



Government of the Republic of Trinidad and Tobago
The Ministry of Energy and Energy Affairs

The Energy

2014 Issue 2

PLATFORM

Local Strength – Global Partnerships



The Honourable Kamla Persad-Bissessar S.C., Prime Minister of the Republic of Trinidad and Tobago with (L-R) Mr. Ronald Harford (Chairman, Republic Bank), Senator, the Honourable Kevin Ramnarine and Mr. Garvin Goddard (President, BG Trinidad and Tobago)

ABOUT US

The Energy Platform • 2014 Issue 2



THE MINISTRY OF ENERGY AND ENERGY AFFAIRS IS THE AGENCY OF CENTRAL GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO CHARGED WITH RESPONSIBILITY FOR MANAGING AND DEVELOPING THE PETROLEUM AND MINERAL RESOURCES FOR THE BENEFIT OF THE NATION.

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Minister's Note

In spite of the realities of the external forces that have played out in the past six years - our energy sector has held its own. Investment in the energy sector has recovered from a downturn in the period preceding 2011 to reach the highest levels ever recorded.

Oil production has stabilised at around 80,000 barrels per day after a precipitous decline between 2006-2012.

Data gathered by the Energy Research and Planning Department (ERPD) at the Ministry of Energy and Energy Affairs (MEEA) indicate that total investment by both foreign and local companies will average over US\$3 billion per year between 2014 and 2016. This is over \$US 9 billion in investment in the next three years with the emphasis on the upstream.

There are currently 28 active Production Sharing Contracts (PSC's) in Trinidad and Tobago dating back as far as 1974. These contracts are administered by the MEEA Contracts Management Division with

inputs from several other Divisions. Of these 28 active PSC's, 12 were signed in the last four years. In addition, in the last three years we have signed three exploration and production licenses. These 12 production sharing contracts and three licenses are valued at almost \$US 2 billion in investment in work programmes.

In 2013, the MEEA completed the first dedicated land based bid round in 14 years. Arising out of this, three blocks were awarded to 3 companies: Range Resources, Touchstone and Lease Operators Limited.

Another deep water bid round was launched in August 2013 and closed in March 2014. Our deepwater province has been opened up to exploration, and that is a historic development. A discovery of oil in the deepwater will only be realised as production by the early part of the next decade.

Some of the other major upstream projects in the period 2014 to 2016 include the BP Savonette drilling



“Our deepwater province has been opened up to exploration, and that is a historic development. A discovery of oil in the deepwater will only be realised as production by the early part of the next decade.”

**Senator the Honourable Kevin Ramnarine
Minister of Energy and Energy Affairs.**

project, which is now complete; and the BP Juniper project which is expected to commence in 2015 and will require the fabrication of a new platform. The capital expenditure for this is estimated at \$US 2.1 billion and will make available 1.1 trillion cubic feet of natural gas. This will move BPTT from a two rig operation to a three rig operation. At present, BG and Chevron are undertaking the development of the Starfish field with first gas expected in October 2014 at a cost of \$US 550 million. Other developments include Petrotrin’s South West Soldado project and the EOG Resources Oilbird project.

Further evidence of the positive investment climate is evident by the fact that in the last two years we have had five new discoveries of natural gas or oil. These are:

- Bayfield’s (now Trinity) EG 8 discovery in Galeota,
- Petrotrin’s Jubilee discovery in Trinmar’s Cluster Six,
- BP’s discovery of one trillion cubic feet of natural gas in Savonette 4 well,

- Trinity’s TGAL 1 discover in Galeota,
- Repsol’s Teak Bravo North discovery in its Teak Samaan and Poui acreage.

This means that the upstream component of the national energy sector has been “re-invented” and is poised to continue to be the mainstay of the economy into the foreseeable future.

In the downstream sector, the MEEA and State owned National Energy continue to pursue new projects that are in different stages of maturity. The development of the Mitsubishi-Massy Methanol to Di-methyl ether project is now in an advanced stage. The project represents a \$US 850 million investment. It is made all the more relevant since 2014 is Japan – Caricom friendship year.

As we move forward into the future we will continue to ensure that Trinidad and Tobago remains the most attractive destination for energy related investment.

RESPONSIBLY ENERGISING A GROWING WORLD

Over 2,000 key influencers and senior decision-makers from the global oil and gas industry converged at the Crocus Expo International Center for the 21st World Petroleum Congress (WPC) in Moscow, Russia from June 15-19, 2014. Delegates including 30 Ministers and 400 CEOs from more than 80 countries attended the event. It was an excellent opportunity to address recent industry and geo-political developments and assess future markets and the global energy supply and demand.



Minister of Energy and Energy Affairs Kevin Ramnarine and Antonio Brufau Niubó (Repsol)



The Government of India's Minister of State for Petroleum and Natural Gas - Dharmendra Pradhan - receives a token from the Trinidad and Tobago Minister of Energy and Energy Affairs Kevin Ramnarine.



BP plc Executives with the visiting contingent from Trinidad and Tobago.



Trinidad and Tobago Minister of Energy and Energy Affairs Kevin Ramnarine presents a token to REPSOL CEO Mr. Antonio Brufau Niubó.

Commonly called “the Olympics of the oil and gas industry,” the theme of this year’s Congress was “Responsibly Energising a Growing World”. Event organisers noted that as the world population increases, oil and natural gas will remain the main energy resource in the foreseeable future. Hence, the main focus of the event was discussions on ways to develop cooperation between the consumers, producers and governments to develop safe, sustainable and socially responsible energy.

Trinidad and Tobago’s Minister of Energy and Energy Affairs Kevin Ramnarine and members of the Trinidad and Tobago delegation met with Mr. Bob Dudley the Chief Executive of BP plc. Discussions centred on the development of the Juniper field and future investments arising out of the OBC 3D seismic of BP’s acreage in the Columbus Basin.

The event also presented the opportunity to discuss possible future LNG collaborations with the Government of India’s Minister of State for Petroleum and Natural Gas, Dharmendra Pradhan.

DID YOU KNOW? Trinidad and Tobago is the sixth largest exporter of LNG in the world and has been exporting LNG since 1999

IDB NATURAL GAS IN THE CARIBBEAN CONFERENCE

June 8, 2014: The following is an excerpt from the speech delivered by the Minister of Energy and Energy Affairs (MEEA), Senator the Honourable Kevin Ramnarine at the IDB Natural Gas in the Caribbean, Hyatt Regency, Miami on June 5, 2014:

“Energy has been an enigma in development economics. On the one hand, for those countries that have abundant energy resources there is the question of Dutch Disease and Resource Curse which in itself stunts development. While on the other hand, those countries that do not have indigenous supplies of hydrocarbons are exposed to the reality of expensive imports and ‘energy poverty’. The latter is exacerbated in the case of small island developing economies.”



Caribbean countries are small islands that consume very insignificant amounts of petroleum products. As such, the geographic distribution of these islands negate the advantage of economies of scale and presents logistical challenges for the delivery of fuel. This is expensive and has become more expensive as the price of oil has increased in the last 10 years.

The dependence therefore on imports of fuel oil and or diesel for power generation negatively impacts on current accounts, balance of payments, and levels of debt in the region. The Caribbean is one of the most indebted regions in the world. If the “energy status quo” holds, the debt burden of the Caribbean will get

heavier. The high price of oil products leads to high energy costs in the region, which slows economic growth and hurts competitiveness. The high price of oil is not going to go away anytime soon. Debt is not necessarily a bad thing if that debt is contributing to economic growth and adding to production.

The current relationship between the Caribbean and energy is, therefore, not sustainable. It has set in train a vicious cycle – oil consumption – increasing debt levels – impact on growth and loss of competitiveness. In a nutshell, the status quo has to change and has to change fast.

WHAT IS THE WAY FORWARD AND WHAT IS THE FUTURE?

The way forward has to be through collaboration and collective action. The region has to diversify itself away from liquid fuels and towards natural gas and where economically feasible, renewable energy. This movement has to start as soon as possible (some say 2018 for first conversion) and should achieve by 2025 a significant conversion of the installed power generation capacity to natural gas or renewable. Forty four percent (44%) of fossil fuel consumption in the Caribbean region goes toward generating electricity while 29% goes to transport. All this of course requires investments and incentives. The success of these measures would be dependent on the level of investments, incentives and regulatory measures that are put in place. All this of course requires investment and investors need a return on their capital. Investors also need to feel comfortable in the political space in which they invest.

Given that Trinidad and Tobago now generates 100% of its electricity from natural gas, it is expected that the next evolution would be towards a lower carbon option. Improving energy efficiency is another measure that has to be implemented as a means of conserving energy.

At the international level, a number of green initiatives have been undertaken and include the following:

- A Memorandum of Understanding between the Government of Trinidad and Tobago and the United States Department of Energy for the establishment of a Caribbean Renewable Energy Center with the major focus being research and demonstration.



August 29th 2014: Senator the Honourable Kevin Ramnarine, Minister of Energy and Energy Affairs and Mr. Herman G. Acuna, Managing Senior VP – International, Ryder Scott Company at the results of the Ryder Scott 2013 Natural Gas Reserve Audit

ON RENEWABLE ENERGY:

Based on research conducted by the Engineering Institute of the University of the West Indies, wind energy offers the most practicable prospect for a grid integrated project. The prognosis is that the cost of onshore wind energy will continue to fall. It is against this backdrop that the Government is about to initiate a Wind Resource Assessment Programme (WRAP) across Trinidad and Tobago. Given that we in Trinidad and Tobago now generate 100% of our electricity from natural gas it is expected that our next evolution would be towards a lower carbon option. That for us means wind resource and wind is abundant on our country's east coast.

- Collaboration with United Nations Environment Programme (UNEP) on the development of a framework for the establishment of a Feed-in Tariff policy.
- A Loan Agreement with the Inter-American development Bank (IDB) with respect to the development of a Sustainable Energy Framework. A Technical Co-operation facility under this loan Agreement has been the engagement of the services of an international consultancy) to provide policy and technical support to the Ministry of Energy and Energy Affairs (MEEA) particularly in the areas of renewable energy and energy efficiency. For the full speech, please visit <http://www.energy.gov.tt/idb-natural-gas-in-the-caribbean>

IRENA

Senator the Honourable Kevin Ramnarine, the Minister of Energy and Energy Affairs has officially received the Instrument of Accession allowing Trinidad and Tobago to be a member of the International Renewable Energy Agency (IRENA).



“Trinidad and Tobago’s membership falls in line with the continued rollout of Renewable Energy activities such as the award-winning National Energy Communication Campaign, Commissioning of Solar Lighting in Community Centres and the Installation of Solar Lighting in Schools, National Energy Schools Caravan and Lightbulb Exchange Initiative as huge strides continue to be made in Sustainable Development and Energy Conservation by the Ministry Of Energy and Energy Affairs.” -

MEEA Permanent Secretary Mr. Selwyn Lashley and the Minister of Energy and Energy Affairs Kevin Ramnarine with the IRENA Instrument of Accession

**Minister of Energy and Energy Affairs
Kevin Ramnarine**

This is an important step in T&T’s move towards renewable energy, allowing us to be a contributor to a global effort in the field of Renewable Energy and Energy Efficiency. Trinidad and Tobago joins 130 other IRENA members including India, the United Kingdom, China, the United States of America and Germany. IRENA is mandated as the global hub for renewable energy co-operation and information exchange and supports countries in their transition to a sustainable energy future. It serves as a repository of policy, technology, resource and financial knowledge on renewable energy.

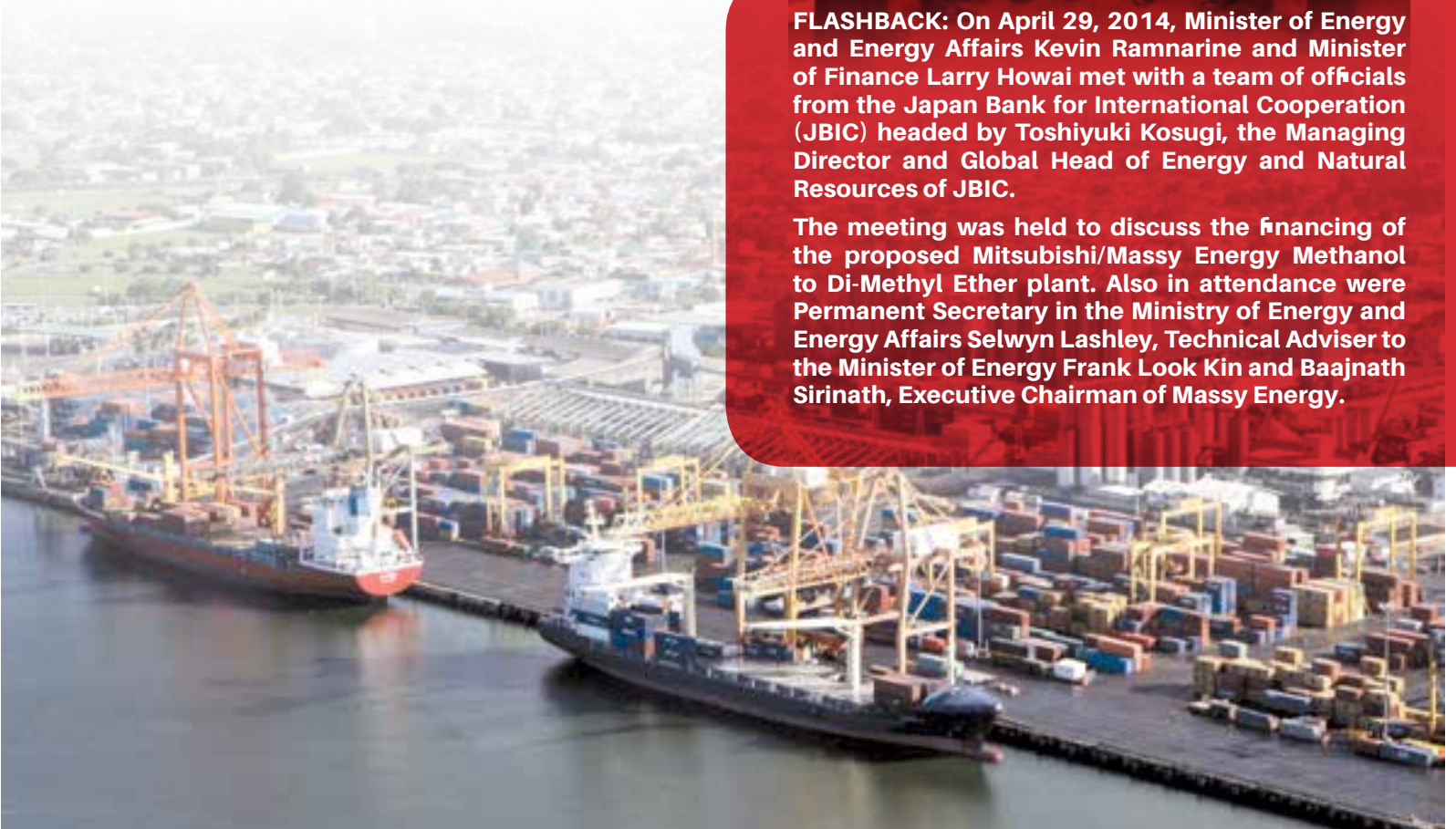


The Chairman of the Mitsubishi Corporation, Yorihiro Kojima and the Chairman of Mitsubishi Gas Chemicals, Kazuo Sakai paid a courtesy call on Energy Minister Kevin Ramnarine on July 28, 2014 at the Ministry of Energy and Energy Affairs. They were part of the delegation of leading Japanese businessmen that accompanied Prime Minister Shinzo Abe on his visit to Trinidad and Tobago.



FLASHBACK: On April 29, 2014, Minister of Energy and Energy Affairs Kevin Ramnarine and Minister of Finance Larry Howai met with a team of officials from the Japan Bank for International Cooperation (JBIC) headed by Toshiyuki Kosugi, the Managing Director and Global Head of Energy and Natural Resources of JBIC.

The meeting was held to discuss the financing of the proposed Mitsubishi/Massy Energy Methanol to Di-Methyl Ether plant. Also in attendance were Permanent Secretary in the Ministry of Energy and Energy Affairs Selwyn Lashley, Technical Adviser to the Minister of Energy Frank Look Kin and Baajnath Sirinath, Executive Chairman of Massy Energy.





RENEWABLE ENERGY UPDATE:

KEEPING OUR COMMITMENTS, CONTINUING OUR MOMENTUM



One of the strategic objectives of the Government and the Minister of Energy and Energy Affairs is to deepen awareness of the citizens of Trinidad and Tobago on energy and energy efficiency. This has been facilitated through the National Energy Communication Campaign 2013/2014. The award winning campaign continues to be guided by strategic imperatives for the sustainability and development of a more energy-conscious nation.

Since the launch of the campaign and its initiatives, thanks to innovative conceptualisation and strong execution, each of these imperatives has been advanced and the campaign continues to step forward in achieving the mission of educating and informing.

Senator the Honourable Kevin Ramnarine receives the EMA's Green Leaf Award 2014 from the chairman of the Environmental Management Agency - Mr. Allen Bachan.

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Ministry of Energy and Energy Affairs
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Over the years we have transformed the ways we use, conserve and think about energy and energy efficiency. The award-winning www.myenergytt.com website and the full multimedia promotional roll-out helped the National Energy Communication Campaign win the coveted Environmental Management Agency's (EMA) Green Leaf Award. On September 10, 2014, the Petroleum Economist hosted its 2014 Awards in London and the Ministry of Energy and Energy Affairs (MEEA) was awarded two of the fifteen awards. Winning "The Executive of the Year" Award was Senator, the Honourable

Kevin Ramnarine for his service to this country's energy sector. The second accolade conferred upon the Ministry was the "Cleaner Energy Initiative" Award, through its Light Bulb Exchange Initiative. These initiatives along with our outreach programs and active Social Media platforms are part of a new wave of communication taking shape in our National Energy Communication Campaign. We continued to focus our research on the areas that we believe have the greatest scientific and commercial potential. Check us out on Facebook at www.facebook.com/myenergytt.



CHECK IN WITH

CHINA

In March 2014, A Memorandum of Understanding (MOU) between the Ministry of Energy and Energy Affairs of the Republic of Trinidad and Tobago and the National Energy Administration of the People's Republic of China was signed. The Prime Minister, in her address on the occasion stated: "Energy co-operation between Trinidad and Tobago and China is strategic to both nations. As a world leader in the application of CNG for transport, China is increasing its use of cleaner natural gas and has increased its import of Liquefied Natural Gas. China also imports asphalt from Lake Asphalt of Trinidad and Tobago and has expressed increased interest in this product."

The MOU seeks to foster green energy initiatives in Trinidad and Tobago and the CARICOM region. It will also facilitate co-operation on scientific, technical and policy aspects of energy efficiency and clean energy technologies through the exchange of ideas and information.

Some of the main areas of cooperation in the MOU include:

1. Co-operation among state-owned and other entities engaged in the energy sector.
2. The establishment of joint ventures and partnerships in the field of oil and gas exploration and production and downstream energy projects;
3. The assessment of the potential for the supply of Liquefied Natural Gas (LNG) to the People's Republic of China;
4. Co-operation on the development and utilisation of new technologies related to natural gas, inclusive of Liquefied Natural Gas (LNG) for vehicles, Compressed Natural Gas (CNG) for vehicles and for natural gas cooling systems;
5. The facilitation of the exchange of expertise and research in order to promote the capacity-building in matters related to the field of renewable energy;
6. Co-operation on projects and activities related to renewable energy including solar energy and wind energy;



The Honourable Kamla Persad-Bissessar S.C., Prime Minister of the Republic of Trinidad and Tobago speaking at the Official opening ceremony for the Embassy of the Republic of Trinidad and Tobago, Beijing, China



Above and below: The Honourable Kamla Persad-Bissessar S.C., Prime Minister of the Republic of Trinidad and Tobago at a visit to the China Agricultural University.





CHINA AT A GLANCE:

In terms of total energy consumption, China is the second largest consumer of energy in the world behind the United States. China's import of Liquefied Natural Gas (LNG) has grown by an impressive 25 % annually over the last four years. Thomson Reuters Point Carbon has developed three forecasts for the growth of China LNG ranging from 52 to 110 bcm for the year 2018. All three lead to the conclusion that China will contribute significantly to tight supply/demand balances in the global LNG market over the years to come.

China is quickly becoming a big player in the LNG market, ranking above major traditional LNG importers such as Taiwan and Spain and reaching 24.7 billion cubic meters (bcm) in natural gas terms in 2013.

If this growth continues, China will be a top importer by 2020, with volumes close to the current import of Japan, by far the world's largest LNG consumer with an LNG import of 118 bcm in 2013.

FLASHBACK:

In 2013, Senator the Honourable Kevin Ramnarine, Minister of Energy and Energy Affairs met with the new Ambassador of the People's Republic of China to the Republic of Trinidad and Tobago, His Excellency Huang Xingyuan.



In terms of LNG trade, five (5) cargoes were sold to China in 2011 and four (4) cargoes were sold in 2012. Minister Ramnarine also noted the significant presence of major companies from China operating in the energy sector in Trinidad and Tobago.

These include:

- China investment Corporation (CIC) which acquired 10% of Train I of the Atlantic Facility in 2012;
- Chaoyang Petroleum (Trinidad), which is owned 50/50 by the Chinese National Offshore Oil Corporation (CNOOC) and Sinopec, holds a 25.5% and 25% interest, respectively in Blocks 3A and 2C. These two Blocks are operated by BHP Billiton;
- Sinopec Overseas Oil and Gas Antilles (Trinidad) Limited (SOOGL), a subsidiary of Sinopec, has a 65% interest in the East Brighton Sub Block A and 45.5% interest in East Brighton Sub Block B.



Left: The Honourable Kamla Persad-Bissessar S.C., Prime Minister of the Republic of Trinidad and Tobago and His Excellency Li Keqiang, Premier of the People's Republic of China.

Below: The Honourable Kamla Persad-Bissessar S.C., Prime Minister of the Republic of Trinidad and Tobago and His Excellency Chandradath Singh at the Official opening ceremony for the Embassy of the Republic of Trinidad and Tobago, Beijing, China.

MEEA UPDATES

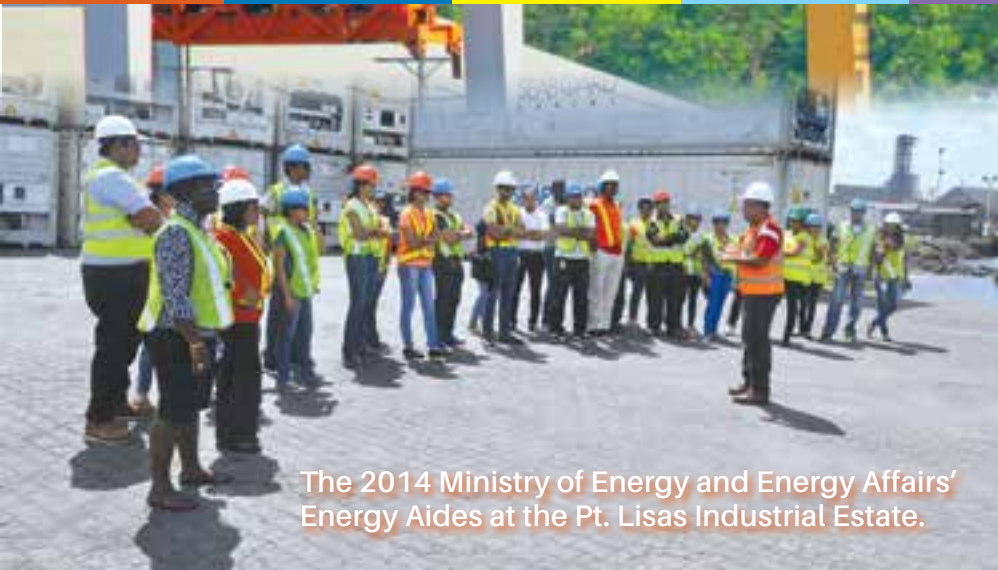
Energy Port and Fish Landing Facility Tour:

Energy Minister Kevin Ramnarine together with his Cabinet colleagues, Ministers Jairam Seemungal, Nizam Baksh and Winston Peters, at a tour of the new Energy Port at Galeota and the new Fish Landing Facility at Guayaguayare on August 15, 2014.



Haiti:

On July 28, 2014, Senator the Honourable Kevin Ramnarine, Minister of Energy and Energy Affairs, signed a Memorandum of Understanding with Haiti's Minister Wilson Laleau (Ministry of Trade). Present at the signing were the Honourable Kamla Persad-Bissessar SC, Prime Minister of the Republic of Trinidad & Tobago, and President Michel Martelly of the Republic of Haiti.

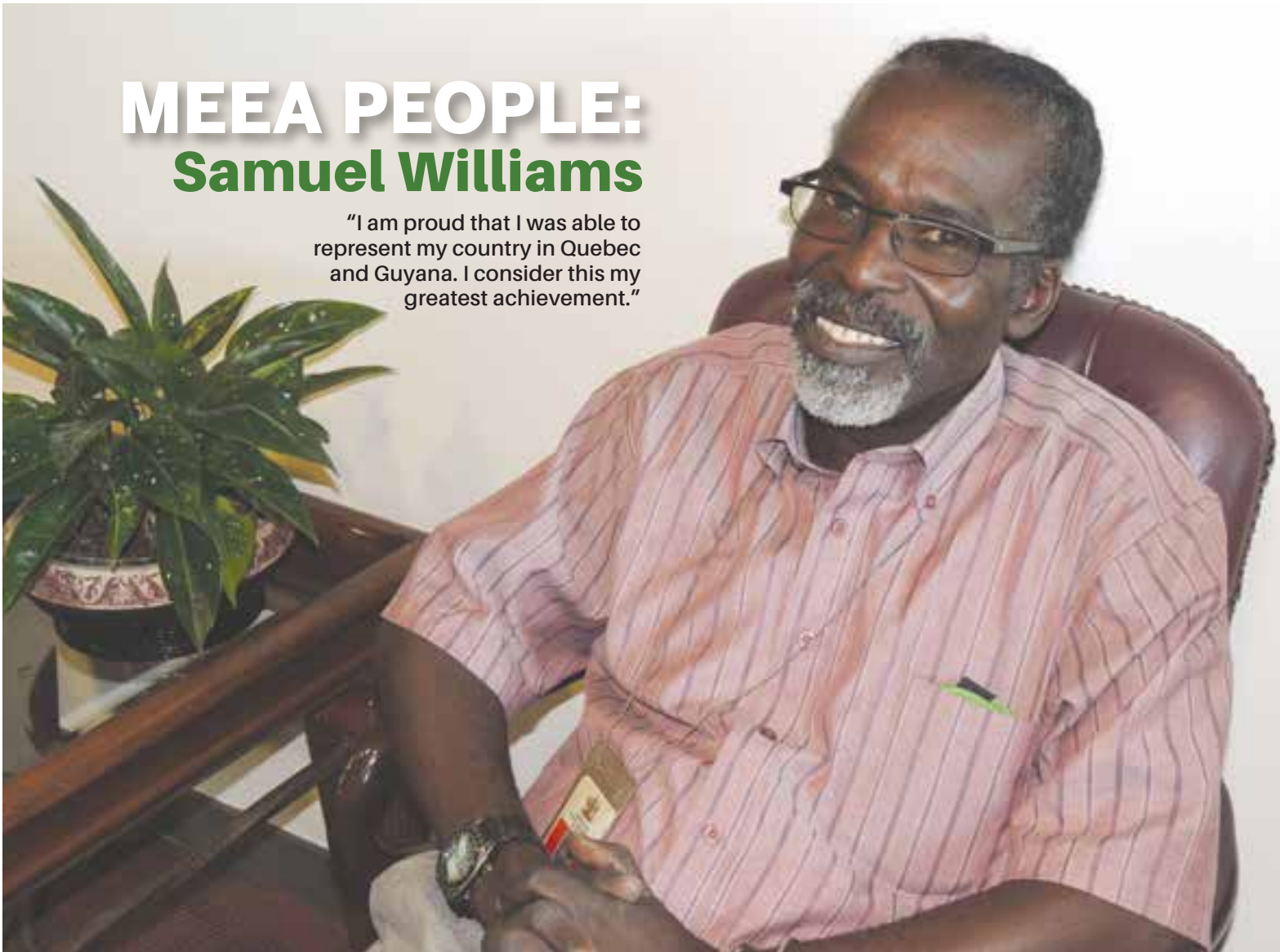


The 2014 Ministry of Energy and Energy Affairs' Energy Aides at the Pt. Lisas Industrial Estate.



MEEA PEOPLE: Samuel Williams

"I am proud that I was able to represent my country in Quebec and Guyana. I consider this my greatest achievement."



The Tower C elevator stops a few times between the ground floor and Level 25. As people enter the lift, the one thing they all seem to have in common is a greeting for Samuel Williams. He knows almost everyone, it seems. A new employee steps in and, without missing a beat, Williams introduces himself and flashes a brilliant smile. Though he is a familiar Ministry of Energy and Energy Affairs (MEEA) personality, few people know his career history trails back 41-years.

Born in St Vincent, Williams' family moved to Champs Fleurs, Trinidad when he was still a baby. At age 18, he ventured out into the working world with only his undeniably resilient attitude intact. After working his way through the fields for a few years, Williams ventured back to school and eventually attained his qualifications as a Surveyor II in 1975. Now 60-years-old and on the verge of retiring from the MEEA, the charismatic Foreman (Other Services) was enthusiastic to reminisce and share memories from his personal archive.



Above: Samuel Williams (right) during a land surveying job for the Ministry of Energy and Energy Industries.

He began his career deep in the country's dense forests and dusty quarries. "In those days things were different. It was more like a family. Many times in the afternoons - after work of course - it was normal for us to gather together to have a drink or organise something to eat. But we always made time to spend together," he shared.

In order to keep the "family" bond strong, Williams spearheaded the MEEA annual "Field Crew Lime". It was (and still is) one of the staple highlights of the organisation's social calendar as all MEEA employees, on and off-field, gather for this end-of-year outdoor party. Events like these brought him joy as he would regularly shift between being the DJ and chief photographer. The latter has resulted in an impressive photo album spanning his 41 years of MEEA social events and history including shots of 14 of the 16 Energy Ministers he worked with.

When asked to share what he thought was his proudest moment, he recalled the two occasions when he was invited by the leaders of the T&T Boy Scouts to represent his country in both Guyana in 1969 and then Montreal, Canada in 1970. It is this memory, and of his late wife Esther, that Williams holds most dear.

"I am proud that I was able to represent my country in Quebec and Guyana. I consider this my greatest achievement." With a wistful smile and tears glistening, he adds almost immediately, "Well, other than marrying my wife, Esther of course. She was the best thing that happened to me."



On-site at the Brechin Castle Clay Project in the late 1970s.



Surveying the Pitch Lake at La Brea in 1996.

Williams credits his energy level, enthusiasm and general optimism to living a healthy lifestyle - and lots of fresh air when he's on his estate. "If I was home now, I'd be swinging in my hammock, watching my crops and sorting out things for the market tomorrow... I go to the San Juan Market almost every day!" he exclaimed proudly. "I have everything! I planted mangoes, zaboca (avocado), plenty citrus trees and even lumber. It took me many years but I bought my land piece by piece. I wanted to have something for my family and have my own space."

MEEA ARCHIVES:

1919 UPSTREAM ACTIVITY MAP OF TRINIDAD AND TOBAGO

