## Most and Least Energy Generated from Gas

<table>
<thead>
<tr>
<th>Rank</th>
<th>Territory</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Qatar</td>
<td>16838</td>
</tr>
<tr>
<td>2</td>
<td>United Arab Emirates</td>
<td>13388</td>
</tr>
<tr>
<td>3</td>
<td>Bahrain</td>
<td>10397</td>
</tr>
<tr>
<td>4</td>
<td>Brunei Darussalam</td>
<td>8920</td>
</tr>
<tr>
<td>5</td>
<td>Luxembourg</td>
<td>6485</td>
</tr>
<tr>
<td>6</td>
<td>Singapore</td>
<td>4917</td>
</tr>
<tr>
<td>7</td>
<td>Trinidad &amp; Tobago</td>
<td>4679</td>
</tr>
<tr>
<td>8</td>
<td>Netherlands</td>
<td>3542</td>
</tr>
<tr>
<td>9</td>
<td>Kuwait</td>
<td>3239</td>
</tr>
<tr>
<td>10</td>
<td>Oman</td>
<td>3025</td>
</tr>
<tr>
<td>133</td>
<td>Poland</td>
<td>56.9</td>
</tr>
<tr>
<td>134</td>
<td>Nigeria</td>
<td>55.7</td>
</tr>
<tr>
<td>135</td>
<td>Serbia &amp; Montenegro</td>
<td>51.3</td>
</tr>
<tr>
<td>136</td>
<td>Norway</td>
<td>44.0</td>
</tr>
<tr>
<td>137</td>
<td>Taiwan</td>
<td>42.8</td>
</tr>
<tr>
<td>139</td>
<td>Peru</td>
<td>36.9</td>
</tr>
<tr>
<td>140</td>
<td>Ecuador</td>
<td>29.2</td>
</tr>
<tr>
<td>141</td>
<td>Israel</td>
<td>4.4</td>
</tr>
<tr>
<td>142</td>
<td>China</td>
<td>3.6</td>
</tr>
</tbody>
</table>

*kilowatt hours of electricity generated from gas, per person per year*

### Technical Notes
- The data are from the World Bank’s World Development Indicators.
- There was almost no electricity from gas recorded for 58 territories.
- Taiwan and Mongolia had missing data so the regional average for Eastern Asia was used.
- See website for further information.
What I will talk about

Overview and natural gas in the global context
History, overview, and importance of natural gas industry to Trinidad and Tobago
Natural Gas Value Chain

Fundamentals of purchasing and pricing of natural gas
Initial Takeaways

- Trinidad and Tobago remains heavily dependent on hydrocarbon (including gas and gas-based industries)
- We’ve done a lot with the resources we’ve had due to deliberate policy decisions
- We have created a lot of value based on our natural gas reserves and gas use strategies
What I will talk about

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Fundamentals of purchasing and pricing of natural gas
Overview

What is it?

- Colourless, shapeless & odourless gas
- Clean burning (emits lower levels of potentially harmful by-products into the air)
- Combustible mixture of hydrocarbon gases
- “Rotten egg” smell that we often associate with natural gas is an odorant that is added to the gas before it is delivered to the end-user.
- Natural gas is a fossil fuel. Like oil and coal, this means that it is, essentially, the remains of plants and animals and microorganisms that lived millions and millions of years ago.
## Typical composition of natural gas

<table>
<thead>
<tr>
<th>Component</th>
<th>Formula</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methane</td>
<td>CH₄</td>
<td>70-90%</td>
</tr>
<tr>
<td>Ethane</td>
<td>C₂H₆</td>
<td></td>
</tr>
<tr>
<td>Propane</td>
<td>C₃H₈</td>
<td></td>
</tr>
<tr>
<td>Butane</td>
<td>C₄H₁₀</td>
<td>0-20%</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>CO₂</td>
<td>0-8%</td>
</tr>
<tr>
<td>Oxygen</td>
<td>O₂</td>
<td>0-0.2%</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>N₂</td>
<td>0-5%</td>
</tr>
<tr>
<td>Hydrogen sulphide</td>
<td>H₂S</td>
<td>0-5%</td>
</tr>
<tr>
<td>Rare gases</td>
<td>A, He, Ne, Xe</td>
<td>trace</td>
</tr>
</tbody>
</table>
Types of recoverable gas

- Conventional non-associated gas
- Coalbed methane
- Conventional associated gas
- Tight sand gas
- Gas-rich shale

Shale gas refers to natural gas that is trapped within shale formations. Shales are fine-grained sedimentary rocks that can be rich sources of petroleum and natural gas.
Hydraulic Fracturing

Hydraulic fracturing, or “fracking,” involves the injection of more than a million gallons of water, sand and chemicals at high pressure down and across into horizontally drilled wells as far as 10,000 feet below the surface. The pressurized mixture causes the rock layer, in this case the Marcellus Shale, to crack. These fissures are held open by the sand particles so that natural gas from the shale can flow up the well.
Where is shale?

Legend:
- Assessed basins with resource estimate
- Assessed basins without resource estimate

Source: United States basins from U.S. Energy Information Administration and United States Geological Survey; other basins from ARI based on data from various published studies.
Recoverable natural-gas reserves
2011, trn cubic metres

Russia
United States
China
Iran
Saudi Arabia
Australia
Qatar
Argentina
Mexico
Canada
Venezuela
Indonesia
Norway
Nigeria
Algeria

World
Trinidad and Tobago
0.4 tr. cubic metres
0.2% of total

Source: IEA
T&T Resources in Context

Trinidad and Tobago: 0.2% global proven gas reserves
0.65% of global consumption
1.2% global gas production
5.7% global LNG trade

<table>
<thead>
<tr>
<th>Reserves @ end 2012</th>
<th>Gas (tcf)</th>
<th>Oil (‘000 mn. Bbls.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trinidad and Tobago</td>
<td>13.3</td>
<td>0.8</td>
</tr>
<tr>
<td>South and Central America</td>
<td>268.3</td>
<td>328.4</td>
</tr>
<tr>
<td>United States</td>
<td>300.0</td>
<td>35.0</td>
</tr>
<tr>
<td>World</td>
<td>6614.1</td>
<td>1,668.9</td>
</tr>
</tbody>
</table>

Source: BP Statistical Review of World Energy 2013
Reserves to production ratios

2012 by region

History

North America
S. & Cent. America
Europe & Eurasia
Middle East
Africa
Middle East
Asia Pacific
World

World proved natural gas reserves at end-2012 stood at 197.3 trillion cubic metres, sufficient to meet 55.7 years of global production. Proved reserves declined by 0.3% relative to end-2011 data, the first annual decline in our data set. Revisions were made to the earlier published estimates for proved reserves in the Former Soviet Union (FSU) countries, which lowered the FSU R/P ratio to 71 years, from 96.3 years at end-2011 in last year’s edition.

Source: BP Statistical Review of World Energy 2013
Distribution of gas reserves

Source: BP Statistical Review of World Energy 2013
Gas production and consumption

Production by region

Consumption by region

World natural gas production increased by 1.9% in 2012. The US once again recorded the largest national increase. Production grew in every region except Europe & Eurasia, where declines in Russia and the UK offset a gain in Norway. Natural gas consumption increased by a below-average 2.2%. As was the case with production, the US recorded the largest national increase and consumption rose in every region except Europe & Eurasia; EU consumption fell to the lowest level since 2000.

Source: BP Statistical Review of World Energy 2013
Natural Gas Consumption 2012 (bcm)

- UAE
- Italy
- Germany
- UK
- Mexico
- Canada
- Saudi Arabia
- Japan
- China
- Iran
- Russian Federation
- USA

World: 3,314.4 bcm
Trinidad and Tobago: 21.7 bcm

TT = 0.654% of global consumption

Source: BP Statistical Review of World Energy 2013
Natural Gas Prices

The graph illustrates the historical price of natural gas from January 2011 to June 2013, showing the price in dollars per million Btu ($/MMBtu). The graph includes data from various locations: TTF Spot (Netherlands), Henry Hub Spot, UK NBP Spot (Britain), and Algonquin Spot. The data is represented over a 5-year period, highlighting fluctuations and trends in gas prices.
What I will talk about

Natural gas in the global context

History, overview, and importance of natural gas industry to Trinidad and Tobago

Natural Gas Value Chain

Fundamentals of purchasing and pricing of natural gas
Walter Darwent (Right) was an Englishman from Plymouth who had served as a captain in the Union Army in the American Civil War. In 1865, he drilled the first really successful oil well at Aripero in south Trinidad. His company, Paria Petroleum Company, did well for a time, with wells at Aripero, San Fernando and La Brea, and it exported small amounts of oil.

Darwent faced many difficulties, and following his death from yellow fever in 1868, nothing much happened to further develop Trinidad's oil industry for another 30 years.

It was not until after John Lee Lum (Left) discovered oil on his land, that events moved forward.

Born in 1842 near Canton (now Guangdong) in south China, John Lee Lum arrived in Trinidad in 1880. He became a successful businessman and acquired a great deal of land. Some of it was in Guayaguayare in south-east Trinidad.

Around 1900, Lee Lum took a sample of oil from his land to Randolph Rust, and together the two men formed a company to prospect the area. Lee Lum continued to finance Rust's early drilling operations in Guayaguayare.

Randolph Rust (Right), an Englishman who lived most of his adult life in Trinidad, secured additional money from Canada, and in 1902 he struck oil in Guayaguayare.

Though neither Rust nor Lee Lum made significant amounts of money from oil, Rust never gave up; making several trips to London to try to raise money for further oil exploration.

It was mainly because of, and through all Rusts' efforts, that the oil industry in Trinidad really took off in 1913; when two big companies were formed and large-scale production began.

Rusts first successful well at Guayaguayare of 1902, is still maintained by Petrotrin, the Trinidad and Tobago national oil company, as an historic site and monument to the pioneers of the local oil industry.

An Introduction to the History of TRINIDAD and TOBAGO; Pg 84
© Bridget Brereton (1996)
ISBN 0 435 984 748
Heinemann Educational Publishers of Reed Educational & Professional Publishing Ltd
[ Abridged - eEd - tajo ]
Historical Highlights

1857: First well drilled for oil in Trinidad - 61 meters deep (Merrimac Company - vicinity of the Pitch Lake)

1866: First successful oil well - Walter Darwent (Aripero)

1886: Electrification

1901: Rust and Lee Lum drilled and tested well which produced 455 liters of oil in 2 hours (Guaya)

1904: Mines Department instituted as a branch of the Public Works (production of manjak)

1908: Commercial oil production begins in Trinidad (Guapo)
Historical Highlights

1953: Natural gas used for power generation in Penal

1954: Natural gas used in cement manufacturing

1959: Gas first used by Federation Chemicals (WR Grace) as feedstock for ammonia.

1963: POS Power plant begin operations with gas fired turbines.

1968: Amoco discovers large reserves of natural gas off East Coast

1975: “Best Uses of Natural Gas Resources” conference held
Historical Highlights

1975- Startup of Point Lisas; establishment of NGC; formation of Coordinating Task Force (CTF)

1976: Construction of 24” cross country pipeline

1977: Start up TRINGEN 1.

1979: Formation of NEC to assume duties of CTF.

1980: ISCOTT established.

1981: Offshore platforms start up; FERTRIN.
Historical Highlights

1982: Construction of 30-in line

1983: NGC – Amoco Gas Supply Contract – Cassia Field

1984: TTMC and TTUC

1988: Tringen 2; NGC invests in Trintomar

1990: NGC to Point Lisas

1991: PPGPL start-up; New gas supply Contract with Amoco.

1992: NGC/NEC merger
Historical Highlights

1991: Commencement of Production at Trintomar.

1992-94: State Divestments: Fertrin; TTMC; Urea; T&TEC

1992: New pricing regime introduced: LNG discussions commence;

1993: New supply contracts: BG /Texaco and EOG (then Enron)

1993-1998: Several new players: CMC; PCS Nitrogen; Farmland MissChem; Ispat; Nucor; Cliffs

1997: New Amoco supply contract; Direct sales to ALNG

1999: ALNG First shipment

2000: Agreement reached on expansion of ANLG Train 2 and 3.
Historical Highlights

2000: BP takeover of Amoco

2000-2004: Further downstream expansion

   ALNG Train 2 and 3

   Ammonia: Caribbean Nitrogen 1 and 2

   Methanol: TTMC 4; M5000; Atlas and Titan (Methanex)

2005: Completion of 56 inch pipeline

2006: ALNG Train 4

2008: Union Industrial Estate (new gas supply agreements)

2010: AUM complex - first major secondary downstream plant

2011: Completion of NEO, UIE and Tobago pipelines

2013: NGC buys out Conoco’s share of PPGPL
Trinidad and Tobago – an enclave?

<table>
<thead>
<tr>
<th></th>
<th>Export commodity concentration ratios, average 1900-1913</th>
<th>Export commodity concentration ratios, average 10 years after independence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First product %</td>
<td>Second Product %</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>Bananas</td>
<td>50</td>
</tr>
</tbody>
</table>

## Dual sector in TT & economic growth

### Petroleum sector
- Most of the investment takes place in this sector
- Growth and investment dependent on exogenous factors
  - Growth opportunities depend on international prices for oil and gas, proven reserves
  - Growth possibilities in services sector related to growth in petroleum sector and petrochemical industries

### Non-Petroleum sector
- Growth and investment dependent on petroleum sector
- Growth in non-oil sector dependent on services
  - Lack of autonomy (growth in non-oil sector highly dependent on oil sector)
  - Relatively underdeveloped non-oil tradeables sector
Previous economic diversification strategies


Import substitution industrialization (ISI) is a trade and economic policy that advocates replacing foreign imports with domestic production (1970s-1990s)

Resource-based industrialization/ Export-oriented industrialization (1990s - ?) trade and economic policy aiming to speed up the industrialization process of a country by exporting goods for which the nation has a comparative advantage. Export-led growth implies opening domestic markets to foreign competition in exchange for market access in other countries.
Reorienting the economy

Point Lisas is the catalyst for the fundamental reorientation in the national economy.
"Blessed as we are with hydrocarbon resources; we had a choice to make. There have been attempts to persuade us that the simplest and easiest thing to do would be to sit back, export our oil, export our gas, do nothing else and just receive the revenues derived for such exports and, as it were, lead a life of luxury—at least for some limited period.

-Eric Williams, Sod Turning Ceremony, ISCOTT (1977)
This, the Government has completely rejected, for it amounts to putting the entire nation on the dole. Instead, we have taken what may be the more difficult road and that is—accepting the challenge of entering the world of steel, aluminium, methanol, fertiliser, petrochemicals, in spite of our smallness and in spite of our existing level of technology."

-Eric Williams, Sod Turning Ceremony, ISCOTT (1977)
Natural Gas Reserves / RTP Ratio

Graph showing the relationship between reserves and RTP ratio over time.
Natural Gas Prices
Energy Sector Impact on Economy

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy as % of GDP</td>
<td>45.9</td>
<td>47.0</td>
<td>45.0</td>
<td>50.8</td>
<td>35.9</td>
<td>35.7</td>
<td>45.3</td>
<td>43.7</td>
</tr>
<tr>
<td>Energy revenue as % of total revenue</td>
<td>52.7</td>
<td>61.9</td>
<td>55.5</td>
<td>57.1</td>
<td>49.5</td>
<td>51.8</td>
<td>57.5</td>
<td>54.3</td>
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<tr>
<td>Energy exports as % of total exports</td>
<td>88.9</td>
<td>91.1</td>
<td>87.0</td>
<td>88.2</td>
<td>85.4</td>
<td>82.8</td>
<td>82.3</td>
<td>81.4</td>
</tr>
<tr>
<td>Energy employment as % of total employment</td>
<td>3.4</td>
<td>3.5</td>
<td>3.7</td>
<td>3.4</td>
<td>3.3</td>
<td>3.2</td>
<td>3.0</td>
<td>3.5</td>
</tr>
</tbody>
</table>

- Energy sector not a major direct contributor to long term employment due to capital intensive nature of sector
- Activity in energy sector creates indirect employment in other sectors such as transportation, storage & communications

Source: CBTT 2012 Annual Economic Survey
Energy Based Plants 2012

1. Natural Gas Liquids Processing Facility
2. LNG Trains
3. 10 Ammonia Plants
4. 1 AUM-(Ammonia, Urea Melamine)
5. 7 Methanol Plants
6. 1 Urea Plant
7. 4 DRI Modules
8. 4 Power Generation Plants
9. 1 Petroleum Refinery
10. 1 Cement Manufacturing Plant
Over 120 Light Industrial and Commercial Customers
Ammonia Industry

10 Plants

#1 in Export from a Single Site
Nitrogen Production

- CO₂
- Ammonia
- Natural gas/coal/fuel oil
- Urea
- Nitric acid
- Sulfuric acid
- Mop
- Uan
- Ammonium nitrates
- Ammonium sulfate
- Potassium nitrate
Fertilizer Companies

• Yara Trinidad Limited (formerly Hydro Agri)
• Trinidad Nitrogen (Tringen)
• PCS Nitrogen (formerly Fertrin)
• Point Lisas Nitrogen (formerly Farmland MissChem)
• Caribbean Nitrogen Company
• MHTL AUM (Ammonia Urea Melamine)
Ammonia Trade Volumes 2012

- Trinidad & Tobago
- Russia
- Ukraine
- Saudi Arabia
- Indonesia
- Other

Source: Fertecon Ammonia Outlook
Ammonia prices 2009 - 2013

$/tonne

©FERTECON 4 July 2013
Methanol

5 Plants

#1 in Export from a Single Site
Methanol value chain

- **Feedstocks**: Natural Gas, Coal
- **Product**: Methanol
- **Derivatives**:
  - Formaldehyde
  - Acetic Acid
  - MMA
  - MTBE
  - DME
  - Gasoline
  - MTO/MTP
  - Biodiesel
- **Products / End Uses**:
  - UF/PF Resins
  - Polyacetal
  - MDI
  - VAM
  - Acetate Esters
  - Acetic Anhydride
  - PTA
  - Gasoline Additive
  - Olefins
  - Fuels
- **Sectors**:
  - Construction
  - Automotive
  - Electronics
  - Appliances
  - Paints/Coatings
  - Insulation
  - Pharma
  - Packaging (PET Bottles)
  - Solvents
Traditional Uses (Mature Markets)

- **Formaldehyde**
  - Pharmaceuticals, Wood Industry, Automotive

- **Acetic Acid**
  - Fleece, Adhesives, Paints

- **Dimethyl Terephthalate**
  - Recyclable plastic bottles

- **Methyl Chloride**
  - Silicones

Energy & MTO (High Growth Potential Markets)

- **DME**
  - (dimethyl-ether)

- **Fuel Blending**

- **MTO**
  - Methanol-To-Olefins

Source: Methanex
Methanol Companies

Methanol Holdings Trinidad Limited
  • Caribbean Methanol Company
  • Trinidad and Tobago Methanol Company.
  • TTMC11
  • CMC 11
  • M5000

Methanex Limited
  • Titan Methanol Company
  • Atlas Methanol Company
Top 10 methanol exporters 2009

Source: CMAI World Methanol Analysis 2010
Methanol Demand

Source: IHS World Methanol Analysis 2013
Methanol Prices

Methanol Price Trends
United States Gulf Coast

Source: IHS
Light Industrial and Commercial Sector

- Light Manufacturing: 25%
- Chemicals: 5%
- CNG: 12%
- Commercial: 13%
- Construction: 11%
- Food Processing: 34%
Intermediate Petrochemical Opportunities

Methanol Based
- Formaldehyde Resins
- UF Resins
- Acetic Acid
- Vinyl Acetate Monomer

Ammonia Based
- Urea
- Melamine
- Nitric Acid
- Ammonium Nitrate
- UAN
Power Generation

T&T began using natural gas in power generation in 1963

**T&TEC** - Responsible for the transmission and distribution of power in T&T. Segmented in 1994

**Independent Power Producers**

- **Powergen** – plants at Penal, Point Lisas, Port of Spain, Cove Industrial Estate (1408 MW)
- **Trinity Power Ltd, Pt Lisas** - 1 plant (225 MW)
- **Trinidad Generation Unlimited, Union Estate** – (720 MW)
### Impact of LNG on the economy

**Gross Domestic Product**
- Slight increase in Petroleum
- Significant increase in Manufacturing
- Slight improvement in Finance, Insurance and Real Estate.

**Balance of Payments**
- Temporary worsening of Trade account - Imports (via increased imports of machinery in the construction phase)
- Improvement in Terms of Trade - Exports (via LNG exports, liquids exports)

**Employment**
- In the construction stage, net increase in temporary employment of 3,000 at peak (Civil engineers, mechanical engineers, manual labourers, etc.)
- In operational stage, increase in permanent employment of 140 people, of which 120 from TT. (Plant operators, shift engineers, administrative managers, maintenance personnel)

**Foreign exchange generation**
- Significant gross earnings (exports of LNG)
- Conversions of foreign exchange by Atlantic LNG to Trinidad and Tobago dollars take the form of payments to local subcontractors, local wages and salaries, land and building taxes, etc.

**Public Finance**
- Increased tax revenues from upstream sales of gas (pretax profit on BP Amoco gas sales taxed at 55 % (petroleum profits tax (PPT) and Unemployment Levy (UL))
- Taxation of condensate from ALNG gas (supplemental petroleum tax (SPT), PPT, UL)
- Limited royalties on gas sold to ALNG by BP Amoco.
- Taxation of increased NGC revenue (dividends from 10 per cent shareholding).
- Personal income taxation from employee payroll
- VAT on private consumption of local capital
- Taxation on personal services

LNG Project Milestones

1992  Atlantic LNG Project initiated with MOU between Cabot and NGC
1993  Feasibility study – single train LNG plant
1995  Formation of Atlantic LNG Company of Trinidad and Tobago Limited
1996  Sod turning ceremony for ALNG project at Point Fortin site
1999  First shipment of LNG from Atlantic LNG Train 1 to Boston, USA.
2002  Start up of Train 2
2003  Start up of Train 3
2005  Start up of Train 4 – Q4 2005
Atlantic LNG Train 1

- **Plant Owners**
  - Mix of gas producers, LNG buyers and state owned company:
    - BP (Barbados) Holding SRL 34%
    - BG Atlantic 1 Holdings Limited 26%
    - Shell 20%
    - Summer Soca LNG Liquefaction S.A 10%
    - NGC Trinidad and Tobago LNG Limited 10%

- **Gas Supply**
  - bpTT - 100%

- Liquefaction capacity - 425 MMcf/d
Atlantic LNG Train 2 & 3

- **Plant Owners**
  - bp 42.5%,
  - BG 32.5%,
  - Shell 25%,

- **Gas Supply**
  - bp - 62.5% gas supply
  - BG - 37.5% gas supply

- **Liquefaction capacity** - 450 MMcf/d

- **LNG Sales**
  - bp - 62.5%, Spain
  - BG - 37.5%, USA – Elba Island
Atlantic LNG Train 4

- Plant Owners / Gas Supply
  - bp: 37.78%
  - BG: 28.89%
  - Shell: 22.22%
  - NGC: 11.11%

- Liquefaction capacity - 800 MMcfd
LNG Exports by Country 2012

Source: BP Statistical Review of World Energy 2013
LNG exports by region

TT LNG Exports by region (bcm)

- North America
- South & Central America
- Europe/Eurasia
- Middle East
- Asia/Pacific


Unit: Billion cubic metres
Natural gas imports

billion cubic feet (Bcf)

From 2003 To 2012

Diversification – making the basket bigger
“This is so simple it sounds stupid, but it is amazing how few oil people really understand that you only find oil if you drill wells. You may think you’re finding it when you’re drawing maps and studying logs, but you have to drill.”

“The Hunters” by John Masters

• attract investors to source “new gas” which can only be found in deep waters
• give them the assurance that there’s a market for any gas discovered
Energy policy imperatives

Oil
- Legislative reform
- Increase E&P: deep water, heavy oil tar sands
- Increase oil production: EOR, heavy oil, LOFO.
- Rationalization in refining sector

Gas
- Aggressive exploration to improve RTP ratio
- Market growth through value added downstream
- Diversification
- External thrust
- Reform of merchant model
Increase oil and gas activity

- Signing of new production sharing contracts
- Deepwater drilling initiatives
- Reprocessing of existing seismic data
- New bid rounds for oil and gas exploration
- Onshore exploration
- Redevelopment / refurbishing of TRINMAR
Energy Policy Imperatives

Power Gen.
- Efficiency, reliability, accessibility
- Legislative reform to support renewable energy

Alt. Energy
- Legislative incentives to promote use (both demand & supply side)
- Expansion of CNG as alternative vehicle fuel.

Fiscal Policy reform
- Fiscal incentives for renewable energy
- Continuous reform of gas legislation PSC framework to promote continuous exploration and development.

Energy Services
- Local content policy framework established in 2004
- Local content legislation to support services sector growth; leveraging of export potential
Initiatives: Sustainability

**Upstream**
- Ensure acreage is offered at regular intervals to ensure reserve replacement

**Downstream**
- Development of new projects and expansion of infrastructure to support industry growth

**People**
- Review and improvement of mechanisms to ensure increasing local value added
• Deepwater Bid Round opened in July 2013, Onshore Bid Round

• Greater activity in sector

• Focus on land and shallow water: Gulf of Paria; heavy oil deposits
Downstream imperatives

- Focus on adding value to existing petrochemical base
- Bidding process for targeted projects
- Emphasis on future linkages to local manufacturing
Downstream gas allocation criteria

Cabinet Approved Allocation Criteria

- Degree of value added
- Environmental impact
- Capital expenditure
- Degree of local content
- Extent of variation with gas price
- Early construction Plan
- Energy efficiency
- Local content in construction and operations
- Variation in terms and conditions for power
- Variation on estate and pier rates
- Additional benefits [CSR]
Global Strategy?

- Leveraging strengths in emerging markets
- Investment possibilities across the natural gas value chain
  - Upstream
  - Midstream - pipeline and processing
  - Downstream - Petrochemicals, other
  - Power generation
Global Initiatives

• Caribbean gas possibilities
  – ECGPL to Barbados, Suriname

• African gas possibilities
  – Tanzania, Uganda, Kenya, Mozambique, Ghana, Nigeria
Two strategies employed in last decade

2004-2010
“Vision 2020”

2011-present
“Innovation for Lasting Prosperity”
Success of this strategy based on the execution of a coherent strategy.

Time will tell.
What I will talk about

Natural gas in the global context
History, overview, and importance of natural gas industry to Trinidad and Tobago

**Natural Gas Value Chain**
Fundamentals of purchasing and pricing of natural gas
LNG Value Chain

Gas Production → Liquefaction → Shipping → Regas Terminal → Pipeline Distribution
Final takeaways

- Trinidad and Tobago still remains heavily dependent on gas and gas-based industries

- We’re doing a lot with the resources we have and are creating value with our natural gas reserves and gas use strategies

- what got us to where we currently are won’t necessarily get us where we need to be in the future

- Proper strategies, policies and execution are needed to get us to the next level – a multinational gas sector that sustainably extracts reserves to the mutual benefit of the investors and Trinidad and Tobago.
“... I urge you to accept that role, that challenge with the same determination, the same sense of discipline, with the same attitude towards productive, hard work that your parents and indeed your grandparents had...”
Thank you!
If I can’t answer you now, send me an email and I’ll try to get the answer for you

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