11.11% of the new Train (NGC also has 10% equity in Train 1). For the 2007 financial year, NGC's LNG sales from Train 4 were 23,875,267 British Thermal Units (MMBtu), an increase of 23% over 2006.

In 2010, NGC undertook five projects, costing approximately TT\$7.3 billion. They comprised the Tobago Pipeline, the North-Eastern Offshore Pipeline, the Phoenix Park Valve Station Upgrade, the Union Pipeline and the Liquid Fuels Pipeline. Cabinet, in March of 2010, had agreed that NGC

would assume ownership of the Tobago natural gas pipeline. This is Tobago's first subsea natural gas pipeline. The pipeline runs from the BHP Billiton Gas Export Platform in the Angostura Field to the Cove Eco-Industrial Estate and Business Park in Tobago. The facility received its first gas in 2012.

In 2013, NGC was given the mandate to expand the usage of Compressed Natural Gas (CNG) in the transportation sector. Seeking to lower the national fuel bill, which relies heavily on super unleaded and diesel fuel, NGC is promoting increased CNG use as an alternative transportation fuel. In this regard, NGC formed a subsidiary company, NGC CNG Company Limited, to facilitate this initiative. NGC CNG will invest TT\$2 billion over five years to construct 30 new or revamped stations, convert 17,000 vehicles, subsidise investment in original equipment manufacturer (OEM) vehicles and launch public awareness campaigns.

Most recently (April 2015), NGC signed a project agreement with several partners for the construction of a US\$987 million Methanol to Dimethyl Ether (DME) Complex at the Union Estate in La Brea. Should an investment decision be taken, the DME plant will be a joint venture



between NGC, Mitsubishi Gas Chemical Company Inc., Mitsubishi Heavy Industries, Massy Holdings and Caribbean Gas Chemicals Ltd. The project will increase NGC's activities in the downstream of the sector. NGC has a 20% stake in the DME venture.

### Corporate Social Investment

By 1992, NGC had spent over TT\$55 million through its Community Relations Programme that historically targeted youth development through education and sport, and expanded it to include a socioeconomic segment to benefit communities along the Company's Rights of Way, from Guayaguayare to Point Fortin and La Brea.

This programme has now evolved to Corporate Social Investment (CSI), which incorporates the three pillars of Sport, Civic Life and Empowerment. NGC has maintained support for numerous entities under its CSI portfolio. These include the Trinidad and Tobago Cricket Board, NGC Bocas Lit Fest, five Police Youth Clubs, and steelbands (NGC Couva Joylanders, NGC La Brea Nightingales and NGC Steel Explosion).

### A Snapshot: 2005 to Present Day

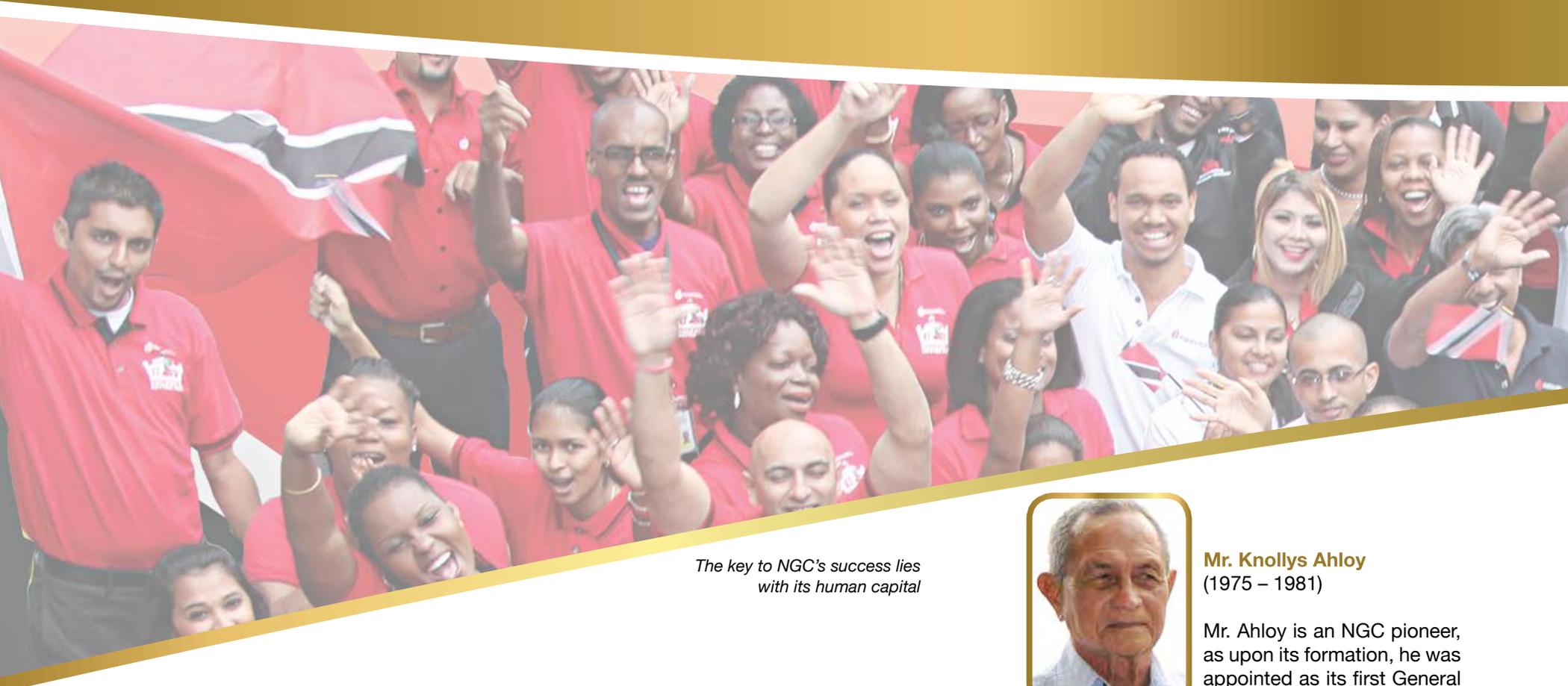
- Launched NGC's 10-year reforestation programme (2006)
- Purchased 24-inch diameter Dolphin to Beachfield Pipeline (2006)
- Completed Union Industrial Estate Pipeline Project (2007)
- Completed extended pipeline networks (2008):
  - BUD Pipeline
  - 36-inch diameter Pipeline Loop to Ring Main Pt. Lisas PPVS
  - Pipeline and Metering Station to UDECOTT
  - Pipeline and Metering Station to Beetham
- Completed construction of Union Industrial Estate (2008)
- Partnered with the Government of Ghana to co-host a pre-independence musical concert in celebration of Ghana's 54th Anniversary (2011)
- 30-year anniversary of Flare Gas Conservation Project (2012)
- Completed the NEO/Tobago Offshore Pipeline (2012)
- Direct marketing of LNG by NGC (2012)
- Formed NGC CNG Company Limited (2013)
- Rebranded NEC to National Energy (2013)
- Brought Tobago onto the natural gas grid with the official opening of a Gas Processing and Metering Facility at Cove Eco-Industrial Estate and Business Park (CEIBP), (2013)
- Signed a Memorandum of Understanding (MoU) with The University of the West Indies, St. Augustine, outlining a five-year contribution for a Professional Chair in Entrepreneurship and Innovation
- Customer base stands at 25 large consumers and 100 small consumers as at 2015. (The milestone of 100 small consumers was achieved in 2003.)
- Signed Project Agreement with NGC, Mitsubishi Corporation (MC), Mitsubishi Gas Chemical Company Limited (MGC), Massy Holdings Limited (MHL), and Caribbean Gas Chemical Limited to establish a Natural Gas to Petrochemicals Complex at Union Estate, La Brea (2015)

### 40 Years and Counting

In its four decades of operations, NGC has grown from a handful of customers in a small Port of Spain office, to a multi-billion-dollar corporate entity based on the Point Lisas Industrial Estate, operating via strategic assets throughout the value chain of the gas-based energy sector. When Trinidad and Tobago's energy pioneers first embarked upon the development of the gas-based energy sector, they possessed a largely untapped natural resource, and the vision of a future energy landscape.

On the horizon is the opportunity for citizens of Trinidad and Tobago to have a vested interest in the NGC Group. In 2013, Trinidad and Tobago NGL Limited was formed to hold 39% shares in PPGPL. The Initial Public Offering (IPO) was made available on 10th August, 2015 and will provide citizens of Trinidad and Tobago with the opportunity to own shares of our nation's thriving energy sector.

Just as the work of forty years ago, it is hoped that these initiatives will provide the foundation for a new era of success for NGC, the gas-based energy sector and Trinidad and Tobago.



*The key to NGC's success lies  
with its human capital*

# Presidents' Profiles

*“Nothing great will ever be achieved without great men,  
and men are great only if they are determined to be so.”*

– Charles de Gaulle

NGC is undoubtedly a major contributor to the Trinidad and Tobago energy sector, the economy and its people. Beyond NGC's brick and mortar infrastructure, its pipelines, and other assets, there is one essential element that ensures the longevity of this Company – its human capital. At the helm, outstanding people have been resolute to shape and develop Trinidad and Tobago's energy landscape.



**Mr. Knollys Ahloy**  
(1975 – 1981)

Mr. Ahloy is an NGC pioneer, as upon its formation, he was appointed as its first General Manager.

As a young man, Knollys attended the Colorado School of Mines. Upon graduation, he was employed as a Petroleum Refining Engineer. He went on to work at the Trinidad and Tobago Electricity Commission (T&TEC). In 1963, when the Commission decided to build the North-South Gas Transmission Line, a Gas Transmission Department was formed with Mr. Ahloy as its head.

Twelve years later, when NGC was established, all the records and personnel of T&TEC were transferred to the new entity. Mr. Ahloy was charged with the responsibility to start up the operations of the new company. One of Mr. Ahloy's first tasks was to recruit qualified personnel to maintain the pipeline system brought under NGC's control. At that time, Mr. Ahloy was the only local gas engineer in Trinidad. He brought a practical, hands-on approach to NGC's fledgling Technical Operations (then called Field Services.)

Mr. Ahloy's legacy as the Company's first general manager is cemented into the history of NGC. Under his leadership, the Company took many strides and became a respected entity in T&T's energy landscape. Mr. Ahloy served two terms on NGC's Board of Directors, from 1975-1981 and 1987-1992.

Mr. Ahloy passed away on 12th July, 2011.



**Mr. Tahir Mohammed**  
(1981 – 1983)

Mr. Mohammed read for his B.Sc. in Civil Engineering at the University of Manitoba and graduated in 1967.

With over 12 years' local and foreign engineering experience, Mr. Mohammed joined NGC in 1979.

As the Project Manager of the Flare Gas Conservation Project, one of his early assignments at NGC was the design and construction of two offshore gas compression platforms (Poui and Teak). Upon Mr. Ahloy's departure from NGC in 1981, Mr. Mohammed was appointed as the new Chief Executive Officer. His involvement in the project continued while he served in this capacity.

Mr. Mohammed joined NGC during a pivotal point in its developmental stages. As the Chief Executive Officer, Mr. Mohammed took NGC through a major expansion programme, from a converted house on Pembroke Street to the Ariapita Avenue offices and then to the Tarel Building on Frederick Street. During that period, the employee population also grew from 30 to 160.



**Mr. Malcolm A. Jones**  
(1984 – 1996)

Mr. Jones is NGC's second longest serving President to date.

In June 1965, Jones graduated from The University of the West Indies

(The UWI), St. Augustine with a B.Sc. in Chemical Engineering. That same year, he started working as a Process Engineer at Texaco Trinidad Inc. He remained there until 1968. In that same year, Mr. Jones proceeded to Queen's University, Canada to pursue his Master's Degree in Chemical Engineering.

Mr. Jones joined NGC in 1984 as the General Manager. Earlier on in his career, he was employed as a Project Manager at National Energy Corporation. His tenure was focused on the development and implementation of organisation structure and management systems which would make NGC an effective and efficient business entity. It was under Mr. Jones' leadership from 1984 to 1996 that NGC experienced phenomenal growth in sales of natural gas and profitability. Mr. Jones was key to the expansion of petrochemical development at Pt Lisas, LNG and new gas supply sources.

Mr. Jones has been honoured with the following national awards: Chaconia Medal (Gold) for long and meritorious service in the sphere of National Economic Development (2004); Career of Excellence in Engineering by the Executive Council of the Association of Professional Engineers of Trinidad and Tobago (APETT); Samaan Tree Award by UWI Alumni Association (Trinidad and Tobago Chapter); Honorary Doctorate in Engineering and Entrepreneurship from The University of Trinidad and Tobago (UTT) and The National Association for the Empowerment of African People (NAEAP) Award for his achievements in excellence.



**Mr. Frank Look Kin**  
(1996 – 2009)

Mr. Frank Look Kin is NGC's longest serving president to date, with 13 years of service under his belt. He joined NGC in 1990. He formerly held the position of Vice President,

Business Development, before taking over the reins of the NGC presidency in May 1996.

Mr. Look Kin holds a first degree in Geophysical Engineering from the Colorado School of Mines and a Master of Engineering in Mineral Engineering Management from Pennsylvania State University.

Mr. Look Kin worked for 20 years in the Ministry of Energy, where he distinguished himself as its Chief Technical Officer. Prior to joining NGC in 1990, Mr. Look Kin had served on its board since 1986.

At NGC, Mr. Look Kin played a major role in the negotiation of gas purchase contracts with gas suppliers, as well as gas sales contracts for the utilisation of natural gas in the manufacture of petrochemicals (ammonia and methanol), the metal industries, LNG, and for general industrial and commercial purposes.

Mr. Look Kin has been honoured nationally as well as by professional organisations. In 1993, he received the Distinguished Engineer Award of the Society of Petroleum Engineers, and in 2008, he was conferred with the Career of Excellence in Engineering Award from the Association of Professional Engineers of Trinidad and Tobago (APETT). In 2008, he was recognised with a national award – Chaconia Medal (Gold) for his contribution to national energy development.



**Mr. S. Andrew McIntosh**  
(2009 – 2012)

Upon Mr. Look Kin's retirement, S. Andrew McIntosh took up the post of president in March 2009, joining NGC with a wealth of technical and leadership experience in the oil and gas industry.



Mr. McIntosh graduated from The University of the West Indies (The UWI), St. Augustine with a B.Sc. (Hons) in Engineering in 1971. His career in the energy industry began in 1977 at the Trinidad and Tobago Oil Company (TRINTOC). Thereafter, he worked at Trinidad Marine Limited, Petrotrin, Cliffs and Associates Limited, Lurgi Metallurgie GmbH, Atlantic LNG and bpTT.

At the time of joining NGC, Mr. McIntosh held 31 years of technical and leadership experience, 13 of which had been at the Vice President level. During his tenure at NGC, he focused on corporate strategy built around pillars, namely growth of new external and local markets and brand strengthening. In the period, Mr. McIntosh upgraded and expanded human capital, training, fit for work, succession planning policies and accountability, as well as safety, employee engagement and communication. Major prestigious capital projects were achieved, including the construction of the NEO/Tobago Pipeline, the Phoenix Park Valve Station Upgrade and the Union Estate Pipeline.

**Mr. Indar Maharaj**  
(2012 – 2015)

In April 2012, NGC welcomed Mr. Indar Maharaj. Mr. Maharaj pursued a B.Sc. in Chemical Engineering from The University of the West Indies (The UWI), St. Augustine and attained a Masters in Business Administration with a specialisation in Finance from The University of Lincoln, United Kingdom.



Mr. Maharaj began his career at the Point Lisas Industrial Estate in 1981. His last position, before taking the helm at NGC, was as Plant Manager at Point Lisas Nitrogen Limited (PLNL).

Under his leadership, NGC has achieved prestigious milestones: acquisitions of TOTAL SA's upstream assets in Trinidad and Tobago and increased shareholding in PPGPL; signing of Memoranda of Understanding (MoUs) with ENN Energy Group (China) to cooperate on matters relating to CNG conversion in Trinidad and Tobago and The UWI, St. Augustine for a professional chair in Innovation and Entrepreneurship, Research Forum, Research Day Expo and the UWI Research Awards; historic sponsorship of the Trinidad and Tobago Cricket Board (TTCB); incorporation of NGC CNG Company Limited; the self-marketing and sale of NGC's LNG cargoes; and most recently, the agreement with the Mitsubishi Consortium to establish a DME plant in Trinidad and Tobago, as well as the NGL IPO share offer.

*Employees celebrate NGC's commemoration of Trinidad and Tobago's 50 years as an independent nation*

## Conclusion

NGC's forty years of existence have not been happenstance. They have been the product of hard work and the will of great minds with a drive to excel, guided by its leaders from 1975 to present.



CNG at the Public Transportation Service Corporation (PTSC) Compound, Port of Spain

# The NGC CNG Story

## *CNG – A Fuel Whose Time Has Come*

On 3rd September, 2013, NGC CNG Company Limited (NGC CNG) was incorporated; it was officially launched on 7th September. This new NGC subsidiary company is a critical component in the national strategy to “accelerate and expand the use of Compressed Natural Gas (CNG) as a major alternative transportation fuel” in Trinidad and Tobago.

It was in 2010 that the Government of the Republic of Trinidad and Tobago (GORTT) outlined its proposals for the expansion of CNG.

The goal established was a target of 20% of the vehicular population (approximately 100,000 vehicles) to be converted for CNG usage. Since its establishment, NGC CNG has been central to the national plan for this alternative fuel, working with regulatory and state agencies, public transportation providers, service station companies, automobile dealerships and others.

The company’s role comprises many elements and the success of its operations will have a lasting

impact on not only the national transportation system, but potentially on the environment and the national fuel subsidy as well.

“The time is right for CNG in Trinidad and Tobago,” says Curtis Mohammed, President of NGC CNG Company Limited. “This is the first time the nation is comprehensively expanding the use of CNG in an organic fashion based on investment, partnership and confidence.”

*New CNG buses on the nation’s roads*





*CNG Fuelling Station at NGC's Warehouse Facility*

*The NGC CNG campaign involves creating awareness of switching to CNG at events such as the Divali Nagar, 2014*

## Alternative Fuel

Because of its many advantages, CNG (methane gas stored at high pressure) has become an increasingly popular vehicular fuel and is an established alternative fuel in nations like Iran, Pakistan, Brazil, Argentina, Colombia and China. Recent statistics put the total number of natural gas vehicles worldwide at 22 million, serviced by a network of over 26,000 refuelling stations.

Locally, planners have seen the potential of CNG for decades. As far back as the 1980s, the GORTT launched a CNG pilot project; after its successful and promising results, a decision was made to develop a CNG station network and expand the use of CNG nationwide. However, for various reasons, there was limited use of the fuel. By 2010, Trinidad and Tobago had nine service stations providing CNG and less than 5,000 vehicles converted to its use (less than 1% of the vehicle population and 0.3% of the total fuel consumed in the nation). In 2010, the Government established the CNG Task Force.

Why this renewed push towards CNG? The reasoning has not changed over the years; if anything, factors like climate change and the real cost of liquid transportation fuels have become more relevant since the original CNG pilot project in 1984.

At market value, CNG is less expensive than liquid fuels. More importantly (and specific to Trinidad and Tobago), the prices of liquid fuels such as super unleaded and diesel are artificially low because of the national fuel subsidy, which costs the country over TT\$4 billion in each of the last four fiscal years (2011 through 2014).

At present, diesel retails locally at TT\$1.50 per litre and super unleaded costs TT\$2.70 at the fuelling pump. The real cost, which depends on the world price of oil, could be more in the region of TT\$5/litre. CNG retails locally at TT\$1 per litre of gasoline equivalent, which makes it the lowest cost transportation fuel on the local market. NGC CNG estimates that the conversion

of taxis and fleets to CNG could save as much as TT\$1.5 billion over the next five years. By increasing the use of natural gas as an alternative fuel and lowering petrol use, Trinidad and Tobago can generate additional foreign income from sale of the displaced liquid fuels on regional and/or international markets.

The other compelling reason for expanding the use of CNG is its smaller environmental impact. Natural gas is the cleanest-burning fossil fuel available. It produces between 20-30% less carbon dioxide than petrol. It also produces 95% fewer tailpipe emissions. If the nation can meet its goals for expansion of the use of CNG, it is projected that the transportation sector could reduce its carbon footprint by up to 15%.

CNG also offers several advantages to vehicle owners such as reduced maintenance costs, prevention of fuel loss through pilfering, spillage or evaporation, and less contamination and greater longevity of lubricating oils.



*MoU Signings:*

*(L to R) Mr. Curtis Mohammed, President, NGC CNG and Mr. Ronald Milford, CEO, Unipet*

*(L to R) Mr. Curtis Mohammed, President, NGC CNG, with Mr. Neil Gosine, Chairman, NP and Mr. Kevin Motilal, Acting CEO, NP*

*(L to R) Mr. Curtis Mohammed, President, NGC CNG and Mr. Gerard Yorke, Acting CEO, WASA*

## NGC CNG in Action

With these compelling reasons for expanding the use of CNG as an alternative transportation fuel, GORTT has embarked upon a comprehensive CNG initiative. NGC CNG was created to be a prime facilitator of this national project. Its role includes (among others) providing funding for new infrastructure, working with service stations to increase CNG distribution, establishing its own CNG service stations, raising awareness nationwide about the benefits of CNG, and working with select market segments (such as public transportation providers and private commercial fleet owners) to convert to CNG.

The company is investing TT\$500 million in the first phase of a five-year plan. Phase 1 includes construction of at least 22 CNG service stations and conversion of just over 17,000 vehicles. The second phase proposes to continue the construction and conversion drive. One of NGC CNG's major goals is to increase the number of stations offering natural gas fuel to more than 30, almost three times the existing amount. NGC CNG also intends to operate five mobile CNG refuelling units in order to satisfy the demand for CNG prior to the construction of new stations.

One of the NGC subsidiary's first actions was to sign Memoranda of Understanding (MoUs) with

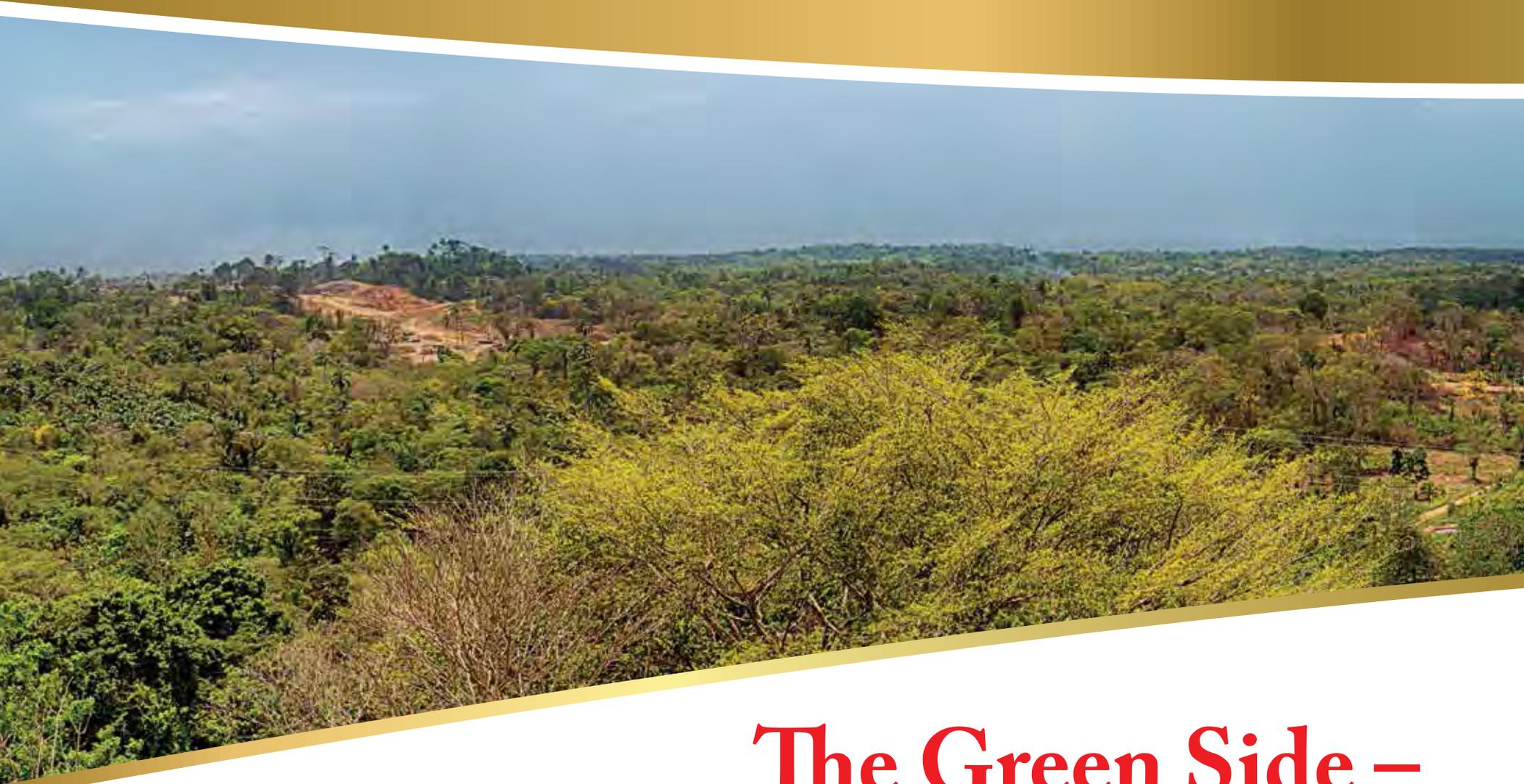
the Trinidad and Tobago National Petroleum Marketing Company Limited (NPMC) and United Independent Petroleum Marketing Company Limited (Unipet) in May 2014 for CNG service at their stations. NGC CNG has also entered into MoUs with the Public Transport Service Corporation (PTSC) to provide a CNG refuelling station for its fleet of natural gas-fuelled buses and with the Association of Maxi Taxis Trinidad and Tobago (AMTTT) to provide grants for the purchase of Original Equipment Manufacturer (OEM) CNG maxi taxis. Recently, an MoU between NGC CNG and WASA was signed, allowing for both state companies to work together for the expanded utilisation of CNG in the water authority's fleet of vehicles, and also for the construction of a CNG fuelling station at WASA's St. Joseph's facility.

The CNG strategy is a balanced approach that consists of focusing first on manageable segments such as public transportation, government fleet vehicles and corporate fleet operators, and ensuring that there are sufficient CNG stations to meet new demand. As facilities are created to service existing and potential demand, this can inspire confidence in the private sector and the general public to invest in CNG, whether through automobile conversion services, the supply of OEM CNG vehicles to the market, or purchasing such services or vehicles.

One indicator that such confidence is being generated was the introduction of OEM CNG vehicles by automotive dealers. For instance, Classic Motors, in March of 2015, launched the Honda City CNG, which uses both CNG and gasoline. Sterling Service also introduced the Mercedes Benz E-Class in 2015. With the current fiscal incentives of no motor vehicle tax and value added tax (VAT) on OEM CNG vehicles, the retail price of the Honda City CNG vehicle is lower than the non-CNG version, despite the additional cost of the CNG equipment and factory modifications to the base vehicle to accommodate the CNG system.

NGC CNG is also working to increase confidence and awareness through its communications strategy and a public education campaign, which highlight the benefits of natural gas fuel to the consumer and the country.

NGC CNG is confident that the time is right to make natural gas fuel a substantial part of the transportation landscape. "Many people have understood and want the nation to enjoy the benefits of CNG fuel," says Curtis Mohammed. "They have been waiting for the right plan and the right investment to make it happen. That time is now."



# The Green Side – NGC Reforestation

## Bringing the Trees Back Home

As NGC celebrates its 40th Anniversary this year, the Company is approaching another milestone – the 10-year anniversary of its reforestation programme. Launched in 2005, this programme is a large-scale tree planting exercise to repopulate degraded forest land with high-value trees. For almost a decade, NGC has been working with the Forestry Division of the Ministry of the Environment and Water Resources, as well as with community groups, to reforest some 315 hectares in four areas of south Trinidad. An estimated 65,000 trees have been planted so far.

The reforestation programme has six stated objectives – to establish a close, mixed species canopy of planted trees in critically damaged

areas of the southern watershed; to provide a habitat for wildlife; to develop and maintain community organisations for the establishment and care of replanted parcels; to generate short-term employment for the communities through agro-forestry; to conserve forest soil; and to reduce the incidence of forest fires.

## Replanting and Employment

Initially, NGC's reforestation programme came about through stipulations in its Certificate of Environmental Clearance (CEC) from the Environmental Management Authority (EMA). The CEC requires the Company to reforest three areas that were cleared for its construction and pipe-laying projects, namely the Beachfield Upstream Development Project, the Cross Island Pipeline

Project (CIPP) and the Union Industrial Estate Project.

The reforestation programme follows the 'No Net Loss' principle. In other words, NGC has undertaken to replant areas equivalent to the size of what was cleared because of its operations. But reforestation is not the only benefit of the programme. As part of its reforestation efforts, NGC employs members of the communities that border the replanting zones to work on the programme. These are rural communities with few opportunities for steady employment. Through reforestation, residents of these small villages and towns find gainful but temporary employment that allows them to provide for their families and generate business in their communities.



*Tree planting in progress*



*High-value trees such as apamate, teak, cedar and mahogany are planted*

## High-value Trees

The reforestation programme has taken place in the following areas – the Victoria/Mayaro Forest Reserve; the Morne L’Enfer Forest Reserve in the South-West Conservancy (which is bordered by the communities of Grant Trace Extension and Guapo/Parrylands); and two areas within the South-East Conservancy, one bordering the community of Edward Trace in Moruga and the other (the newest area within the programme) bordering Union Village in Rio Claro.

Targeted forests have been depleted by timber licensees, oil companies, fires and other man-made causes. Although these areas still possess considerable vegetation, much of it is in low-value trees (trees that do not make an impactful contribution on the forest ecosystem or cannot be used for human needs, like lumber).

The Forestry Division selects the areas within these zones for replanting. High-value trees such as apamate, teak, cedar, mahogany and many more are planted. A mix of shade intolerant (requiring more sunlight and thus open space) and shade tolerant (able to thrive under the canopy of larger trees) saplings are planted. Several species of fruit trees which can support wildlife are also planted.

Reforestation is carried out in phases. Since 2006, several of the selected forest areas (the Mon L’Enfer Reserve and the South-East Conservancy area close to Edward Trace) have carried out five phases and are preparing for their sixth. Each phase consists of several stages.

After the Forestry Division designates a location, workers cut ‘lines’, clearing out an area not only to plant the tree, but also to give it enough open space to grow. After the line is cut, the trees are planted. Following this, is the resupply and tending phase, which ascertains if the tree is healthy or needs to be replaced. Next is the maintenance phase, in which workers monitor the trees and keep the lines clear. Workers also cut open lines that separate the new trees into quadrants (called fire traces) so in case of fire, the blaze will be contained within a quadrant and not spread to other areas.

After five years, by which time the tree should have matured to a level where it is relatively self-sufficient, the entire phase is handed over to the Forestry Division. Thus far, NGC has transferred Phases 1 and 2, is maintaining Phase 3 and resupplying and tending Phases 4 and 5. This year NGC will begin planting Phase 6, and in 2016, it will start Phase 7. Trees from the earlier phases of the reforestation have not only matured past the maintenance stage, but some are already seeding and beginning the process of regeneration.

## A Community Partnership

For NGC’s reforestation programme to succeed, it relies on the work of the community teams who bring not only their physical labour, but also their deep knowledge of the forest and their enthusiasm for its rehabilitation. Reforestation is labour-intensive work that sometimes takes place in highly uneven terrain that includes natural hazards. The programme employs skilled foresters who have gained extensive experience through seasonal work with the Forestry Division, as well as through their everyday lifestyle as members of communities that remain close to the forest and nature. NGC has also partnered with the communities to create community groups and provide training for the programme.

The work teams are made up of both men and women. In fact, some community groups ensure that placements on the workforce go to women, who are being hit even harder than their male counterparts by the lack of employment prospects.

For almost a decade now, the partnership between NGC, the Forestry Division and these southern community groups has rehabilitated some of Trinidad’s most degraded forests and provided much needed employment.



*NGC's commitment is to replace every hectare of forest cleared in its pipe-laying activities*

## Testimonials

### UNION VILLAGE, RIO CLARO

**Amit Benn** – Union is a small community. We are really famous for the forest. There are not many opportunities in Union besides forestry. We grew up in the bush, so the work is normal for us. I am working to get on my first [oil] rig and this is a good way to put money in my pocket until then. NGC is helping us with this programme. It keeps the bills down and provides employment. It is also making a positive impact in the community by replanting the land that has been damaged.

**Imtiaz Rahim** – I would say 65-80% of the community depends on gardens [agriculture], construction and forest work, which is not regular. Any kind of work that comes around we go for it to make ends meet. I grew up in this kind of work, as both my parents worked on the plantation. This is a nice programme and I would encourage NGC to continue and even expand. We are feeding the wildlife and replanting the trees that have been cut down.

### GRANT TRACE EXTENSION

**Neelima Mackay** – I've been doing forestry work for five years now. I like being out in the field. I like nature. Besides me, there are four other

women in my group. The work can be challenging because of the terrain. We have steep hills, rivers and thorny trees. It is a bit more difficult being a woman, but at the end of the day we still come out because we want to work and be independent. Right now, there are few other job opportunities, especially for ladies. This work is giving us the opportunity to be more independent.

**Amarnath Mahadeo** – This is hard work but I enjoy it. It keeps you healthy. There aren't many opportunities in the community. You have to go outside, to San Fernando, for work. I do woodworking as a sideline trade and I hope one day to own my own business. This programme is very good because it helps unemployed people. NGC is doing a very good job here. They are giving back to the community and helping to rebuild the forest.

### PARRYLANDS

**Ravi Balroop** – I am a member of WOMA (Women and Men in Agriculture), a community group from Parrylands and environs that tries to make sure men and women work together on agriculture and forestry projects. We work together because we all need to earn a living. So we share opportunities. I really like this work because I like the forest. You have to like this work to do it.

We are protecting and in fact, giving back to the environment. The wildlife eats the fruit and uses the trees we plant. We are planting big trees that will return the canopy to the forest. This is a very good project.

### EDWARD TRACE, MORUGA

**Raymond Ulbano** – Jobs are very hard to find here. All we have is gardening [agriculture] and fishing. Other than this work, I grow small crops. That is why this programme is so important. I would like to see it expanded.

**Martin Forgeni** – I do some gardening but it is hard because of theft. The project is very good because the forest has been depleted. A lot of logging has taken place. Plus, there have been fires. We have lost a lot of good forest. It also helps the community because there is no work here.



# The Energy of Human Potential

## The Human Development Factor

From its inception, NGC has made the development of human capital one of its priorities. This commitment goes beyond employees of the Company and even members of its fence-line communities. As a national company with an imperative for national development, the creation of new avenues for uplifting Trinidad and Tobago's human potential has been integral to the Company's activities for decades. Today, these efforts have become some of the most effective and far-reaching human development initiatives in the country and many of them originate within NGC's Human Resources Department.

"Human Resources is a division that works both within and outside of the organisation," says Mrs. Carol Sylvester-London, NGC's Manager, Human Resources (Ag). "We are focused not only on the training and development of our internal community, but on the external communities as well."

Alongside programmes and activities familiar to most HR offices, NGC's Human Resources Division (HRD) offers several fundamental initiatives for the benefit of its internal and external communities. For over two decades, HRD has offered four annual bursaries to nationals of

Trinidad and Tobago for undergraduate and technical programmes. The division also facilitates three-month internships for undergraduate students and on-the-job training for technical students from educational institutions such as Metal Industries Company (MIC) Ltd. and The University of Trinidad and Tobago (UTT).

HRD has also sought to reach the external communities through career fairs at secondary schools, universities and other educational institutions, to provide career guidance for students with a potential interest in working in the energy sector.



*NGC Mentors: NGC's BUD Programme seeks to mould young interns*

## Postgraduate Scholarships and Internships

Over the last two years, HRD has embarked upon two initiatives that represent major investments in human potential. In 2013, NGC launched its first Employee Postgraduate Scholarship Programme. The objective of the programme is to develop the next generation of energy sector leaders who will eventually possess the professional skills, the strategic capabilities and the global outlook necessary to advance the nation in the international energy business.

The scholarships provide for full tuition, books, laptops, airfare, accommodation and living expenses for one-year graduate programmes. In its first year (academic year 2013-2014), four NGC employees attended graduate programmes for oil and gas studies in leading universities

in Scotland, UK. In the academic year 2014-2015, one employee received a scholarship. For 2015-2016, four more employees will pursue postgraduate degrees through the programme.

Employees are selected via a rigorous screening process that includes, among other factors, the needs of NGC in specific areas of study that can enhance the Company's operations and that are not currently available within the Company and, in some cases, within Trinidad and Tobago.

The second initiative – the Business Upstream Development (BUD) Internship Programme – is exclusively focused on the development of tertiary-level graduates of Trinidad and Tobago. BUD, a two-year programme launched in February of 2015, is one of the most comprehensive internships available in the country. It provides recent university graduates with an opportunity to

obtain solid and robust experience in the energy sector. Since its commencement, 18 participants have been exposed to the various facets of the NGC Group of Companies, which have included areas of their chosen fields.

BUD also provides training in professional behaviours and life skills. The central aim is to prepare the participants for work in a business environment, whether within the NGC Group, or in any other company.

“Sustainability may be considered as one of NGC's maxims,” added Mrs. Sylvester-London. “We are tasked with managing the nation's natural gas assets and we seek out opportunities to invest in ways that can bring the greatest return to society. By investing in programmes such as BUD, we are helping to mould the professionals that will take the sector and the society forward.”

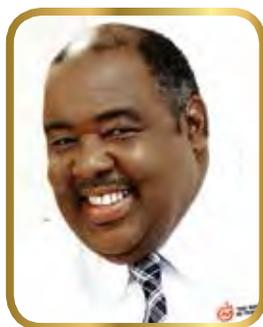


*The 2015 undergraduate interns have been exposed to a series of workshops including Financial Literacy, Leadership Development, Road Safety Awareness and Innovation and Entrepreneurship*



# Employee Perspectives on Our 40th Anniversary

Employees share an experience, career highlight or special message that is significant at this time, as the Company commemorates its 40th Anniversary.



**Wayne Thorne**  
Position: Warehouse Supervisor,  
Procurement and Logistics  
Years of Service: 34

"I remember the early stages of the industrial estate development, when I had just joined the Company; Point Lisas was open space. NGC has grown to a point where other countries and entities interested in natural gas development are looking towards its model to emulate. The offices and the working environment that we have come to know is a stark difference to what we referred to as the 'shed' in La Romaine and a little house on Pembroke Street in Port of Spain where we first started. To know that we have evolved from that to these expansive offices and offsite locations is very significant indeed."



**Alston Cadore**  
Position: Assistant Manager (Retired),  
Offshore Facilities  
Years of Service: 33

"NGC is an outstanding Company. Many people have done the groundwork and done it properly to make NGC what it is today. We have operated consistently, with good business decisions. My hope is that we maintain those good business practices and continue giving our best so that we can leave a legacy and pass on this organisation as a better performing unit to generations to come."



**Lystra Sookdeo**  
Position: Head, Corporate Secretariat Services  
Years of Service: 31 (10 at National Energy subsidiary)

"NGC has a proud history and has played a key role in the development of Trinidad and Tobago. Since 1975, NGC has played a pivotal role in the development of the local natural gas industry. During these forty years, NGC has also contributed a great deal to our national community. Some of its business activities include pipeline operations, LNG marketing and project management. Our growth and success is not due to any one contribution but to a team effort of many great minds. I am indeed proud to be part of this success story!"



**Richard Ramadoo**  
Position: Head, Training, Human Resources  
Years of Service: 31

"Anniversaries are an opportunity for reflection and celebration of achievements and having been part of this journey for 31 of the 40 years, I have experienced NGC from fairly early days and know what we were, compared to what we've become today. I feel proud and happy to be part of the phenomenal growth and development of the Company, especially at this time as we celebrate our 40th Anniversary, and more so with our recent stellar performance, which has made NGC the most profitable state enterprise."



**Yaseen Mohammed**  
Position: Acting Assistant Manager,  
Network & Gas Balancing  
Years of Service: 31

"At the time I was promoted to a Control Operator, our only means of monitoring the pipeline network was mainly via radios and telephones. This meant visualisation of the network from information garnered from suppliers, consumers, and sometimes the general public for any major pipeline emergencies. However, by the year 2000, the Company embarked on a project, SCADA (Supervisory Control and Data Acquisition). This system allows the operators to view live data through the medium of screen displays, and to open and close valves via remote access. SCADA was a step in the right direction to improve our delivery efficiency and safety systems."



**Erva Davidson**

Position: Community Relations Assistant, Community Relations, Corporate Communications  
Years of Service: 30

“My father used to repeat this Latin quote ‘*nihil sub sole novum*’ which translates to ‘there is nothing new under the sun’. I interpret this as ‘There is nothing truly novel in existence...every new idea has some sort of precedent or echo from the past.’ NGC has a rich history; I encourage my colleagues to learn from our history. In my 30 years here, our growth has been phenomenal. My congratulations to NGC for completing forty glorious years of success and may we continue to be on the top of the list for unselfish service to Trinidad and Tobago.”



**Mahindra Maharaj**

Position: Team Leader, Pipeline Integrity  
Years of Service: 14

“I think it is an historical milestone. I believe it should be celebrated with a ‘bang’. The fact that NGC’s natural gas network is over 1,000 km of pipeline, including a 56-inch diameter gas pipeline which happens to be the biggest in the western hemisphere, says magnitudes. NGC has made many contributions socially and economically to T&T. There is much to celebrate.”



**Ramesh Samlal**

Position: Senior Construction Inspector, Construction Services  
Years of Service: 24

“There are many significant memories; one that stands out is my involvement in Project 2000. This project was a major accomplishment by NGC. It is unbelievable that manual welding of 76 kilometres of 36-inch diameter pipeline was completed in five months. The NGC project management team did an outstanding job in managing the main contractor and really pushed themselves to the limit to achieve project milestones.”



**Leon Bryce**

Position: Assistant Accountant, Treasury Services  
Years of Service: 13

“The history of the energy sector in Trinidad and Tobago spans over 100 years. So NGC is really a baby in the wider scheme of things. We have embarked on so many projects. For example, we did debt financing on the international market. We also did pipeline project financing for the 56-inch diameter pipeline, which is 76.5 kilometres of pipe with the capacity to transport approximately 2.4 Bcf/d of gas. This is the largest diameter pipeline in the western hemisphere, located in Trinidad, done by NGC! On this anniversary, we should be proud of what we have accomplished in this short space of time.”



**Lisa Chung**

Position: Administrative Assistant III, Human Resources  
Years of Service: 19

NGC has achieved a milestone and I am extremely proud to be part of this. We are a company set apart from other energy companies and we play a very integral role in national and community development. It is really a privilege to be part of such a great organisation. To my colleagues, I would say continue to take pride in what you do at NGC, just as you did the very first day you joined the Company.



**Kory Hall**

Position: Gas Measurement Analyst, Commercial  
Years of Service: 8

“Forty years is a milestone in any company’s operations. It signals longevity. It signals a wherewithal to respond to the changing economic climate. So forty years isn’t just age, but a catalogue of a company’s experiences. To be able to reach 40 is definitely a major achievement. The people of NGC are the cogs that turn this great machine, so once we stay committed to the task at hand, we will continue to be successful.”



*NGC is a major sponsor of the Red Steel cricket team*

# CSI Initiatives – Our Nation, Our Investment

Whether through ambitious programmes that develop the potential of our young artists and sportspeople, or the provision of places for children to learn and play in some of Trinidad’s remote communities, NGC makes a massive investment in the development and well-being of the society. Over the years, that commitment has grown.

“We are a profitable state enterprise that manages a resource on behalf of the people of T&T,” says Wynda Chandler, Head of Community Relations. “We believe we have a responsibility to create shared value from that managed resource. One of the best ways we do that is through our Corporate Social Investment (CSI) programme.”

## **A Tradition of Giving**

In 1992, NGC launched its Community Relations Department and was the first local company to have a department solely dedicated to community relations. Initially, the focus of NGC’s community relations activities was on ‘pipeline communities’, those situated close to the pipeline network. As the programme grew, the Company undertook larger projects, such as the sponsorship of the Community Basketball League staged by the National Basketball Federation of Trinidad and Tobago (NBFTT) and the concomitant construction or refurbishment of 44 basketball courts throughout Trinidad and Tobago.

The introduction of skills training in targeted communities allowed many residents to receive

certification in areas such as Welding, Building Construction Technology and Food Preservation, to assist them in earning a sustainable income and providing for their families.

Since June 2013, NGC’s community programme has evolved to being a CSI programme with three themes – Sport, Civic Life (which includes activities geared towards enriching public life) and Empowerment, which includes the development of decision-making capabilities at individual and community levels.

## **CSI in Action**

Today, NGC’s CSI programme is a vibrant one that seeks to inspire, develop and in many cases, transform the national landscape.



(Above) NGC's Community Basketball League in action (Below) The NGC Right on Track Caravan visits Youth Training Centre (YTC)

Pan Ensemble performing at SteelFesTT 2012

NGC Bocas Lit Fest storytelling session at the National Library and Information System Authority (NALIS)

The NGC Sanfest encourages various artforms among the youth who participate in the annual festival

## Sport

In Sport, NGC has created the NGC Right on Track Coaching Caravan, a development programme that uses the most effective scientific methods. Indeed, girls and boys between the ages of eight and 17 are exposed to the skill areas of track and field and basketball. In his capacity as Head of the Community Relations Department, Hasely Crawford T.C., T&T's first Olympic Gold Medalist, was instrumental in the conceptualisation and execution of NGC's Right on Track Programme.

NGC also sponsors major youth athletic events such as the **Primary Schools Track and Field Games** of the St. Patrick and Caroni Educational Districts and Moruga Zone, and the **National Association of Athletics Administrations (NAAA) Track and Field Championships**.

Moreover, NGC's legacy of investment in cricket is unparalleled. NGC is also a major sponsor of the Trinidad and Tobago Cricket Board (TTCB). This sponsorship includes the support of the T20 Festival Competition, Women's Cricket, the National Cricket Academy, the TTCB, sponsorship of the Grass Roots Development

Programme, the 50 Over finals and the Tobago Cricket Association.

"It is a very rewarding experience to see how these programmes develop over time," says NGC's Community Relations Officer, Fofi George, who works with the NAAA, among other organisations. "You realise the volume and quality of work that has been done in support of these organisations and you can't help but feel pride. NGC's CSI is a 'doing' job. We get to see the work. We get to conceptualise it and then action it and make a difference in people's lives."

## Civic Life

In Civic Life, NGC is the main sponsor of the NGC Bocas Lit Fest, a five-day international literary event that was created to promote, encourage and support the literary arts in Trinidad and Tobago and the Caribbean as a whole. The NGC Bocas Lit Fest has become one of the region's most important occasions for the celebration of literary arts through its many workshops, lectures, readings and competitions, all of which have rejuvenated the appreciation of reading and books.

Equally as impactful is the National Junior Arts Festival (NGC SANFEST), a national arts festival for primary and secondary school students in the Visual Arts, Creative Writing, Drama, Spoken Word and Music. NGC SANFEST is an incubator of T&T's young artistic talent, providing them with a platform to explore their gifts.

NGC's support can also be seen in the Tobago Heritage Festival and the Trinidad and Tobago Film Festival.

NGC was the main sponsor of the inaugural SteelFesTT, which commemorated Trinidad and Tobago's 50th Anniversary of Independence in 2012 through its highlight of the national instrument, the steelpan. In addition, the Company fully sponsors the NGC Couva Joylanders, the NGC La Brea Nightingales and the NGC Steel Xplosion (Tobago). NGC's commitment to the national instrument includes initiatives for youth training and capacity building.

## Empowerment

In Empowerment, one of NGC's signature initiatives is its sponsorship of the NIHERST



*Beetham Gardens Police Youth Club members exposed to the game of chess as a developmental tool*



*The 2009 intake of the Tobago Plant Maintenance Scholarship awardees*

National Science Centre. NGC's involvement in this project – to widen the reach of science and technology – is testimony to its long-term vision of a scientifically literate Trinidad and Tobago.

In recent years, NGC has expanded its skills' development and entrepreneurship programmes in Tobago, creating opportunities for personal and professional growth in the sister isle. The CSI programme provides four skills training programmes – the Tobago Plant Maintenance Scholarship, Tobago Building Construction Technology (BCT), Tobago Outboard Boat Engine Repairs and Bethel Empowerment Skills Training (BEST).

“As CSI professionals, we have a unique opportunity to use resources to assist individuals, organisations and communities for the greater national good,” says Community Relations Officer Myles Lewis, who works on several CSI initiatives in Tobago. “We are very fortunate because we can see that our job makes a positive impact on lives. Few companies see fit to have as robust a CSI programme as NGC.”

NGC also sponsors police youth clubs in five communities, namely Beetham Gardens, Couva, La Brea, Laventille Road and Penal, and has supported the Youth Training Centre (YTC) by the refurbishment of its multipurpose sports facility and by hosting Right on Track sessions there.

### **Commitment to Social Investment**

The list of NGC's one-off and small community contributions is long. The Company provides support for schools, students and communities throughout Trinidad and Tobago. NGC supports a wide range of initiatives to benefit Trinidad and Tobago – from developing programmes to sponsoring the initiatives of hundreds of non-governmental and community-based organisations through grants and contributions.

Over 100 requests per week for sponsorship or assistance is received. Although it cannot support every endeavour, the CSI programme has clearly articulated guidelines about the type of projects that are eligible for sponsorship or assistance.

“We review every request,” says Ms. Chandler. “If the request has been denied [because it does not fall within the scope of the CSI programme], we will still respond and explain why the specific project was not a good fit for NGC.”

It is arduous work, but members of the Community Relations team are fully committed.

“Doing this job makes me feel good to say I am an employee of NGC,” says Alister Narinesingh, Community Relations Officer. “In my community (Gasparillo), NGC opened the Leo Thompson Recreation Ground, so I hear the gratitude of the people in my community and other communities we support. You say to yourself, you did a good job. This is what life is about.”

As a responsible state entity and a good corporate citizen, NGC treats its Corporate Social Investment programme as priority. NGC seeks to add value to Trinidad and Tobago in a way that builds stakeholder and shareholder value.



*The T&T economy has been buoyed by natural gas-based economic growth and development*

# Beyond the Boundary – T&T’s Gas-based Economic Growth and Development

**By Dr. Haydn I. Furlonge**

**Commercial Manager, Value Optimisation**

At every stage in the evolution of the natural gas industry of Trinidad and Tobago, a combination of strategic moves on the part of government and intervention by state agencies in unison with private capital was critical. With this, proved natural gas reserves climbed to 21.4 trillion cubic feet (Tcf) in 1999, and total gas production increased to just over 4,000 million standard cubic feet per day (MMscf/d) in 2014. The fortunes of such developments redounded to the benefit of the people of Trinidad and Tobago. A replay of the highlights of The National Gas Company of

Trinidad and Tobago Limited (NGC), and that of its various subsidiaries and affiliates, shows a strong relationship with this proud history. The gas-based industry is now at a critical stage in its own development, against the backdrop of a rapidly changing world energy landscape. Yet still, opportunities abound for redefining our sector and NGC’s role in it.

## **Gearing Up for Rapid Growth**

As early as 1964, the ambition of a vibrant natural gas industry was crafted in the ‘Mostofi Commission Report’ (Government of Trinidad and Tobago, 1964). Even though proved natural

gas reserves stood at just 2.4 Tcf and production was 272 MMscf/d with much of this being flared, there were two important recommendations that formed the basis of the gas industry and indeed were precursors to NGC’s existence:

- 1. The important development of a petrochemical industry in Trinidad requires the assurance of gas reserves in the years to come. The use of gas for production of electricity and domestic requirements should be encouraged as much as possible.*
- 2. The use of gas injection for increased oil recovery, conservation and other economical projects is urged by the Commission.*

The Cabinet of the Government of the Republic of Trinidad and Tobago (GORTT) decided on 6th March, 1975 that “The National Gas Company of Trinidad and Tobago should be formed and should be the designated agency of Government for the purpose of purchasing and selling natural gas in the country to industrial and commercial users”.

Following the acquisition in 1976 of the 16-inch diameter (300 MMscf/d capacity) Penal to Port of Spain gas pipeline of 66 kilometre length, and initial gas sales of 0.370 MMscf for the year, the infrastructure built and operated by NGC has increased to 1000 km (4400 MMscf/d capacity), and gas sales of about 1800 MMscf per day.

Then, in 1979, NGC embarked upon fulfilling a government mandate to implement a Flare Gas Conservation Project (Punnett, 2005). It is interesting that the gas compression operation at the Teak-Samaan-Poui (TSP) fields, which commenced operations in 1981, has remained in existence to this day. These facilities reduced the flaring of large quantities of associated gas which was used for secondary oil recovery. Overall, the TSP fields played a pivotal role in the energy sector, having cumulatively produced about 900 million barrels of oil with a peak of 144,000 bpd (in 1977), and with gas supply to the domestic market dating back to 1979. The full economic impact of such an achievement, albeit difficult to estimate, is significant. These antecedents contributed to the germination of a state enterprise that grew from an initial capital injection of TT\$80,000 to an asset base of over TT\$44.3 billion as at 31st December, 2014.

Of course, NGC’s core business of gas transportation, coupled with its gas merchant role, has been one of risk and reward. Direct earning to the government from NGC via taxes and dividends (in nominal terms) amounts to over TT\$25 billion from its inception in 1975 to 2014. The technical, financial, market and other risks have been managed such that NGC has been able to help support the sector’s growth, and at the same time, expand its portfolio to include shareholdings in several related businesses:

- Liquefied natural gas via Atlantic LNG Company of Trinidad and Tobago Limited
- Natural gas liquids processing and marketing via Phoenix Park Gas Processors Limited (PPGPL)

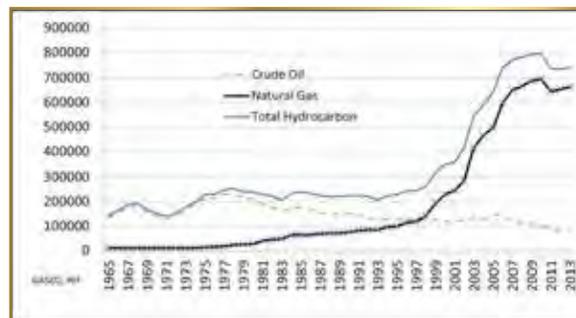


Figure 1: T&T’s hydrocarbon production history (figures in barrel of oil equivalent per day)

- Gas and condensate production in South-East Coast Consortium and Trintomar’s operations
- Gas and crude oil production in Teak-Samaan-Poui marine fields; and
- Oil and gas production in Angostura Block 2c (details in Boodoo and Hall, 2014).

All of these strategic interests and activities are consistent with NGC’s *raison d’être*, and the evidence of the sector’s growth serves as testimony to the effectiveness in fulfilling the Company’s mandate.

Figure 1 shows the historical trend in natural gas production, and in particular, the dramatic increase just prior to the turn of the century. The 1992 Draft Energy Policy for T&T green paper set for NGC an “expanded role as the Government’s prime mover in the future development of the natural gas sector”. There is little doubt that this contributed to the results seen in the subsequent period. Deliberate government policy, acting through several ministries and state agencies to stimulate the growth of the gas sector, proved to be timely as the gradual decline in oil production was more than compensated for by natural gas.

The degree of collaboration between state agencies, often silent and undervalued, in efficient and effective decision-making and project execution, has been an attractive feature for foreign investors. These agencies include various government ministries and regional corporations (for energy, utilities, land use, water, finance, customs and labour), the Environmental Management Authority, the Trinidad and Tobago Electricity Commission, the Water and Sewerage Authority of Trinidad and Tobago, as well as other organisations such as the Petroleum Company of Trinidad and Tobago Limited, Point Lisas Industrial Port Development Corporation, and educational institutions (including The University

of the West Indies, The University of Trinidad and Tobago, and National Energy Skills Centre).

With regard to port and industrial estate infrastructure, the National Energy Corporation, formed in 1979, has in its portfolio two workboats; six tugs; one passenger launch and fast crew supply vessel; six unique multi-user petrochemical and steel terminals at the Point Lisas Harbour; the port of Brighton, contains a dock, three berths and storage yard; the port of Galeota, features five berths, a navigational channel 80m wide and 7.6m deep, a 200m turning basin and eight-hectare storage area; and La Brea Industrial Development Company (LABIDCO), comprises 400 acres of estate land at La Brea. Having overseen the industrial needs for rapid expansion of what is one of the premier petrochemical industrial sites in the Americas (the Point Lisas Industrial Estate), National Energy, as it has now been rebranded, is pioneering a sister site of 150 hectares in La Brea – the Union Industrial Estate. This will act as a major new growth pole in the south of the country and it is already attracting major foreign direct investment.

Formed in 1989, PPGPL is one of the largest gas processing facilities in the region, providing natural gas of a high quality by purification and extraction of natural gas liquids (NGLs) from raw natural gas. The NGLs are fractionated into three components: propane, butane and natural gasoline, which are marketed regionally and internationally. Its facilities include three plants with a combined processing capacity of 1950 MMscf/d, three fractionators with a combined capacity of 70,000 barrels per day (bpd), a 55 km length, eight-inch diameter pipeline from the Atlantic LNG facility in Point Fortin, one million barrels of low pressure storage and two marine loading dock facilities.

All of these midstream activities (gas merchant, gas transportation, gas processing, and infrastructure development) are critical to a gas value chain that necessitates all elements to be simultaneously economic and operational.

## Energy in the Economy

Currently, the NGC Group of Companies (NGC parent, NGC CNG Company Limited, National Energy, and subsidiaries with shareholdings in various joint ventures) generates nominally

US\$3.8 billion in revenues, with attractive positions across Trinidad and Tobago's gas industry. The US\$260 million spent every year on goods and services has a multiplier effect on the economy and creates many thousands of jobs. The Group pays 7% to 8% of the country's annual tax revenue to government, and up to 16% including dividends.

The direct and indirect benefits from the petrochemical plants, estate and port operations are all reflected in the energy sector's contribution to the economy. Looking at the entire energy sector including crude oil, Figure 2 gives the historical GDP trend of T&T from 1975. This demonstrates the close relationship between this key economic performance indicator and energy revenues. The latter is a function of several fiscal parameters, including production and market price, which will be discussed later.

Figure 3 shows the energy sector's share of the country's GDP as it transitioned from 1975 to 2014. The high percentage share in 1975 (40% range) may be partly attributed to high oil prices and production levels in that era. This was followed by a gradual decline in oil production as well as prices, leading to the drop in the contribution of the energy sector (25% range). As previously demonstrated in Figures 1 (See page 32) and 2, the role of the energy sector stimulated by growth in natural gas production has led to an incremental increase in the country's GDP in later years, effectively taking it back to the 1975 level.

Of course, there are other variables and contributions from other sectors of the economy to consider. The country's 2014 GDP portfolio mix for all sectors is shown in Figure 4. Energy is by far the dominant driver of the economy. It is very interesting that, whilst there may have been changes in the intervening period, if one were to compare both pie charts, the sectoral portfolio mix is very similar to what it was back in 1975 when NGC was formed. As indicated previously, the major change over the past forty years has been the role of natural gas versus crude oil in the composition of the energy sector, so as to maintain the overall contribution of the sector to the economy. The other elements of value generated from the energy sector include increased gross national product (local ownership), jobs, skills diversification, multiplier effect of goods and

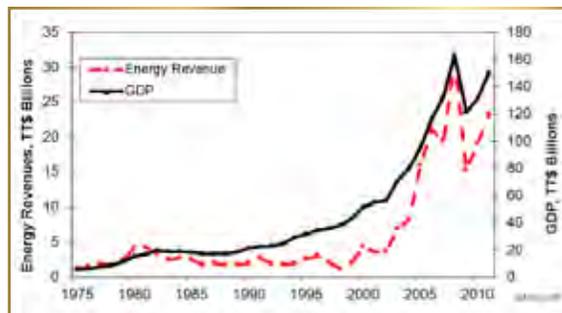


Figure 2: Trend showing energy revenues and GDP

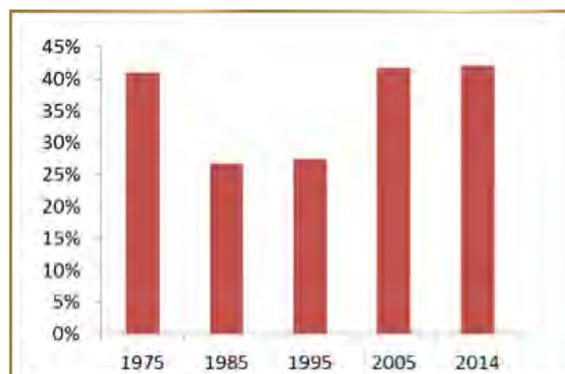


Figure 3: Energy Sector Contribution to GDP (1975-2014) – Data Source: Central Bank of Trinidad and Tobago

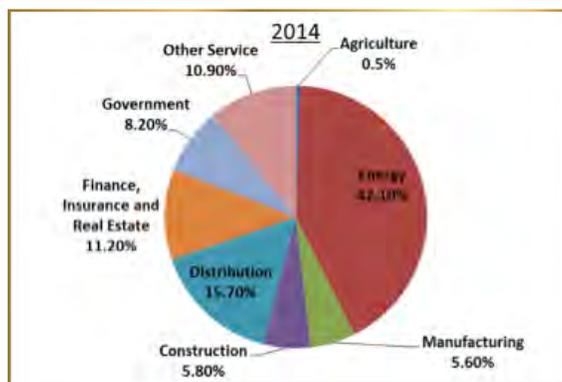
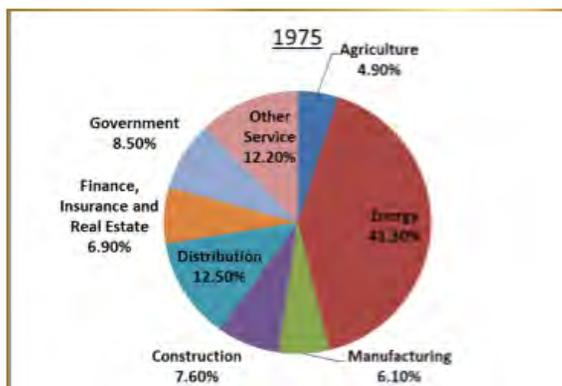


Figure 4: Sectoral Contributions to T&T GDP – 2014 (estimate) and 1975

services in construction and operations, and contributions to community development.

## World Energy Dynamics

The economies of resource-rich countries, as reflected in energy revenues and GDP as described earlier, are impacted by extraneous factors related to market dynamics, and T&T is no different. Let us first outline the various segments of the energy sector and make the link to world energy markets.

The upstream segment of the sector comprises exploration and production which provide earnings to government via royalties and taxes, and dividends in the case of state-owned companies. Sale revenues are obtained from either direct sales to NGC (gas merchant) and to Atlantic LNG, and in the case of crude oil, from sales into the local and international markets.

In the midstream, NGC's merchant/transportation sales revenues, which make up 59% of the Group's revenues, are linked mainly to ammonia and methanol. Crude oil sales currently make up 6.4% of the Group's revenue, representing investment in EOG Resources-operated South-East Coast Consortium and Oilbird; Repsol-operated Teak-Samaan-Poui fields; and recent acquisition of TOTAL/Elf's shareholding in oil/gas offshore Blocks 2c and 3a (operated by BHP-Billiton). LNG, of which the price is partially correlated to the price of oil and other regional gas price markers (outlined later on), accounts for an additional 6.6% of sales from investments in Atlantic LNG Trains 1 and 4.

PPGPL's business is linked to oil prices, which have an effect on NGL prices. Sale of natural gas liquids made up 23% of the Group's sales in 2013. Earnings from National Energy and NGC CNG Company are not directly linked to market prices in any significant way, but generally to infrastructure-related investment returns.

In the downstream, the oil sub-sector (refining, production and marketing) are obviously susceptible to the vagaries of the oil market. The petrochemical and iron/steel sub-sectors are subject to fluctuations in the ammonia/methanol and metals markets respectively.

With this background, what are the world energy dynamics taking place that impact the local energy sector and its contribution to the economy?

Firstly, we note that government revenues from taxes, royalties and dividends from state companies are a function of market prices. As an example, Figure 5 shows the historical trend of ammonia and methanol prices. The cyclical and volatile nature of these markets is well known, which in general terms is a result of supply/demand dynamics. In fact, global macroeconomic events such as the financial crisis of 2008/2009 may have a shock on these markets, as observed from the graph.

Fuel sources, in particular, oil and natural gas, also have a correlation to commodity prices. Historical crude oil prices (represented by the West Texas Intermediate or WTI) are shown in Figure 6. Its pull effect on natural gas prices can be observed. Indicators for three different regions are shown: Henry Hub (HH) in the USA, National Balancing Point (NBP) in the UK and Japan (CIF). The effect of rapid US shale gas production has contributed to US gas prices remaining depressed and uncorrelated to other indices in recent years. T&T's LNG exports are linked to all of these and have adjusted to the different markets accordingly. NGLs, although used as a fuel and for downstream petrochemicals, would have similar characteristics. In summary, the economic fortunes of the energy sector and its contribution to T&T are subject to the vagaries of such market forces.

Secondly, government earnings from the energy sector are also a function of production. If we look at the sector holistically from a quantitative perspective, it comprises production of crude oil (export sales, refined products and condensate); natural gas liquids (propane, butane and natural gasoline); and natural gas (various uses, including petrochemicals, metals, electricity, transport and light manufacturing).

Figure 7 shows the portfolio mix of products within the energy sector on a barrel of oil equivalent basis. It indicates the wide range of energy products and the relative share, with LNG, ammonia and methanol comprising 75% of the mix, and crude oil having just 9%. One must bear in mind, however, that the value accrued per

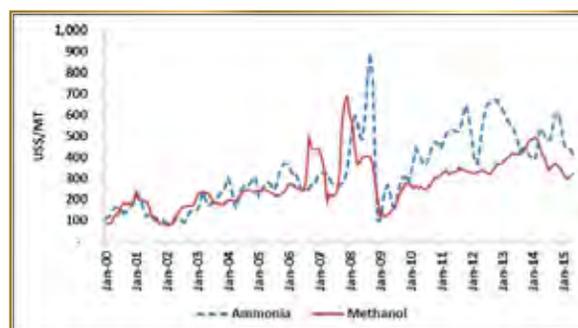


Figure 5: Historical Petrochemical Market Price Trend – Data Source: Fertecon and ICIS

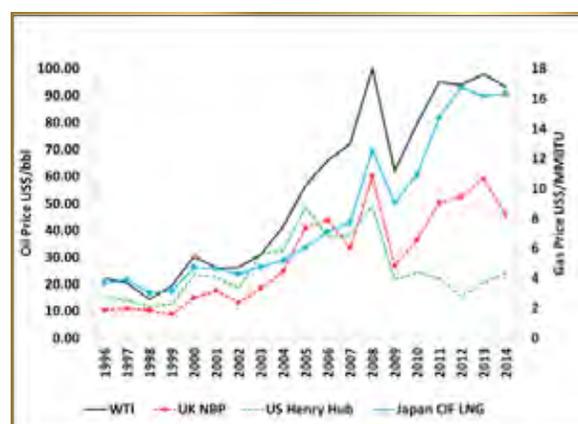


Figure 6: Crude Oil and Natural Gas Price Trend (1996-2014) – Data Source: bp Statistical Review of World Energy, 2015

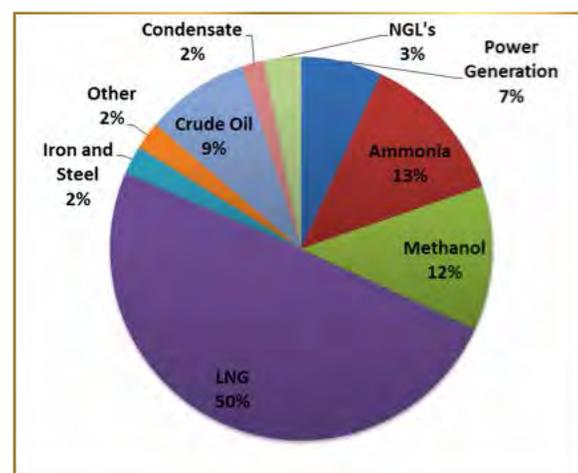


Figure 7: T&T Energy Portfolio Mix for 2014 – Data Source: Ministry of Energy and Energy Affairs

unit of production is different for each product, with oil typically having a larger value than say petrochemicals under typical market conditions. Notwithstanding the varying degrees of correlation between oil and gas-related markets as indicated previously, such a diversified sector has positive implications for its steady contribution to the country's economy. The key, of course, is competing for the best markets to return the maximum value.

Thirdly, there are certain fundamental global energy trends that have implications for the T&T energy sector. These are briefly enumerated:

**OPEC Strategy and Geopolitics** – Balancing oil production with demand and the major influence of Saudi Arabia are ongoing features of the world energy market, and have been critical factors in the dramatic 50% drop in prices in late 2014. Wars and conflicts are other uncertain variables.

**Unconventional Resources** – A sudden increase by 482 trillion cubic feet (Tcf) of US proved gas reserves due to shale commercialisation, using hydraulic fracturing and directional drilling technology, coalbed methane and heavy oil exploitation, now in the commercialisation phase, may have an impact in the future. The rebound of nuclear energy and steady growth of clean fuel alternatives are other variables with longer-term prospects.

**Demand Locations** – With the USA's new-found resources, its demand for energy and petrochemical imports are changing. As an example, US LNG import facilities, which were once major market destinations for T&T's LNG, have now been configured to re-export LNG. The high demand growth centres have now transitioned to the developing world, owing to relatively high economic and population growth rates, and demand for electricity and consumer items.

**New Hydrocarbon Provinces** – Africa, Brazil, Mexico, Suriname, Guyana and other territories are accelerating exploration activity and finding large reservoirs with potentially lower cost than the deepwater territories being targeted in T&T. These not only have the potential to bring significant new regional supply, but also to compete for foreign capital.

**Panama Canal Expansion** – This would open faster access and offer lower shipping costs to the Pacific for LNG, NGLs and petrochemicals from T&T and the wider Americas, whilst conversely allowing passage of greater competition of energy supply from fast-growing Australian and other producers.

## New Opportunities

Whilst T&T pursues its economic diversification agenda, the local energy industry has taken on the challenge to continue to develop and to adapt. Over the past ten years, NGC itself has ‘stepped out of its crease’ into new business activities, namely:

- **NGC Pipeline Company Limited** – In 2005, the provision of third party gas transportation along the 56-inch diameter Cross Island Pipeline (the widest diameter of its kind in the western hemisphere at that time), commenced.
- **Trinidad and Tobago LNG Limited** – Also in 2005, the Company began commercial operations of an LNG business via its shareholding in Atlantic LNG Train 4, and in 2013, started direct marketing of its equity LNG volumes in the international market.
- **NGC E&P Investments Limited** – In 2005, NGC acquired 15% of the Teak-Samaan-Poui fields from bpTT, all producing oil and gas marine fields.
- **NGC E&P Investments (Barbados) Limited** – In 2013, NGC acquired shareholding in a major oil and gas exploration and production field (30% in Block 2c and 8.5% in 3a), with consequent direct marketing of crude oil.
- **NGC CNG Company Limited** – In 2014, NGC initiated a major capital investment programme for the supply and marketing of Compressed Natural Gas (CNG) as a transportation fuel in the country.

- **NGC Petrochemicals Limited** – In 2015, NGC took its first shareholding in a petrochemical plant (Caribbean Gas Chemicals Limited, in partnership with Mitsubishi Corporation, Mitsubishi Gas Chemicals, Mitsubishi Heavy Industries and Massy Holdings), with marketing rights for methanol and further downstream products.

These and other initiatives of National Energy and PPGPL (as mentioned above) have set the NGC Group on a positive trajectory to face local and international challenges. The question now is what will the next ten years bear for the local energy sector, given the dynamics of the industry?

The need to increase the efficiency of operations and technical excellence is ever apparent in a more competitive world, whilst balancing corporate social responsibility and facilitating greater wealth distribution into different strata of the economy. Maximising value from current business elements is ongoing, including maintaining high reliability of supply, increasing production, and export of energy services. Future opportunities include small field development and commercialisation of T&T-Venezuela cross-border fields, heavy oil and enhanced oil recovery solutions, as well as the integration of renewables into the energy matrix.

Pursuing growth across the value chain by finding the best market opportunities for products remains a key strategy. Looking further afield, the region is rich in opportunity. Further portfolio diversification, for example through international growth, would help counteract bottlenecks in the local industry. New and expanding provinces may be seen not just in a competitive light, but also as new areas for exploring such strategic growth via outward foreign direct investment.

Over the last 40 years, the sector has seen the NGC Group setting a solid foundation, and the recent strides have shown promising results. The second innings of the T&T natural gas sector has only just started, and NGC and its affiliates stand ready to play their role.

## Acknowledgement

*The research work of Melissa Diaz and Kristin Singh of the Value Optimisation Division, NGC Commercial Group, is greatly appreciated.*

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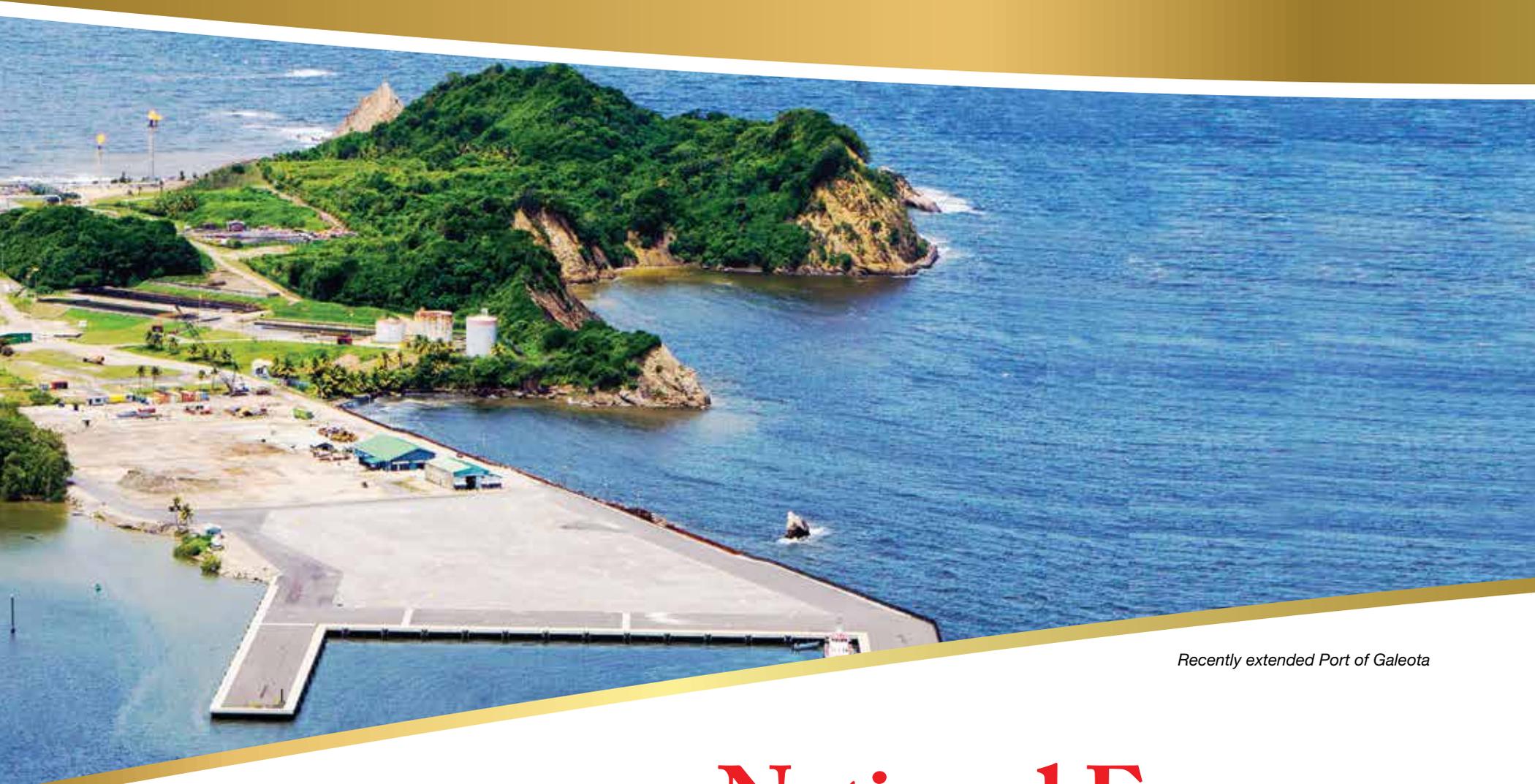
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*Recently extended Port of Galeota*

# National Energy – Building on the Tradition of Achievement

National Energy Corporation of Trinidad and Tobago Limited (National Energy) celebrated 35 years of incorporation on 7th September, 2014. In its 35 year history, the Company has undergone many changes and overcome many challenges in its evolution to becoming the state agency responsible for the conceptualisation, promotion, facilitation and development of new gas-based energy projects in Trinidad and Tobago.

Incorporated in 1979, National Energy Corporation of Trinidad and Tobago Limited (referred to at that time as NEC) was established to continue the work first started by the Coordinating Task Force (CTF), which included the monetisation of the country's natural gas resource, as well as the development and management of its industrial and marine infrastructure. During the 1980s, NEC was also involved in the construction and operation of the early petrochemical plants and

the port and marine infrastructure which service all the plants at the Point Lisas Industrial Estate. In 1992, following the mandate for NGC to be the prime mover in gas-based development, NEC's business development competencies were subsumed within an NGC Group structure. By 1999, NEC was once more reoperationalised within the NGC Group of Companies with a mandate to develop and manage suitable infrastructure, in order to facilitate and promote



*National Energy's tugs*

the various activities relevant and appropriate to natural gas-related operations. This mandate was further expanded to include the facilitation and promotion of natural gas-based development.

Currently, the company, now rebranded as National Energy, owns and operates six petrochemical and steel marine terminals at the Port of Point Lisas and the Port of Galeota, as well as a fleet of ten marine vessels used for launch, towage and harbour operations. National Energy's asset base currently stands at TT\$1.3 billion. The company also manages the port and estate operations at La Brea Industrial Development Company Limited (LABIDCO), as well as the Union Industrial Estate adjoining the La Brea Estate. National Energy is well positioned to be part of the strategy that will take the energy sector into the future. The company is taking a proactive approach to promoting Trinidad and Tobago's energy brand regionally and internationally, as well as continuing to execute the development of energy projects and infrastructure under the guidance of the Ministry of Energy and Energy Affairs.

As a member of the NGC flagship energy Group, National Energy is continuing to deliver on its mandate to expand on both the economic and physical infrastructure of the local energy industry. In the last five years, National Energy has had several notable achievements, which demonstrate the Company's commitment to quality in delivering service to our shareholders and our stakeholders.

### **Commissioning of the Port of Galeota**

The Minister of Energy and Energy Affairs, Senator, the Honourable Kevin C. Ramnarine and the Minister of Community Development, the Member of Parliament for Mayaro, the Honourable Winston Peters, cut the ribbon to officially open the Port of Galeota on 5th September, 2014. The state-of-the-art facility was designed and constructed by National Energy at a cost of approximately US\$85 million and is dedicated specifically for energy and energy-related purposes in Trinidad and Tobago. The facility is positioned to become a major logistics hub for emerging energy markets in South America, particularly in the Guyana-Suriname basin.

Construction commenced on the port in October 2011 and the hardworking and determined National Energy team, in collaboration with construction firm GLF Construction Limited, worked tirelessly to ensure that the project was completed on time.

Speaking at the opening ceremony, National Energy's President, Dr. Vernon Paltoo, noted, "The Port of Galeota is expected to generate revenue for the country, as well as improve efficiency for upstream exploration and production operators and service companies located on the south-east coast of Trinidad."

In his Feature Address, Senator, The Honourable Kevin C. Ramnarine congratulated the Ministry and the National Energy teams on their hard work and commitment to the project. He lauded the quality infrastructure that would attract foreign direct investment to the upstream and downstream sectors. He noted that the port would support the six deep water blocks under the Production Sharing Contracts (PSCs), as well as bpTT's recently launched US\$2 billion Juniper Project. Phase 1 of the Port of Galeota includes five berths, one of which is dedicated to the Trinidad and Tobago Coast Guard.



*National Energy Explorer*

## Project Agreement Signed with CGCL

The signing of the Project Agreement on 10th April, 2015 signified the achievement of another major milestone for National Energy. This agreement brought the country one step closer to the development of a Natural Gas to Petrochemicals Complex for the Production of Methanol and Dimethyl Ether (DME) at the Union Industrial Estate, La Brea. Four agreements were executed in this regard:

1. Project Agreement among the Government of the Republic of Trinidad and Tobago (GORTT), NGC, Mitsubishi Corporation, Mitsubishi Gas Chemical Company Inc., Massy Holdings Limited, Caribbean Gas Chemical Limited (CGCL) and Caribbean Gas Chemical (Barbados) Limited
2. Gas Sales Contract between CGCL and NGC
3. Memorandum of Understanding (MoU) between CGCL and Japan Bank for International Cooperation
4. Engineering, Procurement and Construction (EPC) Agreement between CGCL and Mitsubishi Heavy Industries

Almost two years earlier, the Project Development Agreement (PDA) was executed among the GORTT, NGC, National Energy, Mitsubishi Corporation, Mitsubishi Gas Chemical Company Inc., Massy Holdings Limited and CGCL. The

execution of the Project Agreement as an essential contract brings the PDA and development phase to an end, and represents the beginning of the project implementation phase. Pending final approval by project lenders, the construction is expected to begin in 2015 and commercial operations in 2018.

At the signing ceremony, the Minister of Energy and Energy Affairs noted the following in his Feature Address:

1. The Methanol to Dimethyl Ether (DME) project expectations:
  - a. an investment of US\$987 million (30% of which will be financed through equity and 70% through debt)
  - b. the creation of 2,000 construction jobs and 180 permanent jobs, as well as
  - c. further diversification of the economy and more development in the south-western peninsula.
2. NGC could earn between US\$234 million to US\$489 million from the sale of methanol and DME when the new petrochemical complex comes on stream.

At the signing ceremony, the Minister stated, "This is the most advanced petrochemical project that has come in the last 12 years and we think it's a signal of confidence by Japanese investors in Trinidad and Tobago." He further noted, "The project brings NGC into the downstream of the natural gas value chain with a 20% stake in this

project." NGC will be able to market DME and methanol and will also receive dividends on the project as well as revenues from its sale of natural gas to the complex.

## National Energy 'Exploring' New Marine Business

On 3rd December 2014, National Energy officially welcomed the newest member of its fleet of marine vessels, the *National Energy Explorer*, with a welcoming ceremony held at The Hyatt Regency Trinidad, under the patronage of the Minister of Energy and Energy Affairs.

The *National Energy Explorer* is a fast crew supply vessel which adds a new dimension to National Energy's reliable and technologically advanced fleet, which includes two workboats, six tugs and one passenger launch.

The vessel, which is 53.25 metres in length and has a speed of 22 knots with a maximum draught of 3.20 metres, can accommodate 88 persons on board, inclusive of eight crew members. The crew accommodations include a captain's cabin, an officer's cabin, six crew cabins, cold storage, a pantry and a mess.

Speaking at the function, Senator Ramnarine noted that the new vessel would be an asset to operators located on the south-eastern coast, operating out of the National Energy-constructed

Port of Galeota. The vessel will reduce the time it takes for operators to travel to the offshore platforms, getting them to the platforms in a record eight hours – four hours less than is customary. National Energy has over forty years' experience in providing reliable, quality tug services to the energy industry and will continue to live up to its reputation as the premier towage provider in Trinidad and Tobago.

## Focus for 2015 and Beyond

National Energy continues to focus on operational excellence, high service standards and project implementation in 2015, with several projects in various stages of development.

- **Repair of Berth 2, Port of Brighton**

In keeping with the commitment of National Energy and La Brea Industrial Development Company Limited (LABIDCO) to provide safe and reliable services to our customers and stakeholders, Berth 2 at the Port of Brighton is set to undergo reconstruction. To ensure continuation of operations at the port and the efficient coordination of activities during the reconstruction project, an Oversight Committee was convened in February 2015, along with a Joint Project Coordination Committee in March 2015. Pre-construction works are in progress, including determination of contractual obligations and site logistics, with construction earmarked to begin in the third quarter of 2015.

- **Operationalisation of the Port of Galeota Phase 1**

The completion of the Port of Galeota (Phase 1) has generated keen interest from companies operating on the south-eastern coast. The facility is being operationalised to meet the needs of its targeted customer base, which is expected to grow steadily within the coming years. Tenders for the construction of building and warehouse facilities are at varying stages of development. In the interim, the existing administration building was refurbished and has been fully computerised

and networked to National Energy's Head Office at Couva.

Commercial activities commenced at the port in January 2015, with the National Energy Explorer transporting equipment and materials for NGC out of the facility. Discussions continue with several energy companies for the hire of the vessel, which has great potential to support the six deep water blocks under the PSCs.

- **Start of Construction – Mitsubishi Project**

National Energy fulfilled all its obligations under the PDA and supported attainment of this milestone in negotiating the Site Lease and Berth User Agreements, both of which are additional essential contracts for the project. As the project implementation phase progresses, National Energy will continue to support the project by ensuring the necessary infrastructure is in place during construction and eventual operation of the facility.

- **Project Development and Initiatives**

In addition to the CGCL Gas to Petrochemicals Project, various energy-based projects are under development, including the following:

- Gasfin's Mid-scale LNG Project, for which a PDA was signed in January 2015. Gasfin submitted an Environmental Impact Assessment (EIA) to the Environmental Management Authority (EMA) in March 2015 and they continue to hold public consultations as part of the EIA process.
- It is expected that a PDA would soon be executed for the Chemtech Melamine Project. Discussions continue with several interested parties for new conceptualised projects, such as downstream chemicals and alternative energy projects, as follows:
  - National Energy has partnered with InvesTT for the development of a Solar Park Project.
  - An MoU was signed with an investor in April 2015 for a feasibility study for a small-scale LNG facility.

- In the area of renewable energy, National Energy has been engaged to manage the construction of a 'solar house' on behalf of GORTT. Construction of the house, which would be run entirely on solar power, is nearing completion and solar panels are expected to be installed by mid-2015.

- **Optimising Efficiency – Revenue and Expenditure**

National Energy remains focused on optimising efficiency in all areas of the company to create added value from our operations. To this end, the company has embarked on several initiatives, including:

- An organisational alignment process in which business and operational objectives are cascaded down from the overarching strategic priorities.
- Process improvements, such as Success Factors, which have reduced the paper component of processing human resource documents, are showing positive results.
- Development and execution of Business Intelligence and Business Continuity Plans, which would allow the company to maximise use of existing assets and properly prepare for business recovery in the event of a crisis.
- Restructuring of the Financial Reporting/ Planning and Treasury Services Departments to allow better management of the company's finances, with a view to improving efficiency of liquidity and debt management.

Overall, National Energy is poised to continue to create value for the citizens of this country and deliver on its mandate within the NGC Group of Companies. National Energy would like to extend its best wishes to the parent company on its 40th Anniversary and it looks forward to the road ahead with great anticipation and hope for the future.



*PPGPL has been recognised as Best in Class in the NGL business*

# PPGPL – A Decade of Growth (2005-2015)

Phoenix Park Gas Processors Limited (PPGPL) has distinguished itself as a driving force in the natural gas sector in Trinidad and Tobago and the Americas – no simple feat, given this country’s robust energy industry and the impressive profile of other producing nations in the region. Although a relatively small organisation, PPGPL’s consistently strong financial performance, aggressive business development and excellent customer service are unmatched.

Today, the company is steady in readiness for global recognition as a best in class NGL business, bolstered by its phenomenal growth during the last ten years. Over the past decade, PPGPL continued to demonstrate its capacity for rapid development with the implementation of several strategic initiatives that allowed it to adapt and meet the challenges of a changing market, while capitalising on prime opportunities. This approach produced historic results for the company.

PPGPL’s Acting President, Dominic Rampersad, recalls, “In 2010 we recorded our most profitable year ever, when we generated revenues of over US\$1 billion ... this milestone was as a direct result of our tenacious pursuit of growth opportunities.”

Since its inception in 1991, PPGPL has always generated a profit, despite the often turbulent scape of the energy sector. While it has earned a stellar reputation because of its balance sheet, it is PPGPL’s equally notable safety record that has been the source of widespread accolades. The company has embraced a strong safety culture where everyone is held accountable for his/her performance.

For 14 years, spanning from 1999-2014, PPGPL won first place in the Gas Processors Association (GPA) ‘Accident Prevention Award Division II – International Classification’. PPGPL also won the Trinidad and Tobago American Chamber of

Commerce ‘Excellence in Safety’ award for 2010 and 2012.

## **Facilities Upgrade**

In a bid to establish itself as the region’s leading Natural Gas Liquids hub, PPGPL has maintained a rigorous facilities upgrade programme. For the period in review, two major projects were completed which significantly increased the company’s revenue earning potential. In 2005, in anticipation of further growth in the gas stream, the plant’s fractionation capacity was increased from 46,000 barrels per day to 70,000 barrels per day. Four years later, PPGPL embarked on another major upgrade to its Point Lisas facility with the Phase 3 Expansion Project at a cost of US\$150 million.

The project increased PPGPL’s gas processing capacity from 1.4 billion cubic feet per day to



*The PPGPL plant site*

two billion cubic feet per day, by adding another 600 million cubic feet per day gas processing capabilities and a 250,000 barrel natural gasoline storage tank. These upgrades helped the company cement its position as the largest local aggregator and marketer of propane, butane and natural gasoline. To finance these projects, in 2006 and 2007, PPGPL's finance arm was able to raise funds in the United States for the company's capital growth initiatives at very competitive interest rates. Those instruments were backed by strong international credit ratings by both Standard and Poor's and Moody's investor services.

In the first quarter of 2015, the organisation repaid its external debt and by extension, removed all restricted covenants. This debt was replaced with an unsecured local US Dollar financing facility at a rate close to 2%. "This is reflective of two things – the strong operating capabilities of our business as well as the strength of our shareholders," Rampersad said. "The National Gas Company of Trinidad and Tobago Limited (NGC) was the majority shareholder at that time and the strength that NGC brought to the business inspired confidence in prospective lenders." The upgrades were not confined to the plant only.

Earlier this year, PPGPL formally opened its newly constructed, US\$12 million Administrative Office at Rivulet Road, Couva. The spacious facility is better equipped to meet the needs of the company's growing staff.

## **Investing in Human Capital**

PPGPL has met the demands of an expanding business by significantly investing in its most precious asset – people. In recent times, the company focused on creating specialised roles as the needs of the business grew. Gail Mohammed, Vice President, Human Resources, explained, "To fully reap the benefits of the expansions being made throughout the company, it was important that we had the right people in the right roles. Risk management, audit, operations and procurement were among the critical areas where roles were created or increased."

The company also streamlined its focus on safety with the establishment of the Health, Safety, Security and Environment (HSSE) department, which grew from one position to three – Vice President HSSE, Environmental Coordinator and Security Coordinator.

Over the years, the Information Technology (IT) department also grew from a single person and two servers located in an office, to a data-centre housing the company's information with robust infrastructure supporting geographically dispersed work sites. IT now supports every aspect of the business, with major functional initiatives in Plant Operations, Finance, Marketing and Health, Safety and Security systems and general company operations. Vice President of Finance and IT, Bal Boodram, said PPGPL's system is based on the Oracle E-Business Suite, which allows staff to manage key performance

insights and operations production data. The company also utilises applications that support critical lab activities (LIMS), marketing, shipping information and enterprise project management.

The IT department was also responsible for the deployment of a robust Enterprise Risk Management framework in October 2008, which provides an analytic foundation for comprehensive organisational resilience efforts.

Boodram said, "Through this risk management framework we are able to assess and manage the risks that could potentially disrupt business activities, impede operational capability and jeopardise the company's survival."

"This is just another example of the ways in which we have used technology to equip our staff to do their jobs more effectively as they work to ensure PPGPL's growth and success."

Given the high level of competition for labour within the energy sector, PPGPL focused on strengthening the skill set of its employees as a means of succession planning. Each year, the Human Resources Department provides external as well as internal on-the-job training and development opportunities for its staff.

"We are seriously looking at succession planning and development training, not just through workshops and seminars, but through real hands-on experiences," Mohammed said. "For example, candidates for a leadership role are allowed to



*PPGPL's gas processing capacity is 2 billion cubic feet per day*

act in that position. This allows the employee to have a practical understanding of what the job requires." A perfect testament to this type of planning and employee development is the fact that all members of the company's leadership team came through the company's succession plan (with the exception of one person). When opportunities become available at PPGPL, management first looks inward to fill those roles. This was most evident with the deployment of the Phase 3 expansion project.

Employees from various departments were seconded to the project team for a period of two years. They spearheaded the entire process, from initial design all the way to commissioning and start up. Another example of PPGPL's commitment to people development was its willingness to allow staff to be posted abroad, at various ConocoPhillips sites, so that they could experience another gas processing environment. "Employees have worked in various countries around the world. This gave them valuable exposure and helped to broaden their perspectives in an international setting," Mohammed said. Accelerating the development of the competencies of its employees is an important element of PPGPL's overall strategy for remaining competitive. Investing in its employees has increased its competitive edge and is a critical element of its business success.

## **Business Development**

Alvin Dookie, Vice President, Business Development, spearheads the company's business expansion efforts, which are executed through a multipronged approach. The company is seeking to optimise its existing business through a continued focus on improving the quality of its products. Better products will command a higher price on the open market. To this end, PPGPL is pursuing technical and commercial evaluations

aimed at deriving maximum value from its existing products. The company is also working to capture local growth opportunities.

PPGPL has maintained its position as the national gas processor of choice for NGC, and continues to be the country's NGL export hub. In more recent developments, NGC has once again retained PPGPL to provide gas processing services at the Union Industrial Estate, located at La Brea, South Trinidad. The proposed 300 MMscfd facility is currently in the front end engineering design stage and remains on schedule for completion in 2017.

Dookie said, "This new facility will enable PPGPL to meet the demands for processed gas by the power generation plant Trinidad Generation Unlimited (TGU) which is already in operation, as well as the proposed Mitsubishi Methanol petrochemical plant and the future Gasfin LNG production facility, which are both earmarked for construction at the Union Industrial Estate."

Although there is optimism regarding the growth opportunities in the sector, there are many challenges. T&T's LNG export market is experiencing reduced demand and rising competition as a result of an increase in shale gas production in the USA, which has been a growing source of shale gas since the year 2000.

"However, PPGPL has managed to differentiate itself from the competition because of its ability to meet the needs of the smaller regional customers who do not have the capacity to receive and store the large volumes required to trade with the US," Dookie said. PPGPL's customers also benefit from lower port charges, state-of-the-art terminal infrastructure, efficient loading capacity, 24-hour docking facilities and fast ship turnaround. Its reputation for an efficient, high quality and reliable service is evidenced by the fact that there

has only been one demurrage claim in the past 20 years.

## **2015 and Beyond**

PPGPL stands on the threshold of a historic new era with the partial divestment of its shares through an Initial Public Offering (IPO) of one of its shareholders, Trinidad and Tobago NGL Limited on 10th August, 2015. Once finalised, citizens of Trinidad and Tobago will have a direct stake in the company. These are exciting times at PPGPL.

"We are about to embark on an entirely new journey. In the past, we had three corporate shareholders; now we are going to have John Public owning shares," Rampersad said. "That is going to bring a whole different level of scrutiny. Our performance is going to form part of public discussion as opposed to being confined to a boardroom."

In September 2013, NGC acquired the 39% stake in PPGPL held by US oil giant ConocoPhillips for US\$600 million, bringing its total ownership in the company to 90%. As the controlling shareholder, NGC will now work more closely with PPGPL to ensure that their objectives are aligned for maximum returns. The parent company will spearhead the search for international business opportunities.

"The NGC Group of Companies is actively looking outside of Trinidad and Tobago for investment opportunities. Once those opportunities are aligned with PPGPL's core business, it will certainly give us the chance to expand our footprint abroad. We believe that we can successfully take our business model outside of Trinidad and Tobago and bring a new source of income to the business and by extension, the NGC Group."

PPGPL's success over the last decade tells a dynamic story of a company that has relentlessly pursued growth and expansion. It has been rewarded for embracing change and seeking out new development opportunities with an unmatched performance record in several areas of its business. In the decades to come, the company will remain focused on attaining recognition as an international player in the energy sector as it continues to play its role as a key contributor to the local industry and the overall development of Trinidad and Tobago.



# 40 Years of Reliable Operations

*NGC's President, Mr. Frank Look Kin, presents the Achievement of the Year Trophy for 100% Pipeline System Availability in 1998 to Manager, Gas Transmission and Distribution, Mr. Jaikumar Balkissoon, while Vice President, Corporate Services, Mr. Anthony Gervais, looks on*

## **GTD – At the Heart of NGC's Operations**

The Gas Transmission and Distribution (GTD) Group has been the core of NGC's operations. GTD is responsible for both the movement of natural gas throughout NGC's network and the operation and maintenance of more than 1,000 kilometres of pipeline that make up the network. Since NGC received its first pipeline from T&TEC in 1976 and assumed responsibility for its operation and maintenance, GTD has maintained a legacy of 99.9% reliability in its supply of natural gas to NGC's customers – a world-class reliability record. NGC continues to demonstrate its excellence in operations. In March 2015, NGC's GTD operations were recognised as World Class and Best in Class by Marsh Risk Consulting, one of the largest insurance brokerages in the world. This is not happenstance, as during NGC's 40-

year history, this was the vital component of the Company.

## **Growth of the Pipeline Network**

In 1976, a year after NGC's formation, the Company assumed responsibility for the purchase, transportation and sale of natural gas. During this period, NGC also took over the operation and maintenance of existing natural gas lines. This function was handled by NGC's Technical Operations, which included both an engineering unit (for construction of pipelines) and a transmission and distribution unit (for operations and maintenance of pipelines). In the course of 1976, NGC assisted with the supervision and construction of the 23-mile, 24-inch diameter line between Beachfield and Picton, and a 13-mile, 20-inch diameter line between Picton and Phoenix Park. In 1982, a 41-

mile, 30-inch diameter line was commissioned to Phoenix Park via Beachfield.

In this period, NGC's industrial customers began setting up operations in Point Lisas. ISCOTT was established in 1980, Fertrin in 1981 and Trinidad and Tobago's first methanol and urea plants were constructed in 1984. As NGC's major pipeline and distribution network expanded, the demands on the Gas Transmission and Distribution Division increased.

Today, NGC's pipelines range from two inches to 56 inches in diameter, delivering natural gas to gas-based heavy industry, the light industrial/commercial sector and service stations equipped to dispense CNG fuel. In 2005, NGC's Engineering and GTD divisions were separated. NGC's Engineering function remained within the Technical Operations Group, while GTD was increased in size and restructured from a Division



NGC's GTD routinely undertakes 'pigging' operations for the maintenance of its pipelines

to a Group. The management structure changed from one manager and two superintendents to a vice president and two managers. The total GTD workforce increased to over 250 personnel, more than double the number at the time of the creation of NGC's Transmission and Distribution function. GTD has more personnel than any other Group within NGC.

## Evolution in Operations, Training and Technology

As the Group tasked with the Company's core operations, GTD's development reflects NGC's enormous growth over the years. While it was within Technical Operations, GTD relied on Engineering for many of its operational needs and did not possess the capacity to carry out engineering functions without that support. Over time, as GTD expanded, it increased its ability to carry out projects that would not only require the support of Engineering, but also of external suppliers and contractors. This process accelerated after GTD became a Group. Now, the GTD Group is relatively self-sufficient, able to carry out large and small-scale projects on its own, thereby providing timely execution of operational type projects that support its mandate.

This growth in internal capacity was achieved through a greater emphasis on training and knowledge transfer.

"All of our works, except major works, are conducted by well-trained, in-house staff," says Mr. Tickaram Roopchandsingh, Vice President of GTD. "Staff training takes place both locally and internationally." "One of GTD's priorities," says Mr. Roopchandsingh, "is the development of the necessary competencies and provision of the resources which will allow staff to contribute meaningfully."

One of the key resources utilised by GTD is technology. In 2003, the Group implemented a Supervisory Control and Data Acquisition (SCADA) system, a critical milestone in the use of technology within NGC. The SCADA system of instrumentation was installed throughout the pipeline network, allowing the network to be monitored remotely from NGC's control room. Prior to this, monitoring of the pipeline network was undertaken by employees out in the field, using communication devices to call in data. The SCADA system was upgraded in 2014.

In addition, the network has been automated so that certain operational and maintenance measures can be undertaken remotely and automatically, instead of having to send GTD personnel into the field.

One example of how GTD's development of its internal capabilities, human resources and use of technology has been applied is in 'intelligent

pigging'. In piping, pigging is the act of inserting robotic tools, called 'pigs', into pipelines for purposes such as cleaning or inspecting for damages and defects (such as leaks), in a way that does not interrupt transmission. This is vital for operation and maintenance of the network. Intelligent pigs are instruments that include electronic sensors that collect data as they move through the pipeline. Because there was no local expertise in intelligent pigging, GTD sent personnel abroad to learn about the technology. Even though intelligent pigging is proprietary technology and must be used contractually, GTD gained the expertise necessary to write the technical specifications to implement the device and has contracted it successfully in its operations at considerable cost savings.

## 99.9% Reliability Record

The primary purpose for GTD's evolution is to maintain its outstanding record of service to its customers. Its legacy is the 99.9% reliable operations since the establishment of NGC. Reliable operations are tantamount to the delivery of the gas demand volume to NGC's customers. At no time should the Company have to curtail service as a result of issues related to the pipeline network. "Our reliability record is much better than the industry in general," says Mr. Roopchandsingh. "99.9% is a very hard record to match."

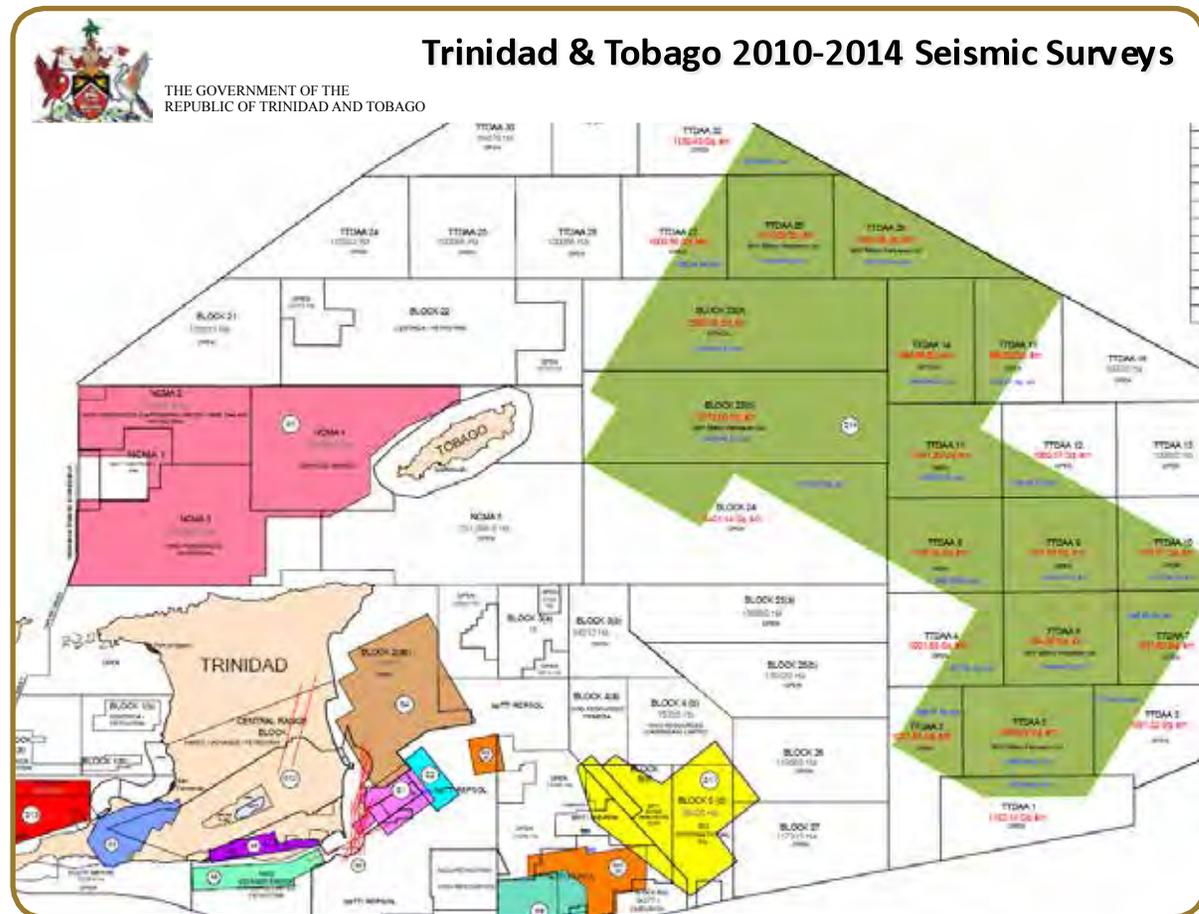
# The Future of the T&T Energy Sector

By Penelope Bradshaw-Niles,  
Senior Petroleum Engineer and  
Sheldon Butcher, Senior Chemical Engineer,  
Ministry of Energy and Energy Affairs

Trinidad and Tobago, with over 100 years of oil and gas production, along with a well-developed downstream industry, continues to be a preferred destination for energy investment. The country is home to the upstream majors like bp, BHP Billiton, Shell, British Gas (BG) and Exxon, as well as the independents like EOG Resources, Trinity and Range Resources. As a predominantly natural gas producer, the sustainability of the supply for the LNG and downstream companies presents an interesting challenge for the future of the industry. This need, along with the dependence of the country on oil and gas revenues, will fuel the strategy and action required for the future of the energy sector.

The replacement and increase of reserves have been the thrust of the Ministry of Energy and Energy Affairs (MEEA), with the signing of 21 Production Sharing Contracts and Licenses over the past five years. Resource estimates for these range from 11 – 45 trillion cubic feet of natural gas and 3.1 – 8.2 billion barrels of crude oil. The Minimum Work Obligations are at an estimated cost of US\$1,095 million. Over the same period, there has been seismic acquisition in all areas of the country, both onshore and offshore, and in all geographical locations. This includes the 3D acquisition over frontier areas, such as the deepwater survey by the BHP consortium and over established producing areas, such as in the bp Ocean Bottom Cable Seismic (OBC) and Trinmar offshore acreage. Rig days and rig count, which are used as measures of the activity in the industry, have been stable over the same period.

The key to the future of the energy sector at this point is in the prudent planning and execution of a



Trinidad and Tobago 2010-2014 Seismic Survey Map

sustainable strategy. The Natural Gas Master Plan and the current and future Deepwater Exploration are two critical factors in this equation.

## Overview of Natural Gas Master Plan 2014-2024

On 11th November, 2014, Senator, the Honourable Minister of Energy and Energy Affairs, Kevin C. Ramnarine, initiated work on the development of this country's Natural Gas Master Plan for the ten

year period 2014-2024. The consulting firm, Poten and Partners (UK) Ltd. was selected through a tendering process by the Central Tenders Board. Poten and Partners is headquartered in London and brings some 60 years of experience to the project. The cost of the contract is approximately US\$1.4 million and the target for the project's duration is six months.

The Natural Gas Master Plan 2014-2024 will consider critical policy areas, including allocation of acreage for exploration, identification of

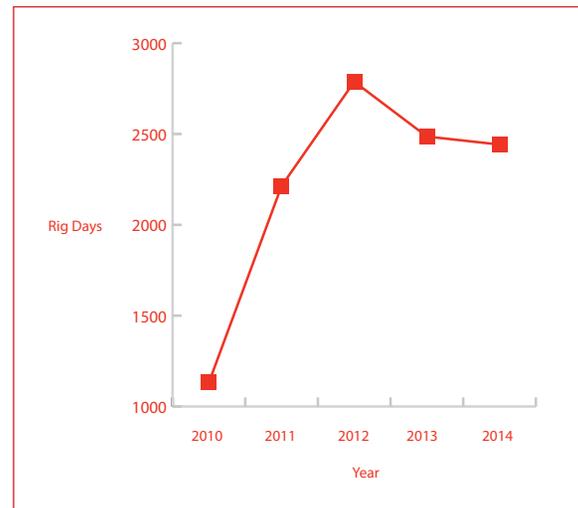


At the Gas Master Plan Launch (L-R): Manager for LNG and Gas Consulting at Poten & Partners, Graham Hartnell; Permanent Secretary in the Ministry of Energy and Energy Affairs, Selwyn Lashley; Senator the Hon. Minister of Energy and Energy Affairs, Kevin C. Ramarine and President of bpTT, Norman Christie

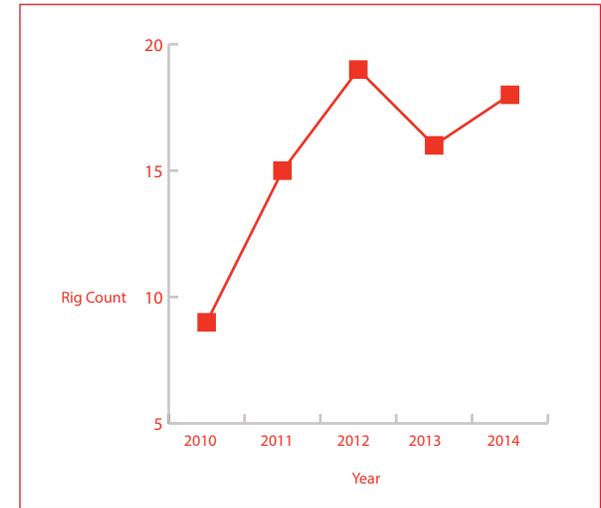
development concepts for deepwater natural gas, review of current contractual arrangements in the upstream, storage of natural gas, utilisation of natural gas, flexibility and optimisation of transmission infrastructure. The consultancy will also examine the legislative and regulatory framework for the efficient management of the various segments of the sub-sectors (upstream, transmission and downstream). The consultancy will also evaluate gas utilisation portfolios for gas-based investments, including petrochemicals and their derivatives; LNG, including small scale LNG plants; metals; power generation; CNG; plastics, and emerging technologies.

The Natural Gas Master Plan 2014-2024 will give more certainty to the companies that already operate in the energy sector, as well as to future investors, as to what are the government's short and medium-term plans for the natural gas-based sector.

The consultants made a presentation on their findings to date to the Standing Committee on Energy on the 12th June, 2015. The draft report was submitted at the end of July 2015. As at August 2015, the review is being undertaken by the Steering Committee and a final report will be issued thereafter.



Trinidad and Tobago 2010-2014 Rig Days



Trinidad and Tobago 2010-2014 Rig Count

## Deepwater Exploration Objectives

After three recent Deepwater Bid Rounds, nine Production Sharing Contracts (PSCs) have been signed by the established players in Trinidad and Tobago – BHP Billiton, bp, Repsol and BG. With more than 10,000 square kilometres under exploration, there still remains approximately 20 open blocks. The future of the deepwater area hinges on the success of the current exploration programme and the leasing of the open acreage. A 2015 Deepwater Bid Round is currently being planned. Discussions are also being held with neighbouring territory Grenada, with respect to joint exploration. This initiative, if it progresses, can lead to a new era in the CARICOM region as Barbados also pushes forward with licensing of acreage.

## Approach for the Future

The current dampened oil prices may lead to weakened new investment in the short or medium-term. However, there are two factors which will limit the impact on the industry in this time frame. One is that the minimum work obligations from the PSCs and licenses over the past five years have already been negotiated and set. The other

is that the PSCs make provision for operations in a range of oil and natural gas price scenarios, which will cover the current pricing climate should these occur over a sustained period.

A thrust for Research and Development (R&D) at The University of the West Indies (The UWI), St. Augustine and The University of Trinidad and Tobago (UTT) for projects in Enhanced Oil Recovery and other areas is supported by the MEEA through the R&D Fund from the PSCs. It is hoped that in the long term, R&D will yield more efficient and effective ways of exploration and production. Training needs of the energy sector are continuously reviewed to ensure that there are adequately skilled human resources in the country. These needs assessments have led to the introduction of new programmes such as the recently established Drilling School. Recently implemented renewable energy programmes and research will also determine the shape of the Trinidad and Tobago energy industry.

# NGC's Board of Directors 1975-2015

## 1975 – 1981

Bernard Primus, Chairman  
Prof. Kenneth S. Julien, TC\*, CMG\*  
Eldon G. Warner  
Basharat Ali, CMS\*  
George Maxwell Richards, TC\*, CMG\*  
Samuel A. Martin  
Knollys Ahloy  
Kamla Bhoolai, Company Secretary (1975-1977)  
K. Espinet, Company Secretary (1977-1981)

## 1981 – 1987

George Hamel Legall, Chairman, PSMG\*  
John A. Charles  
Andre R. Alphonse  
Robert T. Yorke, CMG\*  
George Maxwell Richards, TC\*, CMG\*  
Basharat Ali, CMS\*  
Kamla Bhoolai  
Eldon G. Warner  
K. Espinet, Company Secretary

## 1987 – 1992

Dominic D. Mahabir, Chairman (January 1987-January 1988)  
Shiraz M. Rajab, Chairman (January 1988-March 1988)  
Cecil Anthony Beaubrun, Chairman (March 1988-February 1992)  
Malcom A. Jones, CMG\*  
Knollys Ahloy  
Frank Look Kin, CMG\*  
Kenrick G. Haynes  
Philip Hamel-Smith  
Jadoonath Bhimull  
C.A. David Elder  
Vernon L. Gilbert  
Dhana Maharaj  
Zameer Mohammed  
Phyllis Atherton, Workers' Representative  
Daniel Sankar, Company Secretary (1987-1989)  
Grantley Wiltshire, Company Secretary (1989-1992)

## 1992 – 1996

Prof. Kenneth S. Julien, Chairman, TC\*, CMG\*  
Malcom A. Jones, CMG\*  
Kenrick G. Haynes  
Sharon Christopher  
Ramnarine Ramdass  
Neville Browne  
Frank Look Kin, CMG\*  
McNichols Herbert  
Grantley Wiltshire, Company Secretary

## 1996 – 2000

Steve Ferguson, Chairman  
Kenneth M. Birchwood  
Clinton Rambersansingh  
Indera Sagewan-Alli  
Dave N. Cowie  
Gerry S. Hadeed  
Garvin Akeung  
Ansar Ali, HMG\*  
Errol McLeod  
Vishnu Ramlogan  
Maria Thorne, Company Secretary

## 2000 – 2001

Steve Ferguson, Chairman (until January 2001)  
Vishnu Ramlogan, Chairman (from September 2001)  
Indera Sagewan-Alli  
Kenneth M. Birchwood  
Clinton Rambersansingh  
Kelvin Ramnath  
Dave N. Cowie  
Errol McLeod  
Maria Thorne, Company Secretary

## 2001 – 2002

Vishnu Ramlogan, Chairman (until January 2002)  
Myrnelle V. Akan  
Himansurai Rambarran  
Wilfred O. Espinet  
Satu-Ann I. Ramcharan  
Franco Siu Chong  
Alvin Stephenson  
Maria Thorne, Company Secretary

## 2002 – 2010

Keith Chiang Awong, CMG\*, Chairman (until December 2008)  
Malcom A. Jones, CMG\*, Chairman (from January 2009)  
Lesle Ramyad  
Clarence L. Mitchell  
Wilson Lalla  
Errol McLeod  
David Small  
Dr. Cheryl A. Bennett  
Carol Pilgrim-Bristol  
Maria Thorne, Company Secretary

## 2010 – 2015

Larry Howai, Chairman (until June 2012)  
Roop Chan Chadeesingh, Chairman (from November 2012)  
Haseena Ali, PSMG\*  
Clyde Ramkhalawan  
Dr. Utam Maharaj (from December 2010)  
Gordon Ramjattan (from December 2012)  
Khalid Hassanali (from December 2012)  
Orville Moore (from December 2012)  
Mulchan Lewis (from December 2012)  
Premchand Beharry (until December 2013)  
Cathal Healy-Singh (until November 2012)  
Carlton Gibson (until May 2012)  
Rabindra Jaggernauth (until May 2012)  
Maria Thorne, Company Secretary

TC\* – Trinity Cross

CMG\* – Chaconia Medal, Gold

HMG\* – Hummingbird Medal, Gold

PSMG\* – Public Service Medal of Merit, Gold

*The traditional folk characters Moko Jumbies adorned in national colours at the launch of the 2012 SteelFesTT of which NGC was a major sponsor*

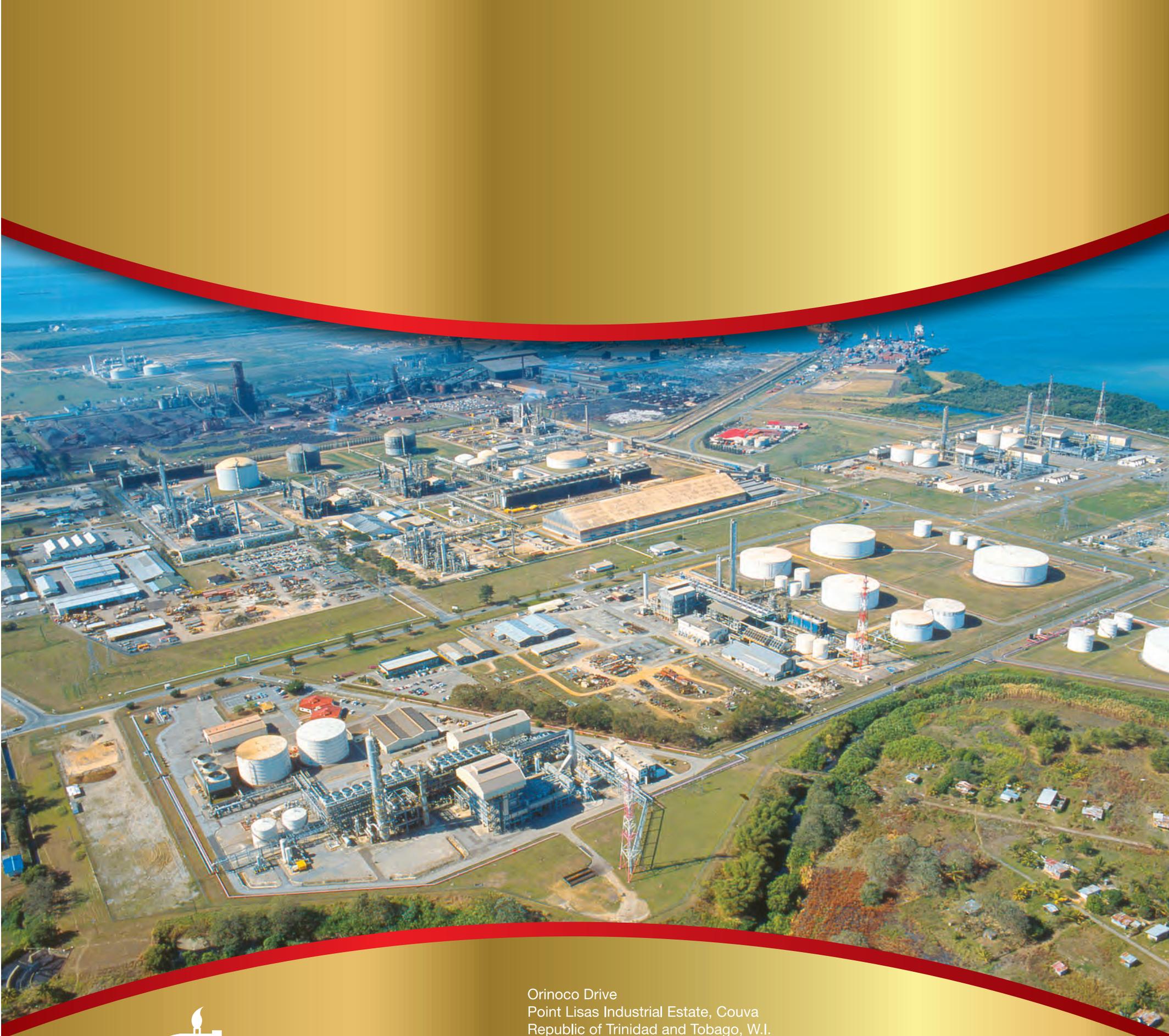


The logo features a large, stylized number '40' in white. The '4' is a simple outline, while the '0' is composed of three overlapping, thick white rings that create a sense of depth and movement. To the right of the '0' is the text 'TH' in a smaller, sans-serif font. Below the '40TH' graphic, the word 'ANNIVERSARY' is written in a bold, uppercase, sans-serif font.

# 40<sup>TH</sup> ANNIVERSARY

The 6th Edition, 2015 T&T Energy Map captures the petroleum landscape of this country. The map was sponsored by NGC, BHP Billiton, BG Trinidad and Tobago and Petrotrin.





**THE NATIONAL GAS COMPANY  
OF TRINIDAD AND TOBAGO LIMITED**

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