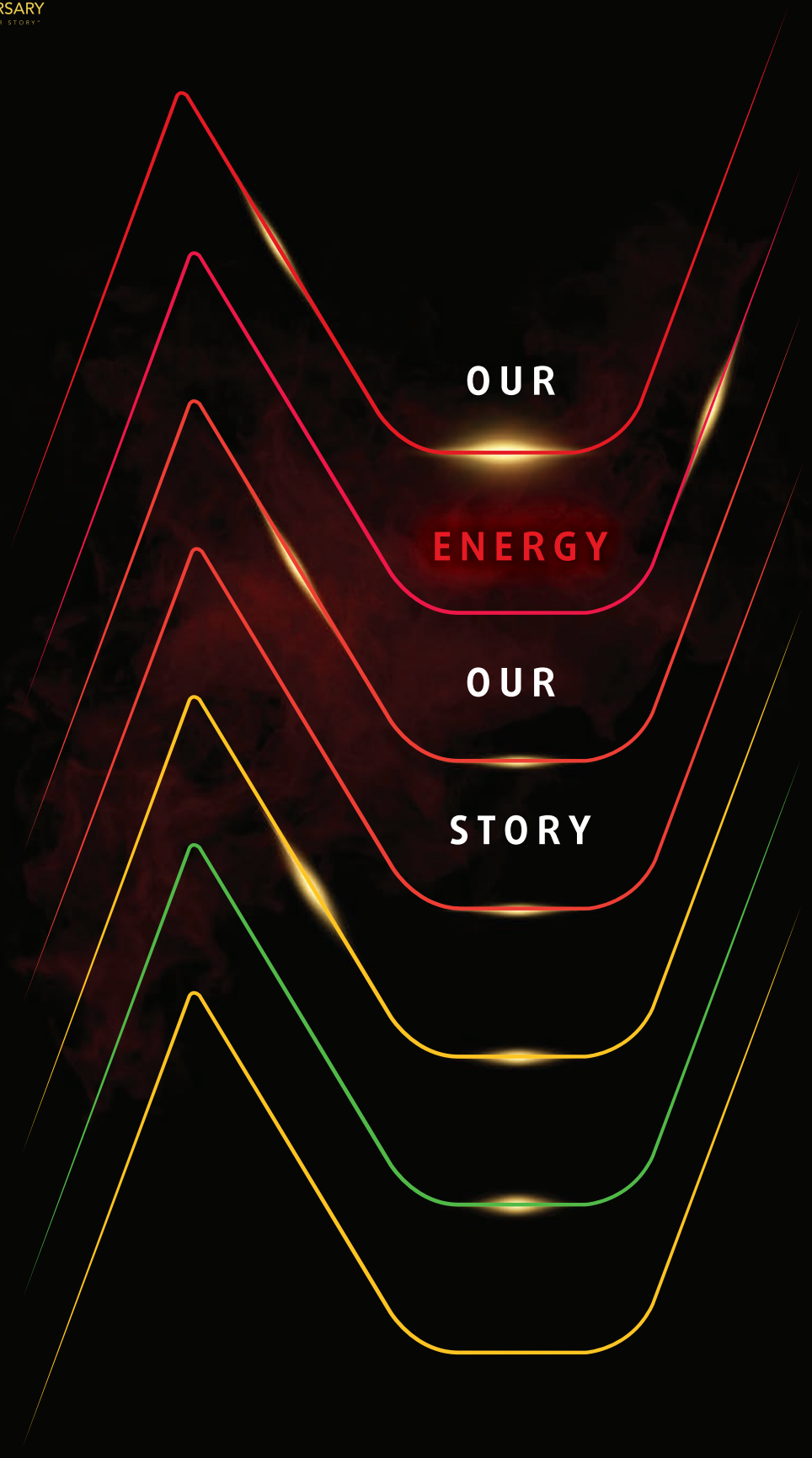
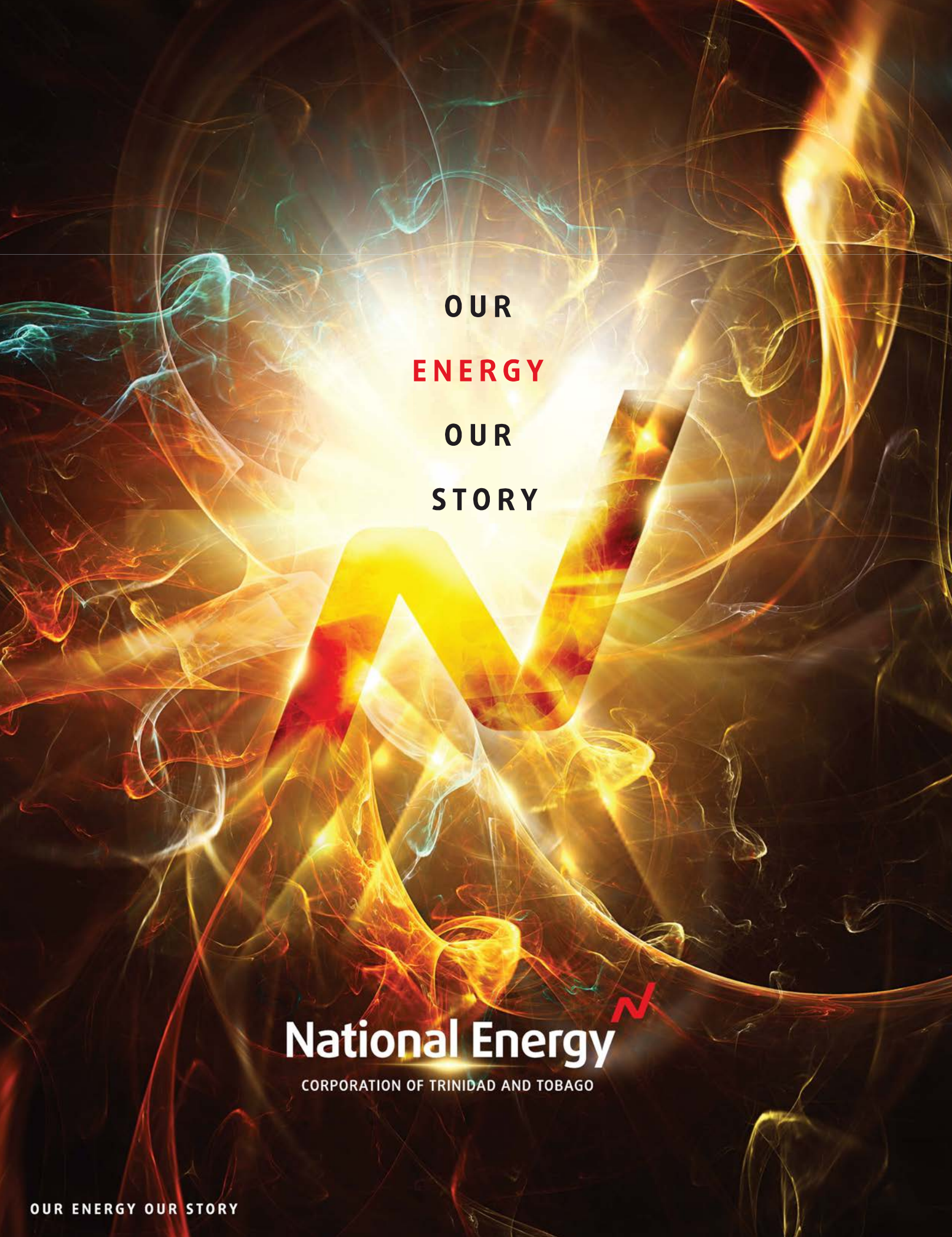
40TH ANNIVERSARY
2019
1979
"OUR ENERGY | OUR STORY"

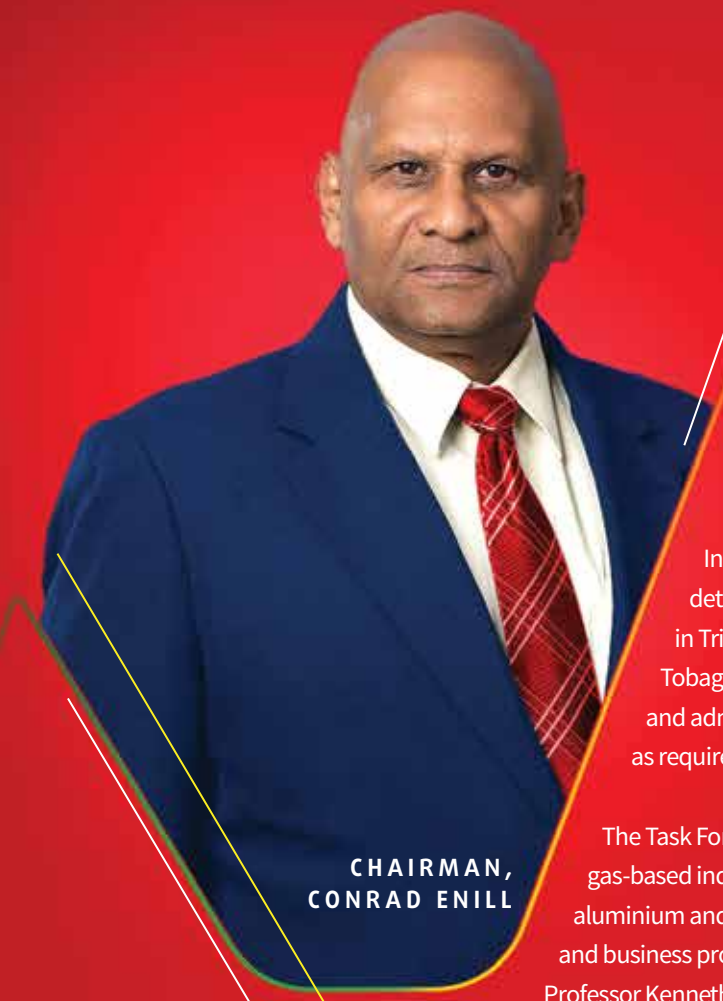
National Energy
CORPORATION OF TRINIDAD AND TOBAGO




OUR
ENERGY
OUR
STORY
National Energy
CORPORATION OF TRINIDAD AND TOBAGO
OUR ENERGY OUR STORY

National Energy
CORPORATION OF TRINIDAD AND TOBAGO

CONTENTS



CHAIRMAN,
CONRAD ENILL

GREETINGS FROM THE CHAIRMAN OF NATIONAL ENERGY

The theme of National Energy's 40th Anniversary commemoration, "Our Energy, Our Story" aptly reflects the inextricable link between the energy sector and the economic development of Trinidad and Tobago. From as early as 1908 when the first commercial oil well was drilled at Guapo, Point Fortin, Trinidad and Tobago began writing its energy story, utilising the nation's petroleum and asphalt resources domestically and for export.

In 1975 the Co-ordinating Task Force (Task Force) was formed to determine the feasibility of establishing natural gas-based industries in Trinidad and Tobago. The National Gas Company of Trinidad and Tobago Limited (NGC) was also incorporated in the same year to negotiate and administer gas supply contracts. NGC would also construct pipelines as required and manage the transmission and distribution of natural gas.

The Task Force determined that there was potential to create a diversified gas-based industry centred around production of methanol, urea, LNG, aluminium and iron and steel. However, the Task Force comprised technical and business professionals co-opted from various institutions, including Professor Kenneth S. Julien from The University of the West Indies, St. Augustine; and Eldon Warner, General Manager of the Industrial Development Corporation. In order to effectively implement the projects identified, a dedicated staff and formalised structure were required.

Thus, on 7 September 1979, National Energy Corporation of Trinidad and Tobago Limited was incorporated. The Company's Articles of Association was signed by Dr. the Honourable Eric Eustace Williams, Prime Minister in his capacity of Minister of Finance; and Mr. Frank Barsoti, Permanent Secretary, Ministry of Finance was the second signatory. Mr. Errol Mahabir, then Minister of Energy and Energy-based Industries witnessed the historic document.

Under the leadership of Professor Julien who chaired its first Board of Directors, National Energy got to work building gas-based industries in Trinidad and Tobago. The iron and steel plant started by the Task Force was completed in 1981. The methanol and granular urea plants were both completed in 1984 and commenced production in the same year. Major infrastructural projects were also delivered, including the expansion of Point Lisas Industrial Estate, construction of marine terminals at Savonetta, as well as construction of a 56 km 30" natural gas pipeline for NGC from Guayaguayare to Phoenix Park.

National Energy
CORPORATION OF TRINIDAD AND TOBAGO

GREETINGS FROM THE CHAIRMAN OF NATIONAL ENERGY

While National Energy had many accomplishments over the years, the Company also faced and overcame many challenges. It is a testament to the strength and resilience of the management and staff of National Energy that the Company has continued to deliver on its mandate for the past 40 years. I congratulate National Energy for embracing its role in the Trinidad and Tobago energy story and playing it so well. On behalf of the Board of Directors, we look forward to continuing the work done by those before us with the group of dedicated young professionals, as together, we open the next chapter.

TO THE MANAGEMENT AND STAFF OF NATIONAL ENERGY, HAPPY 40TH ANNIVERSARY!

PRESIDENT,
DR. VERNON PALTOO

PRESIDENT'S MESSAGE

National Energy's commemoration of its 40th Anniversary culminated with an employee event hosted on 6 September 2019. Below is an excerpt from the President's Remarks at the event.

Let me start by paying tribute to the former CEOs and Presidents of National Energy: Mr. Eldon Warner; Mr. Basharat Ali; Mr. Arnold de Four (who is currently Director of National Energy); Mr. Prakash R. Saith; and Professor Andrew Jupiter. Together, they have shown what National Energy can deliver in keeping with its current mandate of conceptualisation, promotion, development and facilitation of new energy-based downstream industries, as well as the operation of marine and other infrastructural assets to support gas-based activities.

This has contributed significantly to our country's GDP, as well as the daily lives of its citizens. If fact, based on research being conducted, the work of National Energy for the past 40 years has resulted in Foreign Direct Investment of US$11 billion, and from a revenue perspective, Central Bank data shows that National Energy's efforts over the decades, directly and indirectly, have resulted in cumulative foreign earnings of US$70 billion from the export of petrochemicals over the period 1985 to 2018.

Reflecting over the past 40 years, some of our major successes include:

- Construction of the country's first granular urea plant
- Construction of the first methanol plant
- Design and construction of the La Brea Industrial Estate and Brighton Dock and Harbour
- Ownership and operation of all six Savonetta Piers
- Design and construction of a world-class Fabrication Yard at La Brea Industrial Estate
- Design and construction of the Union Industrial Estate
- Design and construction of the Port of Galeota
- Design and re-construction of Berth 2 at the Port of Brighton
- Facilitation and support for development of the Caribbean Gas Chemical Limited (CGCL) Gas to Petrochemicals Complex at La Brea which is expected to commence operations in 2020

National Energy increased its revenues by 31% from 2012 to 2018 and achieved a 12% Compounded Annual Growth Rate from 2015 to 2018, in spite of significantly depressed market and industry conditions. Realising this objective required innovation, visionary strategy and hard work. Credit for our achievements must be given to the Board, management and employees – without your constant diligence and sometimes tireless efforts, none of this would have been achieved!

National Energy
CORPORATION OF TRINIDAD AND TOBAGO

PRESIDENT'S MESSAGE

While we have accomplished a lot to be proud of, the energy industry, both locally and internationally, has changed dramatically in the last 40 years. Trinidad and Tobago is no longer a low-cost gas location with readily available natural gas and globally, renewable energy is expected to comprise 60% of worldwide power supply by 2050. Thus, in the last few years, we have spent a lot of time planning for the future. And while I believe the upcoming road for National Energy will be challenging, it will also be very exciting!

This anniversary is of crucial significance in our history, as we prepare ourselves to grow outside of our mature domestic market, and into the international energy arena. This will require National Energy to be agile, flexible and to take bold steps to pursue our growth ambition, and fulfil our mandate to the Government and by extension, the people of Trinidad and Tobago.

Therefore, in accordance with our five-year Strategic Plan, and our vision of becoming a global leader in the development of sustainable energy-related businesses, National Energy will be actively pursuing the following:

- Acceleration of new market growth into South America
- Strategic Partnerships with international players along the energy value chain
- Investment in Equity Opportunities
- Expansion of Point Lisas Industrial Estate to facilitate new energy-based investment projects, including Renewable Energy Projects
- Execution of Energy Efficiency Strategy
- Development of key partnerships, including Public-Private Partnerships for funding of the expansion of major assets, such as the Port of Brighton
- Implementation of revised Investor Engagement Strategy
- Advancement of energy-based projects requiring less natural gas

It is said that, "Greatness is never achieved alone. Surround yourself with hungry, brilliant individuals who not only buy into your philosophy, but who are all willing to work just as hard as you". In this regard, I must say, that I am honoured and grateful for the opportunity to work with some of the country's most talented, passionate and dedicated people. Your ongoing commitment and effort towards the success of the organisation is truly admirable.

I am as passionate about the future of this industry today, as I was when I joined the organisation many, many years ago. I truly believe we are at the dawn of an industry full of exciting possibilities, which will contribute to meaningful national development.

HAPPY 40TH ANNIVERSARY NATIONAL ENERGY!

GREETINGS

SENATOR THE HON. FRANKLIN KHAN

THE MINISTER OF ENERGY AND ENERGY INDUSTRIES

Trinidad and Tobago's energy sector has a long and illustrious history, as this small nation has defied the odds and stood shoulder to shoulder with the world's leading energy provinces. Moreover, this country has developed a model of value maximisation from natural gas, becoming a global leader in methanol and ammonia production.

Over the past 40 years, National Energy has played an integral part in Trinidad and Tobago's energy story, as the company was the entity through which the State executed its policy of deliberate industrial development. From the extension of the Point Lisas Industrial Estate; construction of the multi-user marine facilities at Savonetta; to construction and operation of the nation's first methanol and urea plants, National Energy delivered GORTT's vision to monetise natural gas for the benefit of the people of Trinidad and Tobago.

Through the innovative thinking, fearless leadership and dedication to service of Professor Kenneth S. Julien, Chairman of the Co-ordinating Task Force, and National Energy's first Chairman, the country was able to realise an era of unprecedented production and prosperity. Built on the foundation laid 40 years ago, Point Lisas Industrial Estate evolved into the largest industrial hub in the Caribbean, boasting 11 ammonia plants with a capacity of 5.6 million tonnes and seven methanol plants with a production capacity of 6.5 million tonnes. The revenues generated at Point Lisas have contributed significantly towards positioning Trinidad and Tobago as one of the most advanced economies in the Caribbean and enabling the high standard of living we enjoy. As a result of the work of companies like National Energy, this country enjoys many social benefits including inter alia, one of the lowest electricity rates in the western hemisphere; universal early childhood, primary and secondary education; free primary healthcare; and a modern telecommunications system.

As Trinidad and Tobago's energy sector enters into another phase of development, we will see a future downstream energy industry that is less reliant on natural gas, and underpinned by energy efficiency and renewable energy, as well as expansion of energy services outside of Trinidad and Tobago. In this regard, the Ministry of Energy and Energy Industries is confident that National Energy will continue to perform an important role in shaping the energy sector of tomorrow.

On behalf of the Ministry of Energy and Energy Industries, I would like to congratulate National Energy on its achievements of the last 40 years and extend best wishes for the future.

MARK LOQUAN

NGC PRESIDENT

When we reflect on the history of our nation, it is impossible to tell the story of our growth from a fledgling gas producer into a global energy player without speaking of the successes of the NGC Group of Companies. Indeed, it was the combination of NGC's commanding achievements in gas merchandising and distribution and subsidiary National Energy's groundwork for industrial expansion, that underwrote the acclaimed Trinidad Gas Model of Development. National Energy's seminal infrastructure projects – such as the industrial estates that accommodate world-scale manufacturing and commercial enterprises, and the ports which conduct the inputs and outputs of their businesses – have generated incalculable value for our country. Importantly for parent NGC, they have worked closely with us to strengthen and deepen our natural gas value chain over the years, incubating a vibrant and diverse downstream market for our gas.

On this historic occasion, NGC celebrates the achievements of National Energy and the great work we have delivered in partnership over 40 years. Today, together, we continue to cut new paths for our nation as we collaborate on the pressing agenda of energy sustainability. We could not ask for a more capable companion on this journey than the company that helped us bring the industry this far. NGC congratulates the leadership and staff, present and past, of this flagship State entity on the achievement of 40 years in the business.

We wish you longevity, vitality and every success on the trails ahead.

National Energy
CORPORATION OF TRINIDAD AND TOBAGO

GREETINGS

It is said that, "an organisation, no matter how well designed, is only as good as the people who live and work in it."

PRESIDENT
PPGPL

L. DOMINIC RAMPERSAD

Celebrating 40 years of a successful business enterprise is clearly a testament to the dedication of the leaders and employees, past and present, who have made the company what it is today. We warmly congratulate National Energy, our sister company on this 40th anniversary of the incorporation. The management and staff should be proud of their laudable efforts to grow the business footprint over the years, expanding the portfolio of services in Trinidad and Tobago, while adapting to the ever-changing economic environment.

Some of those agile movements on the part of National Energy have allowed for a deeper collaboration with Phoenix Park Gas Processors Limited (PPGPL), under the umbrella of the NGC Group of Companies. Together, we've been able to share ideas, technical expertise and human resources, not only for the advancement of each of our companies, but for our country, Trinidad and Tobago. These synergistic partnerships are necessary to ensure the growth and development of the country's energy value-chain. In working towards a sustainable future, PPGPL will continue its internationalisation thrust through its commitment to providing exceptional value, service and products to its stakeholders; so too will National Energy through its renewable energy projects and focus on energy efficiency. Its role in the energy value-chain is even more important now as businesses seek to reduce the effects of climate change on a local and global scale. On behalf of the PPGPL team, I say congratulations again and look forward to your next 40 years of infrastructure support to the energy sector of Trinidad and Tobago.

PRESIDENT
NGC CNG

CURTIS MOHAMMED

NGC CNG sincerely congratulates our sister company National Energy on its 40th anniversary of operation. The management and staff of National Energy over the years can be very proud of the growth and achievements of the company and the milestone of 40 years of contributing to Trinidad and Tobago. You have built the company through vision, hard work and service, navigating and adapting to the changing economic fortunes of our country.

As NGC CNG strives to build a CNG industry, we are heartened to know we can rely on the experience and expertise of National Energy for our future projects when needed. This collaboration has started with the construction of NGC CNG's flagship service station at Preysal. National Energy is responsible for the conceptualisation, design and installation of the solar panels aspect of the station, which will be located on approximately 9,000 sq. feet of canopy. The electricity generated from these solar panels will power certain aspects of the station as well as charge batteries for plug-in vehicle charging. NGC CNG looks forward to the successful completion of this project with National Energy and other projects in the future.

Some say, the toughest years in building a company are always the first, the formative ones. At NGC CNG, now in our sixth year of operation, we are heartened by the strides made by National Energy in industrial estate and port development over the last 40 years. Now with a sharper focus on energy efficiency and renewable energy projects in a changing energy ecosystem, National Energy's role and function is even more vital moving forward.

The management and staff of NGC CNG extend our best wishes to National Energy on the milestone and we look forward to your pivotal role in Trinidad and Tobago's future development.

DR. T. DAX DRIVER

CHIEF EXECUTIVE OFFICER, THE ENERGY CHAMBER OF TRINIDAD & TOBAGO

The Energy Chamber of Trinidad and Tobago extends congratulations to National Energy for achieving its 40th anniversary. Since its inception in 1979, National Energy has served a key role in the development of the energy sector in Trinidad and Tobago and it has certainly positioned itself to maintain this lead in the future as we enter the energy transition. When conceived, the organisation was initially charged with the expansion of Point Lisas Industrial Estate, which has become the largest industrial hub in the Caribbean. In fact, National Energy was responsible for the building and operation of the first methanol plant on the estate in 1987. The development of the petrochemical sector in Trinidad and Tobago has led to significant growth and development in the country.

One of the major trends affecting the energy sector today, however, has been the trend of higher demands for energy but at a lower carbon footprint. Many refer to this as the energy transition or the dual challenge. National Energy has been taking steps to achieve a low carbon national footprint by conceptualising a solar PV manufacturing park and enhancing energy efficiency through the Super ESCO model. While these projects are in developmental stages, their positive impacts will be felt in years to come. Bringing more renewables onto the grid and improving energy efficiency means that more natural gas will be available for the petrochemical and LNG sectors.

At present, National Energy has been servicing the energy sector through an integrated platform – three ports which are strategically located on south east coast – Port of Galeota, south western peninsula – Port of Brighton and at Pt. Lisas (ISCOTT Dock and the Marine Terminals) which is supported by its associated industrial estates and the company's fleet of tugs. These ports could be used for servicing the Guyana and Suriname markets that are currently being developed especially through the work of Exxon, Repsol and Tullow. The port expansions projects have the potential of opening new business opportunities.

A Memorandum of Understanding (MoU) on Energy Sector Co-operation was signed between the Republic of Trinidad and Tobago and the Co-operative Republic of Guyana in October 2018.

National Energy through its representative, Dr. Vernon Paltoo, has served on the Board of Directors of the Energy Chamber for the past 10 years. Dr. Paltoo has been part of many of the significant developments at the Energy Chamber in the transition from the South Trinidad Chamber of Industry and Commerce. We wish to sincerely thank him for his service to the Energy Chamber and look forward to continued collaboration with National Energy.

BUILDING THE INFRASTRUCTURE FOR DEVELOPMENT

NATIONAL ENERGY CORPORATION OF TRINIDAD AND TOBAGO LIMITED

(NATIONAL ENERGY) HAS BEEN INSTRUMENTAL IN LAYING THE INFRASTRUCTURE OF PORTS AND ESTATES TO SUPPORT THE COUNTRY'S VIBRANT ENERGY SECTOR.

National Energy is considered an essential player in enhancing and developing local energy services, downstream expansion and the development, management and operation of industrial sites, port and marine facilities.

The company has been critical in monetising the country's natural resources for the benefit of its citizens. During the 1980s, National Energy constructed, owned and operated the country's first methanol and urea plants at Point Lisas Industrial Estate. The development of this downstream natural gas-based industry on the estate is regarded as the driving force for propelling Trinidad and Tobago into a gas-based economy. Today, the 860-hectare, Point Lisas Industrial Estate is considered one of the major success stories in the Caribbean with 103 tenants including 11 ammonia plants, seven methanol plants and two urea plants.

As part of its mandate, which includes facilitating new energy-based and downstream industries, National Energy has been charged with the development of several major infrastructure projects. This includes the construction of the multi-user terminals Savonetta Piers 1 to 4 and the ISCOTT Dock originally dedicated for import and export of iron and steel products to support the activities of the Point Lisas Industrial Estate.

Building the Infrastructure for Development (cont'd)

National Energy also supervised the construction of the La Brea Industrial Estate and the Port of Brighton, a harbour in the south-western peninsula, which continues to attract new energy service businesses both locally and regionally including Guyana and Suriname. Furthermore, the La Brea Industrial Development Company (LABIDCO), which is managed by National Energy, built the country's largest fabrication yard, which encompasses a 17-acre common yard and two four-acre blocks, and is used for the manufacture of offshore platforms to facilitate the upstream energy sector. To date, 12 offshore platforms have been fabricated at the facility, including bpTT's Juniper topsides which was loaded-out from Berth 2, Port of Brighton in January 2017.

In the early 2000s National Energy managed the construction of Union Industrial Estate (UIE), which currently houses the Trinidad Generation Unlimited (TGU) 720 MW combined cycle power plant and the CGCL gas-to-petrochemicals complex, expected to commence operations early 2020. Designed to cater to heavy, medium and light industries, this 175-hectare estate, has an estate corridor of 75 metres, an estate access corridor of 45 metres and a gas line reserve of 12.8 metres.

In September 2014, the newest port in the country was officially opened, Port of Galeota Phase 1, which was designed and constructed by National Energy. This port is strategically located to facilitate the development of a logistics hub for emerging energy markets in South America and the Guyana-Suriname basin. This port currently serves light to medium offshore energy-based industrial services through a total of five berthing spaces, one of which is dedicated to the Trinidad and Tobago Coast Guard.

National Energy's significant influence on the local energy sector is expected to continue into the foreseeable future. With Guyana experiencing rapid growth in the oil and gas sector, more vessels are traversing the national waterways, which offers numerous opportunities for the commercial assets.

In this regard, National Energy has taken progressive steps to improve the level of site services offered at both the Port of Galeota and Port of Brighton. The services offered include, potable water, warehousing facilities, fire water pumps, 24-hour customs and laydown yards. With the company's contribution and dedication to infrastructural development, Trinidad and Tobago's economic foundation has been soundly laid. With a focus on continued growth and profitability, National Energy has been able to adapt to changes required by clients and customers improving its service offering. With deliberate market expansion thrust and renewed focus on customer service, National Energy is well on its way to ensuring that the local energy sector continues to thrive.

MARINE TERMINALS SPECIFICATIONS

PIER	LENGTH	DEPTH	PRODUCTS HANDLED
SAVONETTA PIER 1 (South)	310 Metres	12.8 Metres	Methanol, Ammonia, Urea, Base Oil
SAVONETTA PIER 1 (North)	115 Metres	7 Metres	Bulk Lube, Base Oil
SAVONETTA PIER 2 (South)	312 Metres	12.8 Metres	Methanol, Ammonia
SAVONETTA PIER 2 (North)	223 Metres	12.8 Metres	Methanol, Ammonia
SAVONETTA PIER 3	500 Metres	12.8 Metres	Methanol, UAN, DRI, Iron Ore Fines
SAVONETTA PIER 4	380 Metres	12.8 Metres	Methanol, Ammonia, HBI, Iron Ore Fines
ISCOTT DOCK	407 Metres	12.8 Metres	Iron Ore, DRI, Vessel Bunkering

PORT OF GALEOTA SPECIFICATIONS

CAPACITY

DREDGE DEPTH
7.6 METRES

TURNING BASIN
200 METRES

NUMBER OF BERTHS
5 (1 USED BY T&T COAST GUARD)

BERTH LENGTHS
104-171 METRES

BACKLAND
2Ha

BUNKERING

LAYDOWN FACILITY

OFFICE SPACE RENTAL

SUPPORTS E&P LOGISTICS

AVAILABLE SITE SERVICES

- 2,700m^2 warehouse with cold room and a 5-tonne overhead crane
- Electrification of the port inclusive of backup generator and high mast lighting
- Roadways and drainage
- Firewater Pump
- Potable Water

TOWING THE WAY INTO THE **FUTURE**

In the years immediately following National Energy's incorporation, the Point Lisas Industrial Port Development Company (PLIPDECO) provided port and marine services to the Point Lisas Industrial Estate, even though National Energy owned the harbour, port infrastructure and vessels. Former National Energy President, Mr. Prakash Saith observed that the revenue earned by the company from marine services was not reflective of vessel ownership. Without any experience or expertise but with the full support of the staff in the year 2000 National Energy commenced 24/7 marine service operations. Armed with the original fleet of four vessels, National Energy earned its place within the towage industry over the past 19 years with its vessels presently conducting activities at all major ports throughout Trinidad and Tobago.

TOWING THE WAY INTO THE **FUTURE**

Today, National Energy's fleet has expanded to 10 vessels, comprising eight tugs and workboats, one launch boat and one fast crew supply vessel. These are operated on a commercial basis, not only providing services to all local ports but supporting the offshore oil and gas industry and regional markets. The vessels range from 12 tonnes to 55 tonnes bollard pull, which allows National Energy to provide mooring and unmooring, harbour towage, rig moves, anchor handling services, deck cargo and personnel transport. These services resulted in National Energy's vessels capturing 66% of the market, based on the total number of vessels calling throughout the various ports of Trinidad and Tobago in 2018. This represented significant growth from approximately 25% of the market in 2000.

National Energy's tugboats are among its main revenue earners and part of a necessary support system for the downstream energy sector, particularly for companies on the Point Lisas Industrial Estate. At the Savonetta Piers, these vessels play an integral role in supporting commodity trade by providing towage services for import and export activities. This enables the safe manoeuvring of hundreds of international tankers annually.

Faced with growing competition, economic downturns and increasing maintenance costs over the past 40 years, National Energy's team has worked assiduously to sustain its excellent record. According to the Manager, Operating Assets, Ms. Michelle Scipio-Hosang, "One of the most challenging things about the industry is finding suitably qualified personnel. Fortunately, National Energy has been able to overcome this issue by attracting some of the most qualified and accomplished personnel in the maritime industry which has undoubtedly contributed to its success."

Ever-changing technological advancements and modernised equipment also pose a challenge to the ageing vessels. National Energy is dedicated to assuring that the vessels are properly maintained not only through continuous maintenance of assets but by continuous training of staff to ensure that these issues are handled in a professional manner.

The impact of National Energy's marine services has been recognised at a local, regional and international level. Over the years, as a State entity, National Energy contributed to the training and development of the workforce in the maritime sector, not simply for personal gain but for the betterment of the local industry. In March 2019, the fast crew supply vessel, ***National Energy Explorer*** embarked on a six-month opportunity with Staatsolie Maatschappij Suriname N.V, the national oil company of Suriname, improving regional growth and development. Additionally, in 2017, National Energy's tugs were at the forefront of the loadout of the Juniper Platform for bpTT safely guiding the platform into its final position. Ms. Scipio-Hosang stated that in her opinion the greatest accomplishment of the vessels is, "the substantial increase in market share and fleet size over the past 15 years, as well as the international acclaim and reputation earned by the vessels contributing to National Energy becoming a household name in the towage industry."

With a view of the future of National Energy, quality assurance and safety management are at the forefront of development initiatives for the tugs and workboats. Already Safe TO Work (STOW) certified, National Energy is working towards achieving International Safety Management (ISM) certification to guarantee continued safety at sea and prevent damage to property, personnel and the environment. Ensuring that vessels are well maintained and fit-for purpose, Ms. Scipio-Hosang stated, "Asset Integrity Management (AIM) for the vessels is of critical importance for the continued success of these assets. This is keeping in line with National Energy's internal Asset Integrity Management Policy and Framework as the company works towards achieving standards commensurate with recognised international best practice."

National Energy's vessels have certainly earned their place in the maritime sector becoming a leader in the industry. Despite their small size, their potential is as wide as the ocean. With plans for expansion in local and regional markets, the future of the tugs and workboats is quite clear - continued growth. The mighty powerhouse that is the tugboat is certainly guiding National Energy safely into the future.

NATIONAL ENERGY'S ORIGINAL FLEET OF VESSELS

DATE OF PURCHASE
1981
DATE OF SALE
2015

Carlton M

Carlton Mack was a founding investor and director in such indigenous institutions as the Point Lisas Industrial Port Development Co. Ltd. (1971-1982), *Trinidad Express* Newspapers Ltd. (1967-1995), West Indian National Insurance Ltd. (WINSURE) (1958-1969) and Royal Bank of Trinidad and Tobago (1972-1981). He served on the Board of Governors of the Academy of Insurance and was President of the South Trinidad Chamber of Commerce (1970-1971). The *Carlton M* vessel was named to pay homage to this son of the soil for his contribution to the business community.

DATE OF PURCHASE
1981
DATE OF SALE
2012

Robert M

The vessel *Robert M* was rightly named as a form of commemoration of the past undertakings of Robert 'Bobby' Montano, who ceaselessly worked toward developing a heavy industrial estate and deepwater port in southern Trinidad. Mr. Montano believed that there was a dire need to increase exports and improve access to imports in the southland. He faced much opposition, but ensured that his goal of creating the deepwater harbour and estate at Point Lisas came to fruition. The year 1956 saw the formation of the South Trinidad Chamber of Commerce. As chairman of the organisation, Mr. Montano believed the Chamber was the ideal avenue to encourage 'prosperity of the south' and by extension, prosperity within the entire island of Trinidad and Tobago, by way of industrial development. Thus, the vessel *Robert M* was named to recall the influence of Robert Montano in laying the foundation for industrial growth in south Trinidad and in the country at large.

DATE OF PURCHASE

1982

DATE OF SALE

2007

Point Lisas M

As a deepwater harbour didn't exist in south Trinidad during the 1950s, discussions commenced to facilitate its development. Due to pertinent features such as the nature of the coastline, the area of Point Lisas proved to be the most accommodating and was therefore chosen as the location for the industrial estate.

Ten years subsequent to the creation of Robert Montano's South Trinidad Chamber of Commerce, The Point Lisas Industrial Port Development Corporation (PLIPDECO) was established. The latter contributed significantly to the completion of the water port project. In 1975, National Energy's predecessor, the Co-ordinating Task Force (CTF), was created with a mandate to undertake planning and design that would make the estate successful. Today, the Point Lisas Industrial Estate has 11 ammonia plants with a capacity of 5.6 million tonnes and seven methanol plants with a production capacity of 6.5 million tonnes.

DATE OF PURCHASE

1982

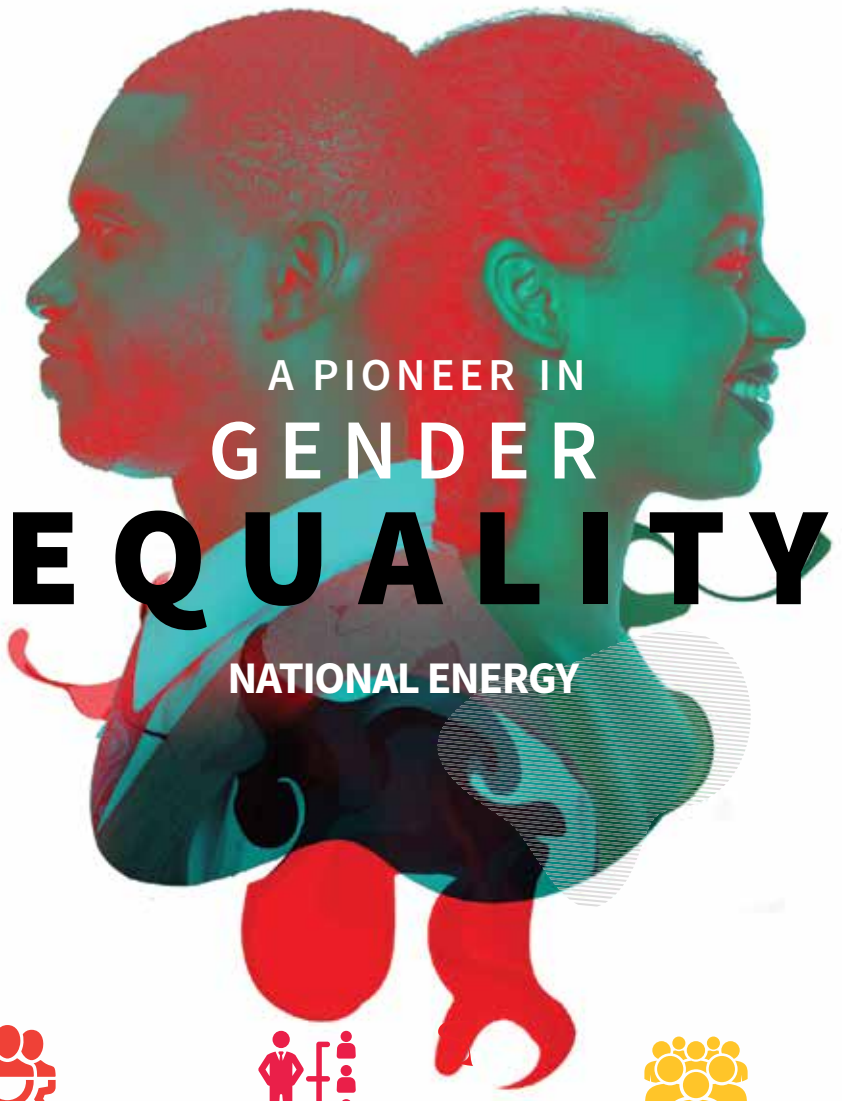
DATE OF SALE

2007

Errol M

During the 20 years Mr. Mahabir spent in government, he served in the ministries of Labour and Social Security (1969-1971); Industry and Commerce (1973-1976): Petroleum and Mines (1976-1979), Energy & Energy-based Industries (1979-1981); Labour, Social Security and Co-operatives (1981-1985); and External Affairs (1985-1986).

In his Energy portfolio, Mr. Mahabir oversaw the creation of NGC, which was conceptualised to deliver offshore gas directly to the industries at the Point Lisas Industrial Estate and elsewhere. National Energy was incorporated in 1979 during his tenure as Minister of Energy and Energy-based Industries.



A PIONEER IN GENDER EQUALITY

NATIONAL ENERGY

JANUARY 2019

66%

EXECUTIVE MANAGEMENT

JANUARY 2019

64%

MANAGEMENT

JANUARY 2019

56%

GENERAL EMPLOYEE

The most suitable candidate would be selected for the job and gender did not factor into the decision. Over the last 40 years, this practice has been intricately built into the foundation of the organisation. As at January 2019, women made up approximately 66% of the Executive Management of the company, 64% of the Management and 56% of the general employee body.

As a pioneering organisation, National Energy has been privileged during its 40-year history, to employ women who embody the company's pioneering spirit, with several of them being pioneers in their own right. As we reflect on National Energy's history and continuing story, the *Pioneer* sat down with some of the past and present female employees of National Energy who shared some of their experiences from working in the energy industry. They also shared their thoughts on how National Energy has been able to nurture its gender inclusive environment and how it can be preserved in the future.

ANGELA HORDATT
1980-1984 AND
1986-1989

Angela Hordatt first joined National Energy in 1980 as a Project Engineer assigned to work on the country's first LNG project concept. As the first female engineer to work at the company, Ms. Hordatt acknowledges that she had to learn quickly how to 'hold her own' in an industry that was at the time, dominated by men. However, she believes that the strong team spirit that existed at National Energy got her through the challenging times. She recalled, "It was a team. There was no gender motive. We worked together as a team and everyone's contribution was valued. There were people like Jerome Sooklal, Charles Baisden and Rampersad Mootilal. We started out together as young pioneers."

Ms. Hordatt also praised the leadership of Prof. Kenneth S. Julien, National Energy's first Chairman, for stimulating a productive atmosphere and having confidence in the young team. She fondly remembered, "Prof. Julien had a vision for the energy sector which included a portfolio of projects. His philosophy for the company was 'work hard and get things done'. He always saw that women could be effective and efficient contributors to the economy. He was a true mentor and made us believe that if we maintained focus, we could do anything."

Now retired after having worked at various organisations throughout her career, Ms. Hordatt describes her time at National Energy as the favourite job experience of her entire career. She explained, "I feel so lucky to have been given the opportunity to work with the people we had and to do my part to bring in foreign exchange to the country."

She shared a bit about her personal attitude towards work, "We didn't have sizeable pension plans and compensation packages. We worked for country. There were times when I was called out to work in the middle of the night to address issues with the loading arms at Savonetta Pier, but I did it willingly. We handled complex negotiations with our foreign agents to ensure that Trinidad and Tobago was getting the best value for money. Based on the foundation we developed at National Energy, I still can't tolerate mediocrity."

She believes that young women have an important contribution to make to the future of Trinidad and Tobago's energy sector if they are given a chance to demonstrate their worth. She noted, "We have to make room for the young women and listen to them. Ms. Hordatt also had some advice for young women entering the energy industry, "Find a mentor. I urge my fellow experienced professional women to reach out and lend a hand to the younger women. We must support each other."

When asked what she would do differently if given the chance to go back in time, Ms. Hordatt chuckled and said simply, "I would learn to play the steelpan. Otherwise, I wouldn't change a thing."

MICHELLE SCIPIO-HOSANG
2000-PRESENT

Michelle Scipio-Hosang, Manager, Operating Assets at National Energy takes pride in the company's practice of gender equality. In her address at the World Maritime Day forum hosted by UTT in 2018, she stated, "In every area of National Energy, you will find women working alongside men and gender equality is part of the social fabric of the company."

Ms. Scipio-Hosang has been involved in the maritime industry for almost 30 years. Speaking with the *Pioneer*, she recalled her entry into the maritime field in 1990, when she was one of two women to be awarded scholarships from the Port Authority of Trinidad and Tobago (PATT), to study either marine engineering or navigation, "Ms. Venessa Maurice fought hard to get PATT to agree to allow even two women on the programme."

While she notes that women have made strides in the industry, she acknowledges that there are still many issues facing women in the field. Women continue to face challenges in terms of access to education, training such as cadetships and access to equal job opportunities with parallel wages. She stated, "The belief that the maritime industry is 'a man's world' is a subconscious bias of many inside and outside the industry."

In contrast to the wider industry, National Energy was commended by Ms. Scipio-Hosang for its equal treatment of women in the workplace during her 19 years with the company. She paid tribute to former President, Mr. Prakash R. Saith, whom she recognised for actively fostering a culture of equality. "Empowered by my boss, the President, I drafted contracts for the purchase of new vessels and supervised their construction, sea trials and delivery. The expectations were high, and we were not treated differently from our male peers even when he dished out his wrath."

As the first female marine engineer in Trinidad and Tobago, Ms. Scipio-Hosang is a part of a team of female marine trailblazers at National Energy and she has praise for the many young female maritime professionals she has worked with throughout her career. When asked about the future of the maritime field, she expressed hope for gender equality across the industry. "Putting aside the concerns of the past, I am confident that we can move towards embracing workplace diversity and inclusion as a source of growth and enrichment of us all. The world waits on no one. There's simply no more time to waste around gender equality issues."

DONNA BECKLES
2001-PRESENT

"When you are told over and over that women cannot do this kind of work and you are even given a cold shoulder or the look of 'what is she doing here?' do not let negative comments and actions deter you from pursing your chosen career or going after your goals." That's the advice of Donna Beckles to young women looking to get into the marine field.

Ms. Beckles, joined National Energy in 2001 as the company's first Marine Co-ordinator, but her history of 'being the first' started long before 2001. She recalls her early career in the 1980s, "I deliberately set goals to be the first woman to work in areas where women were not considered for the job. When I observed at the time, that young women were only looking to qualify themselves in secretarial and clerk typist skills for office work, I was determined to break the mould."

Donna's career path saw her gaining in-depth knowledge and hands-on experience in the shipping industry. She recounted, "I became the first female Transport Dispatcher operating out of the Port of Port of Spain; the first Customs Boarding Clerk going on vessels at all ports in Trinidad; and the first Vessel Operations Supervisor (Ag.) supervising, discharging and loading cargoes to and from vessels and preparing ship plans."

Donna was an instrumental part of the team that worked tirelessly when the company assumed responsibility for the direct operation of its fleet of towage vessels in the early 2000s. During this critical time in the company's history, Donna stepped into the new position of Marine Co-ordinator with the courage and confidence for which she has become known. She remembers the transitionary period, "At first I was hesitant to transition from the operational aspect of shipping that I had known since the beginning of my working life. However, this was a chance to experience a new side of the industry and I was intrigued by the challenge."

In her current position of Supervisor, Commercial Operations in the Commercial Group, Ms. Beckles is responsible for one of the major revenue-earning arms of the business – the towage service. Daily, her unique negotiation skills come to bear, as she seeks to maximise value for the organisation. She is proud to see Marine Co-ordinators whom she trained, accept opportunities to develop themselves further while contributing to the company's operations at the Ports of Brighton and Galeota.

Donna continues to find new ways of advancing the marine industry. At the 81st Annual General Meeting of the Shipping Association of Trinidad and Tobago (SATT) held on 27 March 2019, she was appointed Vice Chairperson of SATT Group B. She shared her objective for accepting the challenge to serve in this capacity: "In this role, I will continue to gain first-hand knowledge of the changes and trends in this dynamic industry, which I can share with my colleagues. This is an opportunity to be part of a group that is working towards positive change in the shipping industry in Trinidad and Tobago."

WENDY SEOW
2006-PRESENT

Wendy Seow, Vice President, Commercial is a prime example of a person who brings together all facets of her work experience to move the organisation forward. As the first female to hold the position of Vice President, Commercial at National Energy, she stands equal with her male counterparts as a leader in the energy industry. However, she explained that she never felt pressured to overcompensate, "The key to being a skilled competitor in this field, is mental preparedness and the ability to be aware of what is happening in the environment and more importantly, to understand the different agendas which may be at play."

Having worked in both the private and public sectors, Ms. Seow has received advice from several mentors. She shared the same wisdom that she was taught, "You need to stay focused on what needs to get done and learn from experiences to make improvements." Building on her past experiences while furthering her training and competencies and employing effective networking, Wendy's passion is to make a difference. She told the *Pioneer,* "Through continuous learning and believing in themselves, women will undoubtedly advance their career paths to success." She asserts that being solution oriented is critical when progressing one's career. She affirms, "I should always be prepared to offer a solution for consideration. This has augured well for building a good working relationship and trust with my bosses over the years and at the same time, built my confidence."

During her career, Ms. Seow has had the opportunity to work at "start-ups" or new companies, providing her with the environment to hone her innovation skills, and develop and implement policies and procedures required to build departments. Serving in the newly created capacity as Vice President, Commercial, Ms Seow has had to navigate numerous challenges. Despite the challenges, however, within two years, she has managed to enhance and transform National Energy's Commercial Operations and its approach to business in meeting our customers' needs.

The ensuing positive results provided her with a significant sense of fulfillment and gratitude to her fellow employees but most notably, to the two former Presidents of National Energy, Mr. Prakash R. Saith and Professor Andrew Jupiter. These two men mentored and showed her how the public sector worked following her many years in the private sector. She is thankful for their contribution to her abilities and career at National Energy.

She noted that during her period at other companies in the procurement and logistics field, the shipping industry and within the energy sector, she was often the only woman in management. She commends the leadership of National Energy for providing an environment that encourages women to aspire to leadership positions.

Rather than requiring large-scale recognition, Wendy is content as long as the beneficiaries of her work are satisfied. "Her faith in God fuels her passion as she knows that He recognises and rewards her daily efforts abundantly."

MARCIA MAYNARD
2006-PRESENT

Marcia Maynard, National Energy's Manager, Investment Facilitation, believes that being a woman has positively influenced her career, mainly because the challenges she faced as a young engineer starting out in a plant environment, fuelled her passion to achieve. Marcia told the *Pioneer,* "I take risks and challenge myself, so my approach was never having other persons decide on my career development. I consider my career my responsibility. Nobody has that power."

Before joining National Energy as a Team Leader in the Business Development Division in 2006, Marcia gained valuable experience in the engineering and banking arenas, having worked as a young engineer at Process Plant Services Limited (PPSL) and also at the Royal Bank of Trinidad and Tobago (RBTT). Speaking about her past experiences, she related, "At PPSL, I worked through construction, commissioning and operations of the Titan Methanol facility. It was a difficult commissioning, but there was dedication, teamwork and team spirit. The staff comprised young engineers who were given tremendous responsibility. Working on cross-functional teams shaped my ability to function well in teams and have an understanding of different professional disciplines." Marcia was part of another ground-breaking project during her time at RBTT where she was involved in the implementation of the Trinidad and Tobago Inter-Payment System (TTIPS), the Automated Clearing House (ACH) which is widely used for payments today.

One of Marcia's most memorable experiences at National Energy was representing the company and the country at the Fifth Summit of the Americas. She couldn't hold in the laughter when she recalled, "I was part of the logistics team assigned for the airport operations and I was able to see Air Force One land at Piarco Airport and had the opportunity to shake hands with former President of the United States, Barack Obama. I didn't want to wash my hands for days afterwards!"

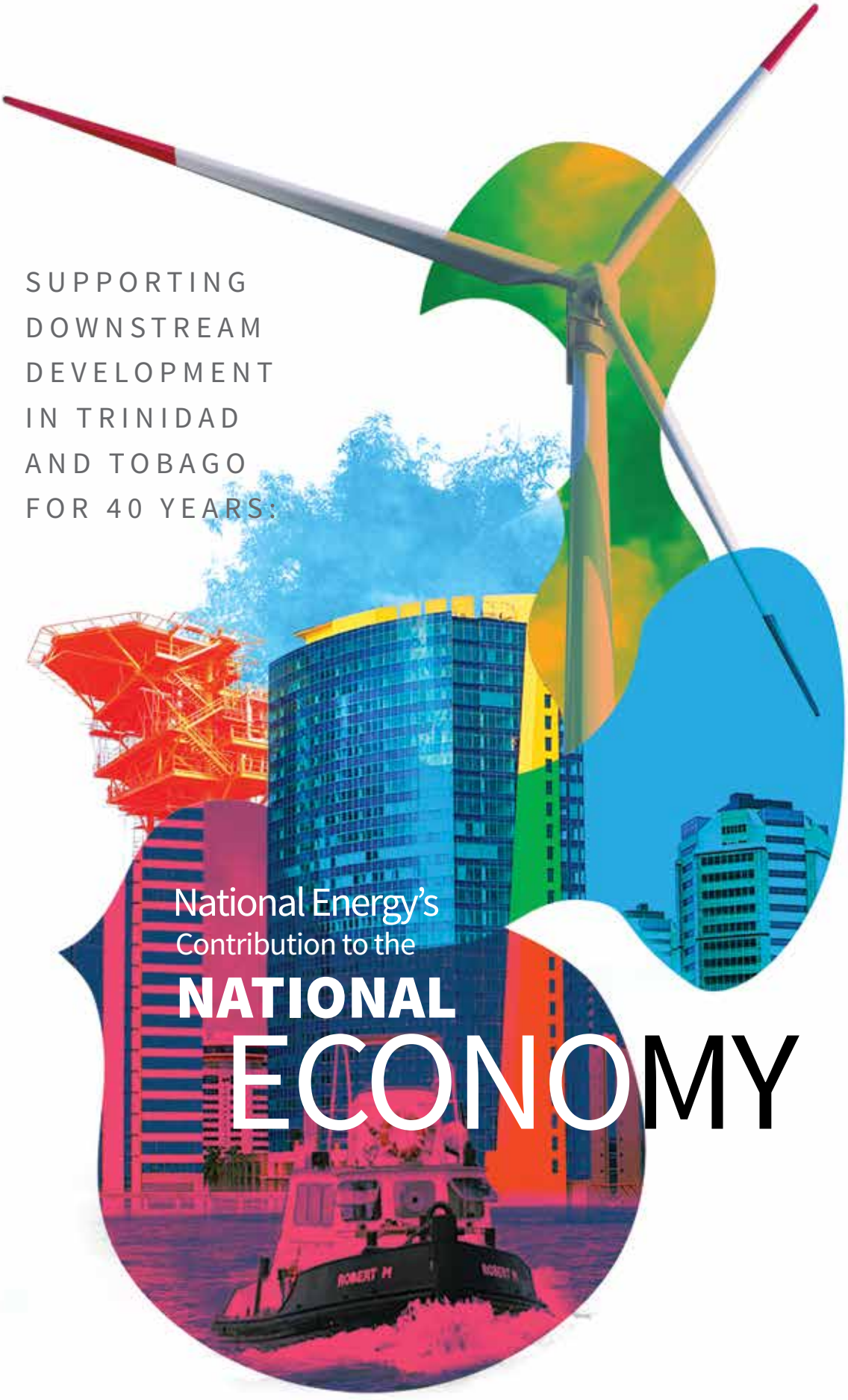
Regarding National Energy's approach to gender equality, Ms. Maynard applauded the organisation, stating, "I think National Energy has been quite open to affording the same access to resources and opportunities to its staff, regardless of gender. Its Management Team certainly is reflective of this."

Reflecting on her beginnings in the energy industry, Marcia shared on the value of a support group. "When I started working as a young engineer, there were other young female engineers who were also having similar experiences where the process plants were still adjusting to having female technical staff in supervisory or leadership positions. We formed a strong female network, ate lunch together most days and shared so much that persons were intimidated going into the kitchen at lunch time. We laughed a lot and we cried sometimes, but most importantly, we supported each other."

She advises young female engineers and business professionals to assert their place in the workplace, "Always know who you are and that you are capable. Remember that persons treat you how you allow them to treat you. If you are attending a technical meeting, you are there in the capacity of an engineer, not a note taker. Speak up and be heard."

She also had these words of encouragement for her sisters in the energy industry, "Be passionate about what you are doing. Connect to it in a real way and most importantly, believe in yourself and your capability. Stop chasing perfection, as there will be failures. Learn the lesson and move on!"

SUPPORTING
DOWNSTREAM
DEVELOPMENT
IN TRINIDAD
AND TOBAGO
FOR 40 YEARS:



National Energy's
Contribution to the

NATIONAL ECONOMY

Prime Minister, Dr. the Honourable Eric Williams and Prof. Kenneth S. Julien attend the opening of Iron & Steel Company of Trinidad and Tobago (ISCOTT) in 1981.

Arising out of a national conference on the best use of our natural resources in early 1975, the State identified steel, aluminium, ammonia, methanol, acetylene and furfural as major industries to target for the monetisation of natural gas in Trinidad and Tobago.

GAS-BASED

BUSINESS DEVELOPMENT

To achieve this objective, the State initially formed a Co-ordinating Task Force in 1975 which was replaced by the National Energy Corporation of Trinidad and Tobago (National Energy) in 1979. At the time National Energy's mandate as outlined in its *Annual Report* (1980) was to "guide the development and management of oil, gas and other mineral resources of Trinidad and Tobago and to assist the government in the formulation of energy and industrial policy and strategy." Forty years later, Trinidad and Tobago (T&T) has a significantly different energy landscape.

Multiple reports and articles have accurately captured the relative scale and importance of the downstream energy sector and the economic significance of it to the National Gas Company (NGC), government and the wider T&T economy. However, less emphasis is given to the amount of work that went into successfully achieving the suite of projects that have transformed the energy sector of T&T over the past 40 years.

Armed with a team of highly skilled personnel with expertise in gas-business development and project development, National Energy actively carried out its mandate to develop the downstream energy and energy intensive industry locally. This involved the simultaneous development of projects on behalf of the Government of the Republic of Trinidad and Tobago (GORTT), together with the infrastructural work necessary to support plant construction and exportation of product. Some of the projects included the construction and ownership of the first methanol and urea plants, attraction and facilitation of a suite of new petrochemical plants, expansion of the Point Lisas Industrial Estate, significant business developmental efforts that led to the creation of Atlantic LNG in 1995, the formation of the La Brea Industrial Development Company (LABIDCO) to manage the development of an industrial estate and port in La Brea, as well as the creation of the Union Industrial Estate (UIE).

National Energy also built a reputation as a reliable marine services provider, which was essential in its thrust to continue the gas-led industrialisation process by attracting new entrants. With the expansion of multi-user marine terminals at Savonetta, port facilities at Brighton, the establishment of world-class port facilities at Galeota and the acquisition of an expanded fleet of tugs

and workboats, National Energy has also continued to ensure that the downstream and wider energy industry remains competitive.

The methanol to dimethyl ether (methanol to DME) plant under construction in La Brea is the latest example of projects in which National Energy played a crucial role in its realisation. While the plant is expected to begin production soon, the work that National Energy embarked on in support of this project actually commenced in 2012. Like some of the earlier projects in National Energy's 40-year history, supporting the development of this project also simultaneously involved economic appraisal activities on behalf of GORTT while facilitating discussions with the Mitsubishi-led consortium, regarding the support infrastructure required at UIE and nearby industrial port facilities. As part of its typical project development and business development activities, National Energy carries out extensive work including:

• **Project/Cluster Conceptualisation** – National Energy is mandated to add value and contribute to the diversification efforts within the downstream energy sector. Under this umbrella, the company actively develops project ideas from multiple sources, including soliciting ideas from industry players, assessing specific markets or using a range of innovative market research tools to monitor trends.

• **Project Promotion** – With a typical project idea or focus area of GORTT, National Energy actively promotes project ideas to local, regional and international industry players in a bid to secure partners who can provide some of the needed elements to attain its stated objectives and are willing to locate a facility in T&T. National Energy also places significant emphasis on the promotion of Trinidad and Tobago as a location for heavy industry and makes recommendations to GORTT regarding preferred measures, essential to maintain its relative competitiveness.

• **Project Assessments** – National Energy is also responsible for, and continuously engaged in the screening and assessment of multiple projects, the endorsed ones, being the result of a robust analytical review process and project amendments in collaboration with sponsors and investors to ensure the project aligns to GORTT and the Ministry of Energy and Energy Industries' (MEEI) stated policy goals.

This stage typically involves, but is not limited to, the production of independent pre-feasibility studies, feasibility studies, including economic modelling of multiple scenarios and assessment of various types of risks. These activities have continuously allowed National Energy to make informed and credible recommendations to the State.

• **Investment Facilitation** – A key role over the last 40 years has also been that of investment facilitator. On behalf of GORTT, National Energy has played the part of "walking through" with investors for the development of projects, including the facilitation of negotiations between investors and State bodies until project sanctioning or otherwise. The Ministry of Finance; MEEI; NGC; the Trinidad and Tobago Electricity Commission (T&TEC); the Water and Sewerage Authority of Trinidad and Tobago (WASA); the Environmental Management Authority (EMA); Regional Corporations; Commissioner of State Lands (COSL); and Town and Country Planning Division (TCPD) are just a few of the agencies that National Energy engages with on a constant basis in the development and facilitation of energy-based projects and associated infrastructure.

• **Estate Development** - Of critical importance is the provision of adequate contiguous parcels of land with all the amenities that give it developmental potential. For example, with CGCL, the provision of adequate land in relative proximity to a port was of key importance. From the engagement of surveyors, development of plots, securing all statutory approvals and range of contractors and utility providers to carry out the work in an efficient manner, National Energy actively engages a wide range of actors, essential in providing land that satisfies financiers demands for good marketable titles.

• **Marine Support Infrastructure** – Similarly, the provision of world-class export infrastructure is also a major responsibility of National Energy to ensure that projects have the necessary assets to enable the importation of large pieces of equipment or raw material and the smooth exportation of product as needed.

These project and business developmental activities are carried out in support of the development of energy and energy-intensive industries that have the potential to deliver significant returns to T&T. As Barclay (2004) outlined, the process of attracting and successfully securing foreign investments into the country "is not an effortless process." In fact, a critical feature of the work of National Energy over the last 40 years is the often – unseen value brought in the attraction and assessment of projects on behalf of the State, a task which continued from the days of the Task Force, the merger with NGC and the re-emergence and reaffirmation of the business development mandate from 2004 onwards.

This is critical since analyses allow the State to better understand the best arrangements for balancing competitiveness with value creation for any approved project concept.

NATIONAL ENERGY'S ECONOMIC CONTRIBUTION

In assessing National Energy's economic contribution, it is not a straightforward process of calculating the taxes paid to GORTT, dividend contributions, payments to suppliers, employee benefits and funds voluntarily invested in social projects across its host communities. As the State's project development and investment facilitation agency for downstream energy and energy-intensive projects, National Energy's contribution to the economy is really in the value it brings in successfully attracting, facilitating, and developing projects on the one hand and supporting their activities by providing the relevant land and marine infrastructural support on the other. It is in these core areas where National Energy has contributed to the realisation of the policy directive given in 1977 to "take the more difficult road of iron and steel, ammonia, urea and methanol."[1]

As a result, over the last 40 years, Trinidad and Tobago was able to attract roughly US$11 billion[2] in foreign direct investment (FDI) for metal processing, ammonia, methanol, urea, LNG and other niche downstream gas-based products for the export market. In fact, an IDB report by Khadan and Ruprah (2016) highlighted that while there has been limited diversification in the wider Trinidad and Tobago economy, the energy sector "has been continuously diversifying since the late seventies both in terms of products as well as in export markets." A summary of these projects can be seen in Table 1 (following page), with only Yara's 1959 plant and Tringen 1 existing prior to National Energy's incorporation.

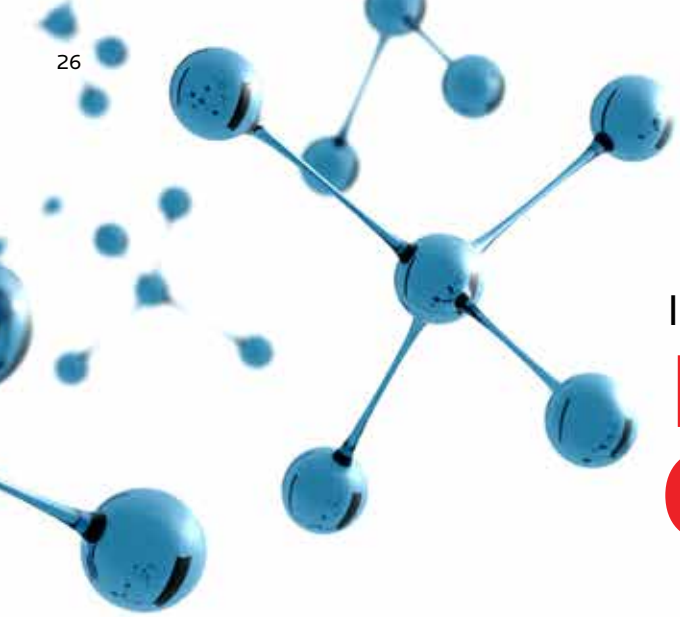
While recognising the contributions and collaborations that would have led to the successful realisation of most, if not all, of these projects from other State organisations, their existence is no doubt a testament of the major developmental effort that National Energy would have provided and the continued reliable provision of export support services.

ECONOMIC IMPACT TO WIDER TRINIDAD AND TOBAGO ECONOMY

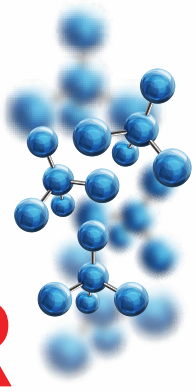
By now one would agree that National Energy's efforts have created not just significant, but sustained value to the economy of Trinidad and Tobago. It is a long-known fact that the wider energy sector is the single major driver of the economy and that the natural gas-based sector has increasingly become more important to the economy over the decades. Figure 1 provides a summary of the impact on government revenues, jobs and GDP contribution, among others.

1 E. Williams (1976), cited in ""Eric Williams and the Emergence of the National Energy Sector" (2005), Nineteenth Lecture in the Dr. Eric Williams Memorial Lecture Series.

2 See Furlonge and Bahaw (2009) "A Review of the Dynamics between the Energy Sector and the Economy of Trinidad and Tobago. *NGC Gasco News*. Also recall the US$1 billion Methanol to DME investment in La Brea. Further, note that the replacement cost, for this US$11 billion in capacity, using data from Farrell (2019) and the Oxford Energy Institute (2019), is equal to roughly US$30 billion.



PLANTS
IN THE MIDSTREAM AND DOWNSTREAM GAS SECTOR



Start-up Year	Plant	Product Produced	Plant Capacity (TPY)	Capital Cost (US$Mn)
1959	Yara (W.R. Grace)	Anhydrous Ammonia	285,000	N/A
1977	TRINGEN I	Anhydrous Ammonia	500,000	125
1980	Mittal (ISCOTT)	Direct Reduced Iron	380,000	468.3
1981	PCS 1	Anhydrous Ammonia	445,000	333.3
1982	PCS 2	Anhydrous Ammonia	445,000	172.5
1983	PCS Urea	Urea	710,000	173
1984	M1 (TTMC I)	Methanol	480,000	183
1988	TRINGEN II	Anhydrous Ammonia	495,000	350
1991	PPGPL	NGL Facility	70,000	98.8
1993	M2 (TTMC II)	Methanol	550,000	200
1994	POWERGEN	Electricity Generation	1000MW	N/A
1996	PCS 3	Anhydrous Ammonia	250,000	75
1996	M3	Methanol	580,000	235
1998	PCS 4	Anhydrous Ammonia	650,000	252
1998	PLNL	Anhydrous Ammonia	650,000	300
1998	M IV (M4)	Methanol	580,000	265
1999	Trinity	Electricity Generation	225MW	150
1999	ALNG 1	LNG	3,200,000	930
2000	Methanex -Titan	Methanol	860,000	261
2002	CNC	Anhydrous Ammonia	660,000	300
2002	ALNG 2	LNG	3,400,000	550
2003	ALNG 3	LNG	3,400,000	550
2004	N2000	Anhydrous Ammonia	650,000	315
2004	Atlas	Methanol	1,700,000	400
2005	M5000	Methanol	1,890,000	450
2005	Nulron	Direct Reduced Iron	200,000	180
2005	ALNG 4	LNG	5,200,000	1,200
2009	AUM I	Ammonia	650,000	
2010	AUM I (Derivatives)	Urea, Nitric Acid, Ammonium Nitrate, Melamine	Urea - 693,000 Nitric Acid - 495,000 Amm. Nitrate - 630,000 Melamine - 60,000	1,700
2020*	CGCL	Methanol	1,000,000	1,000

SOURCE: NATIONAL ENERGY DATABASE

*Expected start of operations

OUTPUT

A review of official data from the Central Statistical Office (CSO) indicates that the petrochemical sector contributed on average 5.4% to nominal GDP over the last two decades.

Petrochemical and LNG real GDP averaged a share of 13.5% of total real output over the 2013-2018 period.[3] In fact, Central Bank data highlights that the downstream gas-based sector over the same 20-year period, accounted for 97.5 million tonnes of fertiliser exports and 93 million tonnes of methanol. Further, for the last 20 years, approximately 487 million tonnes of LNG were produced as well as large volumes of intermediate and downstream iron and steel product.

GORTT REVENUES

National Energy's efforts have also provided a sustainable stream of revenue to the State in taxes from the companies. A cursory review of NGC Group financials from Annual Reports for the last 20 years (1999-2018) reveals that as much as TT$50 billion in profits before taxes was generated by NGC (including National Energy) on behalf of GORTT.

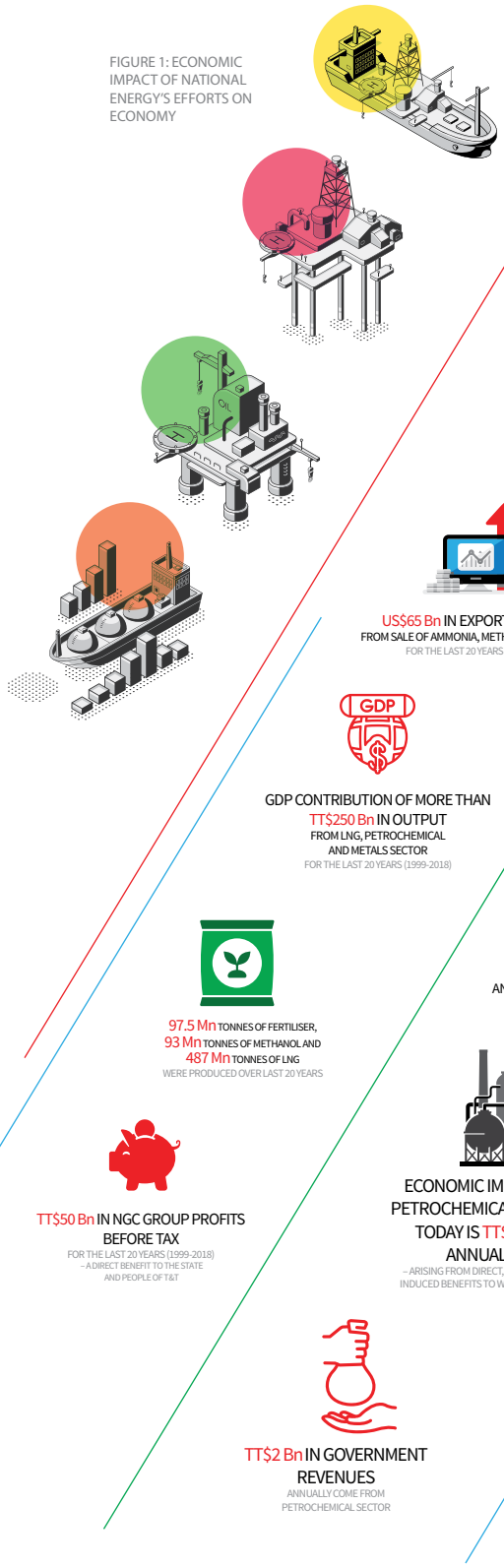
Further, the wider metals, petrochemicals and LNG sectors have contributed significantly to GORTT revenues annually. Atlantic for example, in the last six years (2013- 2018) have paid over TT$10 billion in direct corporation taxes to GORTT. Revenue data from the Ministry of Finance revealed that between 2009-2017, taxes and levies received from ammonia and methanol producers amounted to TT$17.35 billion. Over this same period, annual petrochemical sector revenues ranged between TT$1 billion and TT$3.1 billion. Over the last two decades therefore, roughly TT$2 billion, or 7% of government revenues came from the petrochemical sector annually.

Employment

While the energy sector does not employ a large number of workers directly in relation to capital deployed, through the activities of the sector, indirect employment is generated. Estimates suggest the petrochemical sector employs roughly 1,700 - 2,000 persons. However, if we include the direct jobs from LNG and across the NGC Group (~ 1,030) we get another 1,800 direct jobs that are primarily supported as a result of the existence of the mid and downstream gas industry in Trinidad and Tobago.

Further, significant indirect labour is utilised from contractors who do specific activities on behalf of companies like the provision of maintenance, transportation, security and other short-term services during plant turn arounds. In fact, the Energy Chamber's STOW database has over 22,000 workers registered to work in the energy sector.

FIGURE 1: ECONOMIC IMPACT OF NATIONAL ENERGY'S EFFORTS ON ECONOMY



[3] See Ministry of Finance's *Review of the Economy 2018*

Foreign Exchange and Export Earnings

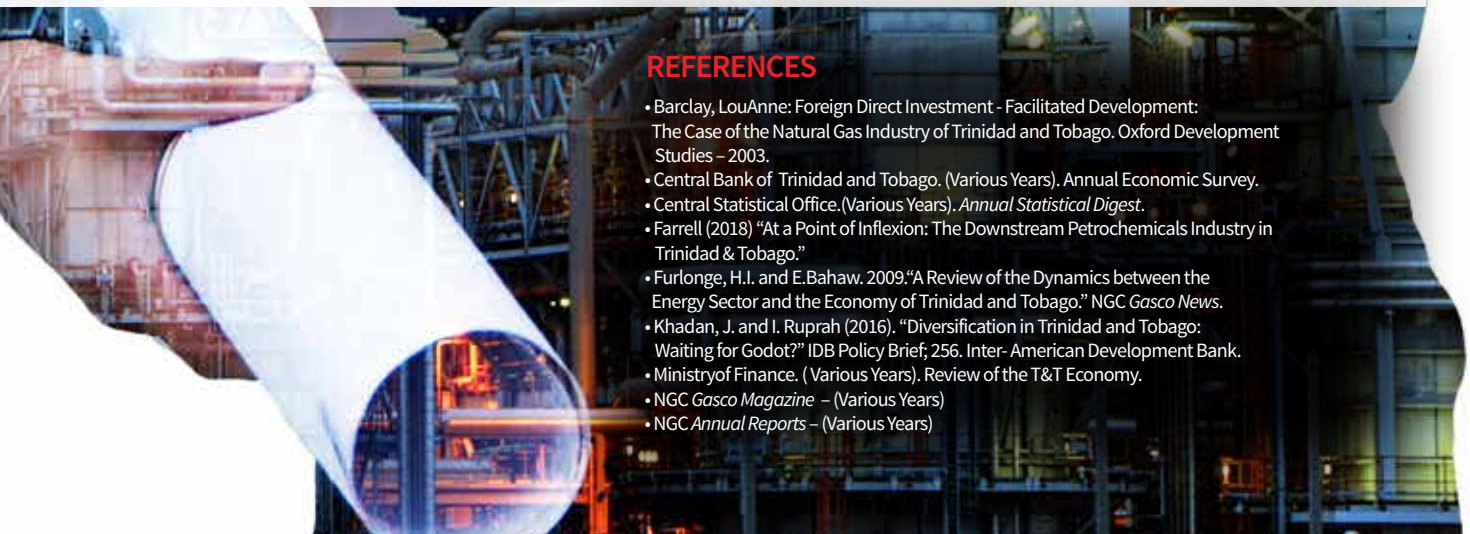
The downstream gas-based industry is also an important source of foreign exchange earnings for the country. In fact, from a revenue perspective alone, Central Bank data shows that National Energy's efforts over the decades directly and indirectly have resulted in cumulative foreign exchange earnings of US$70 billion (or TT$476 billion) arising from the exportation of ammonia, methanol and urea over the 1985-2018 period. For the last two decades this figure equates to US$65 billion. Over the 2005- 2015 period, the petrochemical and LNG sub-sectors contributed on average 21% and 23% towards export earnings respectively (UN Comtrade).

CONCLUSION

When account is taken of the indirect and induced impact the downstream petrochemical industry has had on the economy, the significance of the efforts by National Energy to support such development is even more astounding. In reiterating that the overall real contribution to the local economy extends far beyond the plant output and the value fetched via exportation, Farrell (2019) noted that for only the petrochemical players "the total impact on the economy, applying a multiplier of 1.9, is US$642 million or TT$4.3 billion annually. A critical point to note is that gas prices and volumes are lower than what was realised in the earlier decade. Similarly, if Atlantic's average direct contribution is used for the last five years we get an annual average contribution of TT$3.2 billion 'annually'.

Trinidad and Tobago today, benefits significantly from the efforts that National Energy has consistently performed in supporting the transition of the energy sector from a mono-commodity sector (oil) to one in which the export suite now involves the exportation of multiple gas-based and energy intensive products – all in supporting 'a very definite industrialisation process.'

Forty years on, National Energy is poised to continue the process of value creation for GORTT, the NGC Group and the people of Trinidad and Tobago.



REFERENCES

- Barclay, LouAnne: Foreign Direct Investment - Facilitated Development: The Case of the Natural Gas Industry of Trinidad and Tobago. Oxford Development Studies – 2003.
- Central Bank of Trinidad and Tobago. (Various Years). Annual Economic Survey.
- Central Statistical Office.(Various Years). *Annual Statistical Digest*.
- Farrell (2018) "At a Point of Inflexion: The Downstream Petrochemicals Industry in Trinidad & Tobago."
- Furlonge, H.I. and E.Bahaw. 2009."A Review of the Dynamics between the Energy Sector and the Economy of Trinidad and Tobago." NGC *Gasco News*.
- Khadan, J. and I. Ruprah (2016). "Diversification in Trinidad and Tobago: Waiting for Godot?" IDB Policy Brief; 256. Inter- American Development Bank.
- Ministryof Finance. (Various Years). Review of the T&T Economy.
- NGC *Gasco Magazine* – (Various Years)
- NGC *Annual Reports* – (Various Years)

HSSE
YESTERDAY TODAY TOMORROW

National Energy is a truly unique company with unique operations.

Take for example, the operations at the Savonetta Piers where the loading of methanol, ammonia and urea takes place out of the same facility. In fact, the Savonetta Piers are the only multi-user loading facilities of their kind in the western hemisphere. It is a credit to the dedicated and skillful people who manage these operations with a focus on Health, Safety, Security and Environment (HSSE) that in 40 years of operations, National Energy has not experienced a major incident which resulted in serious injury or fatality to any member of staff or contractors.

Back in the 1980s, before HSSE was a popular 'buzz word' in Trinidad and Tobago, HSSE was embedded into the culture at National Energy. The company was constructing new industrial plants and marine terminals, so the stakes were high for the team of young professionals. All involved were acutely aware of the importance of their work for the company's survival and to move the country forward. They had to prove that nationals could run our industrial sector and that we could do it safely and profitably.

Laying the Foundation for an HSSE Culture

With a fraction of the world's natural gas reserves, Trinidad and Tobago had the audacity to compete with the rest of the gas-producing world, so our facilities needed to be world class. Therefore, best practices in safety were implemented from the inception. For instance, when the Trinidad and Tobago Methanol Company (TTMC) was formed in 1984 as a subsidiary of National Energy, HSSE management systems were immediately established. Mr. Whelan Hall who held senior HSE positions at TTMC from 1983 – 1988, including Fire and Safety Officer, told the *Pioneer* about the company's approach in those days. "We were producing methanol, a highly flammable product, so HSSE was paramount in our operations." He described some of the elements of the Safety Management System, "We implemented a 13-element HSSE initiative at the time, which incorporated:

- Management, Leadership and Accountability;
- Staff Training and Behaviour;
- Crisis and Emergency Management; and
- Management of Change"

Mr. Hall went on to state, "At TTMC, we had a fire station with firemen and a fire tender on site 24/7. There was also an onsite nurse and the company had its own security personnel."

National Energy, through TTMC and the Trinidad and Tobago Urea Company (TTUC) was also instrumental in instituting the culture of safety at Point Lisas Industrial Estate via its involvement in the Trinidad and Tobago Mutual Aid Scheme (TTEMAS). According to Mr. Hall, "The goal was to bring HSSE to the forefront, so that all companies on the estate shared a world-class safety culture. Through the leadership of people like Clinton 'Billy' Rambaransingh at TTMC, Stephen Harris at Phoenix Park Gas Processors Limited (PPGPL) and many others, standards were established which are still relevant today. The leadership was very receptive and co-operative when it came to building safety into our operations."

Following the dissolution of TTMC and TTUC in 1988 and 1990 respectively, and the subsequent merger of National Energy with NGC in 1992, management of HSSE for National Energy's assets was handled by NGC's HSSE personnel. This arrangement would remain in place until the restoration of National Energy's mandate for business development in 2004, following the company's revitalisation as an independent entity under the NGC in 1999.

Building on the Foundation in a New Era of HSSE

As part of its new mandate, National Energy would be responsible for the construction of an entirely new industrial estate at Union Village, La Brea. This was National Energy's first major infrastructural undertaking since having its mandate expanded and the company had to adjust quickly to the evolving HSSE environment.

Following the Establishment of the Environmental Management Authority in 1995 and subsequent creation of a number of subsidiary environmental legislation in 2001, it became necessary for National Energy to establish an internal framework to manage all environmental matters related to its projects. Personnel were therefore engaged to ensure the company's compliance with the Certificate of Environmental Clearance (CEC) process and requirements. This involved implementation of CEC Terms of Reference which included, inter alia, the conduct of Environmental Impact Assessments (EIAs), risk assessments and mitigation measures, business continuity best practices, emergency response tactics, marine environmental monitoring at our port and harbour facilities, as well as stakeholder and community consultations.

Alignment with the new legislation and regulations also informed the way the company would approach its social responsibility to the communities in which it operates. National Energy adopted a 'fenceline' approach in which the company seeks to establish and maintain ongoing relationships for the benefit of both the organisation and the community. This strategy has resulted in National Energy partnering with communities of La Brea and environs, Mayaro/Guayaguayare and Couva. Numerous initiatives designed around the CSR Pillars of Youth, Sport, Education, Culture and Capacity Building have been hosted.

In 2010, the company formalised its commitment to the integration of HSSE best practices into all its operations with the formation of its HSSE Department. Since that time, National Energy has achieved several significant milestones, some of which are highlighted on the following pages.

Signing of STOW Charter

Safe TO Work (STOW) is a certification programme for contractors' HSSE management systems. The Energy Chamber started the STOW programme in response to the challenges of its members who were experiencing difficulty in meeting the range of HSSE requirements among the major oil and gas operating companies. National Energy signed onto the STOW Charter in 2013 as an indication of its support of STOW and the intention to adopt STOW to manage contractor safety.

In addition to being a signatory to the STOW Charter, since 2014 National Energy has also been STOW Certified for its Towage and Harbour services, which is a high-risk service.

ISPS Certification

National Energy owns and operates many international port facilities on the western, south-western and south-eastern coasts of Trinidad. Accordingly, these facilities comply with the International Ship and Port Facility Security (ISPS) Code, which is an amendment to the Safety of Life at Sea (SOLAS) Convention. By complying with the ISPS Code, HSSE ensures the company's compliance with the minimum-security arrangements for ships, ports and government agencies. Our port facilities are routinely audited by various arms of the Trinidad and Tobago Coast Guard and the United States Coast Guard. This ensures that National Energy's 'licence to operate' remains intact as we move toward our global energy vision. The HSSE Department through various partnerships, ensures that National Energy's ISPS certification is maintained.

Environmental Projects and Programmes

National Energy's HSSE Department has implemented several environmental projects and programmes over the years, including:

- Marine environmental monitoring at our port facilities;
- Conduct of EIAs, baseline environmental assessment and environmental due diligence programmes at our industrial estates and ports;
- Ongoing implementation of Community Awareness and Emergency Response (CAER) programmes;
- Community environmental education and outreach programmes with schools in our 'fenceline' communities in partnership with the EMA and the University of Trinidad and Tobago (UTT);
- Implementation of a shoreline monitoring and management programme at Galeota ;
- Establishment of a Greenfield Buffer Zone at Union Industrial Estate (UIE).

An injured man is taken for treatment during a full scale emergency response drill at the Port of Brighton

Members of the **Mayaro/Guayaguayare** community receive Oil Spills Response training

SECURITY

Fire officers pose in front of a fire tender and ambulance (inset) at TTMC Plant in 1987.

WHELAN HALL
Fire and Safety Officer at TTMC, 1987

Additionally, the HSSE Department works closes with the NGC Group HSSE Committee to advance the Group's HSSE-Focus – Destination: World-Class Safety. To this end, employees are engaged annually to participate in the International Coastal Cleanup. Eco-tours to various eco-tourism destinations throughout the country, World Environmental Day commemoration as well as HSSE awareness sessions.

Strengthening the Foundation with AI

Asset Integrity (AI) and Asset Integrity Management (AIM) have been embraced by National Energy as the company seeks to keep abreast with industry best practice. As defined by global quality assurance and risk management firm, DNV GL, AIM ensures that organisations have the business processes, systems, tools, competence and resources required to ensure integrity throughout the asset lifecycle. In short, AIM is a tool for keeping equipment safe and reliable and ensuring that they can perform according to design specifications.

As owner and operator of major assets that support the energy and commercial sectors, National Energy is working towards achieving AIM excellence, as guided by the ISO 55000 standard. The company therefore implemented a revised AIM Policy Framework in 2019 and is developing procedures to close AIM system gaps and build the AIM culture. National Energy sees this as an integral part of our duty as stewards of critical national assets. Not only will AIM improve the safety and integrity of all assets under National Energy's management, but also, long-term maintenance and operational costs will be reduced; AI-related incidents will be minimised, and the overall reliability and availability of assets will be improved.

HSSE for Sustainability

Based on the experiences of the past and the body of international HSSE and AIM knowledge and best practices that have been developed, business methodologies have changed fundamentally and will continue to change. No longer are HSSE and AIM viewed as systems to be merely complied with, but they have evolved into critical operational elements that underpin the way people, processes and equipment interact. National Energy is therefore driving HSSE and AIM throughout its operations, as these are key enablers for the organisation's success and sustainability.

Juniper Platform is successfully loaded out from the Port of Brighton, 2017

Construction of La Brea Industrial Estate, 1996

LABIDCO's first office at Bungalow 14, La Brea Industrial Estate

THE STORY OF

LA BREA INDUSTRIAL DEVELOPMENT COMPANY LIMITED

THE BEGINNINGS

In the **1970s**, Trinidad and Tobago embarked on an aggressive phase of industrialisation with the government of the day leading the thrust to monetise the country's hydrocarbon resources.

This process saw the formation in 1975 of strategic State entities including The National Gas Company of Trinidad and Tobago Limited (NGC) and the Co-ordinating Task Force which was formalised as National Energy Corporation of Trinidad and Tobago Limited (then "NEC") in 1979. By 1976, the government had also acquired the majority shareholding in Point Lisas Industrial Development Corporation Limited (PLIPDECO) through which previous owners, The South Trinidad Chamber of Commerce, had managed the Point Lisas Industrial Estate and Port of Point Lisas.

With these key assets in hand, the government was able to undertake what can still be regarded today as an astounding feat of industrial development of which the Point Lisas Industrial Estate was the flagship project. Throughout this period of rapid expansion, methanol, ammonia and steel plants came into fruition with support services clustering around them. Point Lisas Industrial Estate quickly developed into the petrochemicals and steel hub of the Caribbean and by 1995, the estate was approaching full capacity. There was a critical need for another industrial estate to accommodate further advancement of the energy sector. After consideration of several sites, a decision was taken by Cabinet to develop the La Brea Industrial Estate in south-western Trinidad. The site met various criteria, including its proximity to a natural deepwater harbour. The site which also possessed a large, contiguous parcel of land, was zoned for industrial use and owned by the State.

On 15 February 1995, the La Brea Industrial Development Company Limited (LABIDCO) was incorporated, owned jointly by NGC with a 83% shareholding and the Petroleum Company of Trinidad and Tobago Limited (PETROTRIN) with 17%. LABIDCO was managed by National Energy on behalf of the shareholders, an arrangement that remains today with a revised shareholding structure – 92% NGC, 8% PETROTRIN. After 40 years of National Energy's operations and 24 years managing LABIDCO, we reflect on the journey towards making LABIDCO a viable economic enterprise and steadfast contributor to the social fabric of La Brea and environs.

CHARTING A NEW COURSE

LABIDCO's initial mandate was the management of the La Brea Industrial Estate which was being developed to accommodate the Farmland MissChem Ammonia Plant and the Atlantic LNG (ALNG) Plant along with relevant support services. To facilitate the construction of these plants, Phase 1 of the estate was developed, comprising approximately 400 acres of land and a construction dock which was dredged to a depth of six metres (Chart Datum) to accommodate vessels of 140 metres in length and 15,000 deadweight tonnage. A drainage system was also established and a marshalling yard for storage of construction materials was built. Access to the estate was achieved through the construction of an access corridor approximately 40-metres wide which comprised a 12-metre-wide utility corridor and a 16-metre-wide pipeline corridor.

Unfortunately for LABIDCO, within the company's first year of operations, both anchor projects for the new estate were relocated due to various contributing factors. ALNG went to Point Fortin and Farmland MissChem moved to Point Lisas North. This was a major blow for the fledgling company which needed to quickly devise ways to generate revenue and recover development costs. It was a credit to the management team at the time, led by Mr. Prakash R. Saith, then Manager – Infrastructure Planning & Development, who showed great resilience in the face of severe economic and political pressure, that LABIDCO was able to keep its doors open. The management team developed and implemented a new business strategy which moved away from heavy industry and instead targeted small – medium-sized energy services and manufacturing companies. Bioremediation services which had initially been used to treat the soil at La Brea Industrial Estate were also offered to local oil companies in addition to storage and support facilities.

To facilitate growth based on the new strategy and attract the target market, further infrastructural works were required at the estate. After careful consideration of the environmental, socio-economic and financial projections of the new direction, the LABIDCO Board took a decision to pursue construction of a secondary road and the sub-division of the estate into smaller parcels of land which were made available for lease. Fifty-six plots were created in the process and local energy services companies started to show interest in the new estate. Some of the earliest tenants at La Brea Industrial Estate were Gordon Winter, Kenson Production Services Limited and Gen-Fab Limited. Kaizen Environmental Services Limited operated the bioremediation facility and TRINMAR expressed interest in transporting offshore crews at the Port.

CORPORATE CITIZENSHIP

As the majority shareholder of LABIDCO, NGC initiated an active community involvement programme to benefit the residents of La Brea and environs. The thrust was aimed at building capacity in the community so that residents could take advantage of employment opportunities when they became available. The idea was to empower people to not only be eligible for work at the estate, but also to grow their own businesses and market their skills throughout the country. Some of the programmes implemented included the Marine Environmental Awareness Programme (MEAP) in which young people learned skills such as boatbuilding and repair. The Youth Sail Caravan holiday camp which taught various maritime-related activities was also hosted in the La Brea area.

LABIDCO took on the role of liaison between contractors and residents by encouraging community groups to organise themselves into skills banks while simultaneously encouraging contractors to utilise indigenous labour as far as possible. Town meetings were also held within the community to inform residents about the potential impacts of the change in use of the estate. Under the auspices of LABIDCO, repair work was also initiated on the St. Helena Home for the Aged and t project was subsequently completed by NGC.

By 2003, LABIDCO had started to find its rhythm with the company's operations showing modest profits derived primarily from revenue earned through storage of pipes for NGC's 56" Cross Island Pipeline project.

At the time, the construction of the fabrication yard was also underway. This project, completed in 2004, would become the country's largest site for fabrication of offshore platforms and a major revenue earner for LABIDCO.

In addition to its contribution to profitability, the fabrication yard paved the way for increased local content in the upstream oil and gas business. The achievements at this facility proved conclusively that Trinidad and Tobago possessed the capacity to deliver world-class projects of this nature when BHP Billiton's Kairi 1 was completed at the construction dock in 2004, and bpTT's Cannonball Platform was completed in 2005. Seven more platforms and one flare boom were constructed at the site from 2006 to 2010, when there was a slow- down in offshore activity. In 2011 the fabrication yard also saw the successful completion of dry-docking of three vessels from National Energy's fleet, further underscoring LABIDCO's commitment to local content and capacity building. In 2016, bpTT's Juniper topsides became the largest platform to be fabricated in Trinidad and Tobago, demonstrating again the world-class technical capacity available in this country.

BREAKING BARRIERS

LABIDCO faced many challenges in the process of transitioning the La Brea Industrial Estate and the Port of Brighton into commercially viable operations. The company was confronted with the task of attracting new tenants and port users, while simultaneously upgrading land and port infrastructure. All this was being done with limited human and financial resources as the company sought to balance growth regarding both market size and profitability.

The company responded by focusing on customer service and building relationships with tenants and port users. Regular meetings were held to gain an understanding of tenants' infrastructural needs and find solutions. Additionally, services were utilised from existing tenants on the estate where practical, to support the growth of the facility. The availability of storage, as well as the efficiency of the Port of Brighton, compared to other, heavily subscribed ports in Trinidad, were also leveraged to attract users to the Port.

The La Brea Industrial Estate has approximately 58 tenantable parcels of which 54 are leased lots. Tenants are involved in a range of activities including aggregate storage, bioremediation, general construction, oil and gas logistics, pipe laydown yard, platform fabrication and warehousing. Trinidad and Tobago's newest methanol plant and its first dimethyl ether (DME) facility is being constructed by Caribbean Gas Chemical Limited (CGCL) at Union Industrial Estate. CGCL has used the Port of Brighton extensively during its construction phase and once operational, all products are expected to be exported through the Port facility.

National Energy congratulates the management and staff of LABIDCO for the work they have done and continue to do to generate business activity in the south-western region for the benefit of the community of La Brea and environs and the country as a whole.

Aerial view
of La Brea Industrial Estate and the Port of Brighton circa 2004