

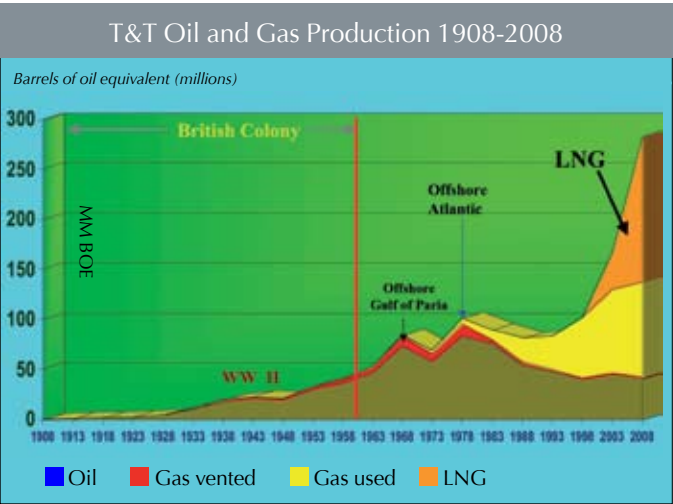
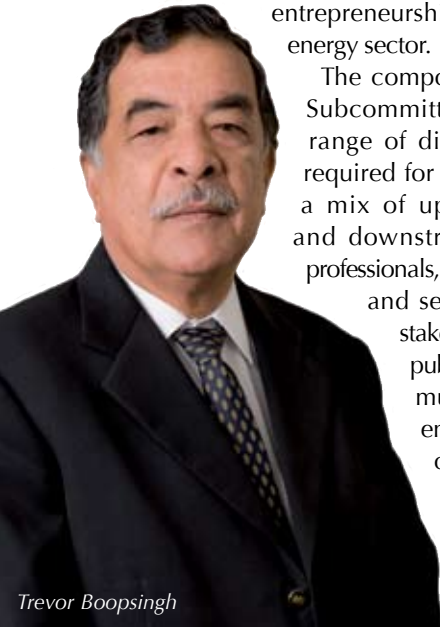
Energy Vision 2020 – revisited

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One hundred years after the first commercial oil well was completed, Trinidad and Tobago has, over the past 25 years, succeeded in creating a world-class, globally competitive natural gas industry. In 2003-04 Energy Vision 2020 proposed that Trinidad and Tobago, in seeking to develop an overall Vision for development, should leverage the strengths of that existing world-class energy sector to efficiently diversify and strengthen the relevant non-energy sectors which either source, supply or are intrinsic to this stellar sector of the economy. In the context of the multi-sectoral planning exercise which resulted in the national 2020 Vision for Trinidad and Tobago, the Energy Subcommittee thus presented a vision that focused on the primacy of the energy sector to the sustainability and development of the local economy on its path to the year 2020. More specifically, the Subcommittee saw the industry as progressing to become “sustainable, operating transparently with the full support of the government through effective governance and the people of Trinidad and Tobago...including locally-owned and managed energy-based companies that participate throughout the complete value chain in projects and operations that are both local and global in scope and scale.”

The vision also saw Trinidad and Tobago’s energy sector operating to bring excellence to the Caribbean region through energy production, supply and use. In addition to the growth of the industry itself, the vision articulated that the example set by the success of the sector would drive the remainder of the economy to produce the necessary pillars, such as world-class educational institutions, energy services and a vibrant capital market which would support and foster innovation and entrepreneurship in and beyond the energy sector.

The composition of the Energy Subcommittee spanned the full range of disciplines which are required for energy activities, i.e. a mix of upstream, midstream and downstream managers and professionals, including the electricity and service industries. The stakeholders were from the public and private sectors, multinational and state enterprises, professional organisations and included trade union representatives. The original Energy 2020 vision was, therefore, a national



consensus created by knowledgeable personnel familiar with the energy sector rather than that of the government’s or an institutional vision. The Draft Energy Plan presented was accepted by the Government of Trinidad and Tobago and incorporated as part of the overall National Vision 2020 plan.

Energy and the Economy – five years later

While the Energy Vision expected significant expansion in gas production due to the coming on stream of Atlantic LNG (ALNG) Trains 2 and 3 in 2003 and in 2004 respectively, as well as additional gas-based industrial development, the assumptions used for world energy demand and for future oil and gas prices were based on forecasts made in 2002 by the United States (US) Department of Energy and the International Energy Agency, among others. Thus, while the anticipated growth in Gross Domestic Product due to LNG expansion and consequent gas production increases, was both predictable and anticipated, the actual level of price increases which followed from the year 2004 for both oil and natural gas to the present, was very much larger than projected by the Subcommittee. In addition, with new crude oil production from BHP Billiton coming on stream in 2005, revenue estimated from oil and gas production increased to levels far in excess of those anticipated in 2004. Thus, the critical immediate variable which impacted on the country over the past five years was the much larger annual financial surpluses available to the government, as the economic rent from the production of hydrocarbons grew to unprecedented levels.

The graph above shows the 100-year history of oil and gas production in Trinidad and Tobago and the dramatic impact that gas production for LNG has had on oil and gas production

over the past ten years. Table 1, below, shows the correlation between increases in Natural Gas production and increases in GDP. The first instance was in 1999/2000 as ALNG Train 1 was fully brought on stream. (Natural gas prices also rose in 2000 to unprecedented highs as the California electricity crisis made its impact on regional gas markets). A step-change in GDP then occurred in 2002, 2003, and 2004, as ALNG Trains 2 and 3 were made fully operational. By 2006 a fourth train of LNG continued its GDP impact as the run-up in natural gas prices was now stabilised at higher than previously anticipated levels.

One of the significant consequences of the rapid and large increases in oil and gas prices was the decision to change the laws governing the taxation of petroleum. This decision was first announced in 2005 and after much study by independent consultants was implemented in June 2006 and made retroactive to January 2005. Two follow-up consequential realities then became apparent. The first is shown in Table 2 (see next page) as the share of Petroleum revenues in total government revenue grew sharply from 2005.

The second consequence was that with the evident focus on tax collection, the Exploratory Bid Round of October 2006 was an almost total failure as only one group made a bid for just one of the marine blocks offered. Thus, in 2008 the Consultants are currently further reviewing the petroleum tax regime with a view to addressing several new exploration, production and manufacturing issues, so as to treat with the outstanding oil (including heavy and stripper oil), gas and new downstream plant development. Table 3

(see page 114) shows further supplementary data on the increased dominance of the energy sector post 2003.

Finally, it is very important to note that there were two other consequential effects to the rapid run up in oil and gas prices which occurred almost concurrently with the large increases in natural gas production, followed by new taxation systems and increased tax revenues that flowed into the National Treasury starting in 2005.

The first was that with the abundance of capital now available to the state, the need for treating with the capital normally required from private and foreign investors became a much lower priority. The expansion of the producing arm of the petroleum sector also became low priority. The second was that a much larger quantum of funds was now available for saving in the form of Long Term Funds, or for spending to meet the many pressing social, infrastructural and human needs of the population. The expenditures were made against the background of limited human resources and quality systems available in the country, and the latter were justified on the basis of urgent need as government spending in excess of the absorptive capacity of the economy followed. Thus the current inflationary domestic environment is a not unexpected consequence of the macro-economic choices made by the government.

The Energy Vision – Goals and Objectives

Nine distinct Goals were identified for the Energy sector by the Energy Subcommittee. These included maximising the benefits

Table 1: Trends in GDP and in Oil and Gas Production, 1999-2007					
Year	GDP Current Prices TT\$M	GDP Constant Prices (2000) TT\$M	% change in GDP in Constant Prices	% change in Oil Production	% change in Gas Production
1999	42889.1	41438.7	19.8	1.8	28.6
2000	51370.7	49633.5	7.1	-4.6	16.9
2001	55007.2	53147.1	0.7	-4.9	6.5
2002	55365.6	53493.3	19.5	15.1	14.4
2003	66168.3	63930.7	16.2	2.7	42.1
2004	76892.3	74292.1	17.6	-8.3	12.9
2005	90454.6	87395.7	26.6	17.5	9.9
2006e	114474.4	110603.3	12.2	-1.2	20.5
2007e	132114	116686.2	5.5	-15.9	4.6

Source: Central Bank of Trinidad and Tobago Annual Economic Survey Various Issues www.central-bank.org.tt, and G. McGuire

Table 2: Share of Oil & Gas in Government Revenue, 1999-2007 (\$mm)			
Year	Total Current Revenue TT\$M	Hydro-Carbon Revenue TT\$M	Hydro-Carbon Rev as % of Current Rev
1999	9613.2	1999.7	20.8
2000	13006.7	4475.6	34.4
2001	13379.9	3693.5	27.6
2002	14517.2	3931	27.1
2003	17852.6	6904.7	38.7
2004	20624.7	7641.1	37.0
2005	29008.7	13360.4	46.1
2006e	38479.6	21385.3	55.6
2007e	40034.0	20079.2	50.1

Source: Central Bank of Trinidad and Tobago Annual Economic Survey Various Issues www.central-bank.org.tt and G. McGuire

that could be derived from the proper utilisation of the oil and gas resources and the maximisation of the use of the human capacity of the country through education, good governance, as well as through seeking high value added local content and appropriate diversification. Partnering with communities was recognised as critical in order to seek sustainable development concurrent with high health and safety standards and environmentally sound practices.

Some Overview items in the Management of the sector

The Energy Subcommittee noted in its report that the rate of expansion of oil and gas production will be critical to the country's future and depends on both the rate of allocation of acreage and the exploratory effort, as well as on technology and market expansion. The report noted that extensive marine acreage was still available and provided appropriate deep water technology was utilised, the prospects for exploration success in that acreage were good. The Group also had positive perspectives on the extensive and as yet unexplored deep areas on land, particularly in the light of the recent hydrocarbon finds in Oligocene formations. Further, the Subcommittee was aware that the country's extensive heavy oil deposits had also not been properly evaluated. It therefore noted that long-term sustainability through appropriate dynamic asset management was a critical need and that this could be achieved through creating and focusing on three areas, vis; flexibility, diversity and the depth and breadth of national involvement. The Report paid special attention to two additional issues. These were:

- Increasing the number of natural gas suppliers, and
- The need to upgrade the refining business, not simply by the introduction of new capital and technology to produce more environmentally marketable products, but also to utilise new and more efficient business processes and practices, as well as developing quality ancillary services.

The Subcommittee emphasised that the need to maintain cost competitiveness in the production of petroleum products extended particularly to the manufacture of natural gas-based products such as methanol and ammonia, and to the production of natural gas itself. This requirement cannot be overstated. The Subcommittee's report drew attention to the need for the development of an acceptable set of strategies that would treat with the replacement of the ageing

first-generation manufacturing plants at Point Lisas and in addition would strive to get maximum value from each BTU of gas produced and consumed in Trinidad and Tobago as well as that exported.

Role of the State

The Vision 2020 Energy Subcommittee noted that the role of the state was critical, and inevitable in Trinidad and Tobago, given the size of the country and the magnitude, nature (technological and capital intensive) and dominance of world-scale energy industries. Thus, the report outlined many roles for the state. Among them was the need to adopt policies to facilitate the ease of entry/exit for technology and corporations. The need to put in place fiscal measures which would be tailored and relevant so that incentive would be provided for growth and development without unduly eroding fiscal take was also anticipated. The Subcommittee did not, however, envisage disincentives such as the now very large and increasing burden that the Petroleum Subsidy and Levy, estimated to amount to more than TT\$3,000 million in 2008, places on the economy. It also anticipated the state ensuring that non-fiscal measures would be taken to promote current areas of strength and to develop global services provisioning as well as to promote the following:

- Local ownership, control and financing to increase local value capture along the value chain (in and out of T&T)
- The maximisation of local content
- Maximisation of the impact of the ongoing sector activities through the transfer of technology and know-how (competitiveness,

capabilities, cluster developments) to other sectors

The Energy Subcommittee, however, was also of the view that in addition to these objectives outlined above and the clear need for the government to also act as a strategic investor in order to promote industrial diversification, national participation in the sector would be enhanced by the use of the domestic private sector in as many domestic energy enterprises as was possible.

The Scorecard

Government's approach to implementing the Energy Vision

After presenting the overall Vision 2020 plan to the country, the government sought to prioritise its activities in a manner that would meet the goal it adopted for itself – Developed Country Status by 2020.

In this context it put a very high priority on increasing its educational programmes with among other training initiatives, the establishment of the University of Trinidad and Tobago with emphasis on technical education in petroleum and maritime activities. At the same time it also sought to create a much larger range of technical support skills as it attempted to develop a seamless system of education with an expanded programme of technical and vocational skills.

Expanding Productive Capacity

Perhaps the most important target in the government's Vision 2020 aspiration was the level of GNP per capita. The Macroeconomics and Finance Subcommittee of the Vision 2020 group noted that "Trinidad and Tobago will need to grow GNP per Capita at 9.0 per cent per annum over the period 2004-20 to reach within 51 per cent of the average of the high-income non-OECD countries in the year 2020." Seemingly guided by that target, the government identified the energy sector and the construction sector as the immediate engines of growth.

In energy, it identified some of the easy opportunities and immediately further expanded (a 50 per cent increase) LNG production through ALNG Train 4, which was made fully operational in 2007. A new industrial estate and port at La Brea was established almost concurrently with a new platform fabricating facility at that site. It also attempted to establish a policy framework for maximising local content and adopted the policy position that no further new ammonia and methanol producing facilities would be approved, unless they included significant downstream manufacturing facilities to add value to ammonia and methanol.

Progress in attracting the diverse new investments in new downstream products such as ethylene, aluminium and new Iron and Steel plants has been slow, in spite of much effort and public pronouncements. In part this has been a consequence of the

rising costs of international capital goods (in particular steel and manufactures), and in part because of domestic environmental pressure groups as in the case of a proposed ALCOA aluminium smelter. However, a project agreement has been signed between the government (30 per cent) and its foreign partners on a US\$2.3 billion polypropylene complex, with LyondellBassell as lead investors (60 per cent) and Lurgi as technology providers. In addition, the small ALUTRINT smelter (125,000 mtpa) at La Brea had already been advanced to the early stages of construction. Petrotrin had in the meantime sought to address the vulnerable high cost of its refining operations by actively pursuing an upgrade of the country's sole refinery at Pointe-a-Pierre, at a last reported cost of US\$850 million (August 2007). It also expects to bring to completion a Gas to Liquids plant on its refinery site in partnership with World GTL.

As noted earlier, in part because of the new petroleum tax regime, relatively little acreage has come into play, but three recent discoveries by Petro-Canada offshore Tobago and Canadian Superior off the East Coast of Trinidad, have had the significant effect of bolstering the country's natural gas reserves which are now being depleted at an annual rate of 1.4 trillion cubic feet (tcf). The National Gas Company has successfully made some major pipeline expansions to its natural gas pipeline system and is currently well advanced in building a new pipeline to Tobago for electricity generation and industrial use on the island and for such other islands of the Eastern Caribbean as may become part of the gas users in the archipelago. Thus, the vision of the Energy Subcommittee to include Tobago as part of the country's energy development, appears to be advancing at a reasonably quick pace.

Domestic Private Sector

The largest and most significant domestic private sector activity in the Energy sector in Trinidad and Tobago has been the development of CL Financial Methanol Holdings' AUM complex, involving six new plants including Melamine, Urea, Nitric Acid and Urea Ammonium Nitrate (UAN) production as part of a new integrated complex, starting with new Ammonia production facilities. This followed on the same group's completion of the M5000 methanol plant in 2005 and expected commissioning of the AUM complex is scheduled for 2009. As a further follow-on the CLICO Energy group has also established itself globally with a new world scale Methanol plant under construction in Oman. One of the more accomplished plant operating companies out of the domestic private sector – IPSL, has accompanied the group in this venture into the wider world.

The other significant downstream domestic private sector investment is in Caustic Soda manufacture – CariSal – and significant progress has also been made by the local private sector through the offshore upstream services sector via the Neal and Massy/Wood

Group joint venture company and through the Weldfab-Chet Morrison TOFCO platform fabrication company. In downstream engineering services the Fluor Summit Engineering services group has also captured some of the new opportunities now available in Trinidad through another joint venture arrangement.

Efforts at new Ammonia and Urea production facilities by TEIL and Ammonia and UAN by the Ansa McAl group have not yet borne fruit. However, in the upstream sector, the two state enterprises Petrotrin and NGC have taken minority positions in the Repsol purchase of the bpTT oilfields off the East Coast of Trinidad and a local management buyout using domestic resources has seen the creation of one small new upstream private sector venture, Ten Degrees North, in mature oil producing operations on land.

Regionally, the significant special effort has been the Eastern Caribbean Gas Pipeline Company, which represents an effort by the domestic private sector, supported by the Government of Trinidad and Tobago, to provide a reliable source of natural gas for the electricity generation for five islands within the Eastern Caribbean chain. This is in addition to providing for CARICOM special needs through an annual TT contribution to a specially established Fund from which funds can be withdrawn after CARICOM agreement to meet the particular needs of any member of the group.

Resource and Institutional Constraints

Noting that there was a severe shortage in the pool of qualified persons available to rapidly mobilise the natural and other resources, the Subcommittee saw the need for an immediate increase in human capital and the development as well as optimal use of the institutional capacity to do so, particularly for technical, managerial and commercial applications. The Visioning group saw that given the undisputed need for substantial international capital in the future to finance the desired levels of investment, extensive domestic capital would still be needed for effective

national participation. This is even more critical in the area of high-risk exploration.

Further, in order to ensure that technological and commercial innovation and continuous process improvement continue unabated, the Subcommittee saw the need for new R&D institutions such as an Energy Institute and a Centre for Energy Enterprise Development (CEED). The Natural Gas Institute of the Americas has now been created as part of a Centre for Energy, Process and Utilities at the new University of Trinidad and Tobago. However, little public funding and support has been made available to CEED, which is a necessary instrument for the creation of new and expanded enterprise capacity building in the Energy sector. Local value added issues have been addressed through the establishment of a government-appointed Committee but the effort at implementing measurable steps in the process became bogged down in the bureaucratic machinery of government. Perhaps the most significant shortage of quality resources has been in improving the level of information available to civil society and for Public Education. The efforts here continue largely through an annual two-week course for journalists supported by bpTT at the UTT, and the occasional media briefing as various milestones in the industry are achieved.

Environmental/Social Impact issues

In the absence of a clearly defined strategy and a coordinated, proactive approach to treating with the social impact of rapid industrial expansion, a lot of anxiety and tension has been generated by environmental and community activists. This has been particularly evident where some of the smaller and more rural communities reacted angrily to perceived threats to their existing ways of life, whether real or not. This issue surfaced with preliminary attempts to create the first new industrial estate at Union Estate where the clearing of forested lands led to the loss of

habitat for some of the indigenous wildlife. It was exacerbated with the efforts of ALCOA to create a large global scale aluminium smelter in the remote, agricultural community of Chatham.

Similar activist sentiments, however, gained little support from the La Brea community where the ALUTRINT smelter has encountered few objections from residents, accustomed as they are to decades of industrial oilfield development. Additionally, there appeared to be a more strategic approach to communications and community

relations in the establishment of a smelter in La Brea.

However, opposition to industrialisation continues as a new port in Claxton Bay is widely seen by the local fishing community and environmentalists as destructive of both the mangrove environment and the local fishing industry. Further, this port, associated as it is with a new inland expansion of the Point Lisas Industrial Estate, is seen as a critical node in the construction of new steel mill facilities which are viewed as directly contributing to the environmental degradation of the area. Some residents in the surrounding communities claim that there is limited information on the project and an absence of ongoing dialogue.

As such, priority should be given to more effective strategic planning, especially with regard to communication and community relations. The implementation of modern change management strategies is also critical so as to effectively handle the complex people issues that will arise when small, rural communities are buffeted by industrial development. The pace and magnitude of the changes that such communities will experience can lead to significant conflict if the issues are not proactively addressed.

Further, a planned approach to the following additional items is also now most urgent:

- Clean-up of old land fields (wells, facilities and pipelines) and the decommissioning of marine platforms and pipelines.
- Decommissioning of old/obsolescent plants and machinery must be anticipated and addressed.

In this regard, greater attention and resources must be allocated by the relevant authorities to the monitoring aspect of the environmental management portfolio.

Energy Vision 2020 had proposed a more enlightened approach to building relationships between corporation and community in the energy sector. Traditional public relations practices were felt to be inadequate to fulfil the legitimate aspirations of the various communities and to maximise the available resources, both technical and financial. Since then, many of the large energy companies have launched major initiatives in an effort to build more meaningful and sustainable partnerships with their neighbouring communities. For example, in Mayaro, bpTT has introduced its MYPED project, in Toco, BHP Billiton initiated its Turtle Village Trust and BG T&T continues with its very popular Energy Challenge, as well as its Science Bus and youth cricket activities. The National Gas Company has its ‘pipeline’ communities programme. Companies at Point Lisas such as Yara, with its associated model farm and agricultural support systems and Methanex, CLICO Energy and PCS Nitrogen also have responded to the need for meaningful community partnering. state-owned Petrotrin, covering almost all the communities across southern Trinidad, has continued the focus of its predecessors, Shell, Trinidad-Tesoro and Texaco, on sport, education and culture as mechanisms for community development.

While the Vision 2020 group did not highlight it, the issue of one of the major consequences of the energy sector’s success is the widening gap that is now evident between the sector and the rest of the population and the economy. It is now clear that an even more concerted effort must be made to manage this growing chasm and it again highlights the need for effective change management strategies. There are considerable challenges ahead for the energy sector and the country as the process of industrialisation and modernisation continues. However, there are significant opportunities for human development and enhancing the quality of life but it will require a more sensitive, responsive and imaginative approach in dealing with the social and environmental impacts of industrial expansion.

Trinidad and Tobago and the World

The rapid establishment and urgent expansion of LNG from Trinidad and Tobago, on the platform of its established large capacity in the international production and trade in ammonia and methanol production, catapulted the country on to the global stage in natural gas production and utilisation. The quality and reliability of supply of these products, the efficient management and high operating standards of all these gas producing, transmission and conversion facilities, further increased the country’s reputation as a first-class site for energy-based plants. Current efforts at enhancing the existing human resource base will additionally serve to strengthen the capacity of the country to be a global exemplar in natural gas development.

Given Trinidad and Tobago’s location, the Vision 2020 Subcommittee saw a clear role for the country being the premier regional supplier of quality natural gas and associated products. Nevertheless the advent of Venezuela’s PetroCaribe and ALBA strategies has posed challenges for Petrotrin’s retention of its regional markets in petroleum products and has impacted Trinidad and Tobago’s relationship with CARICOM. The committee envisioned T&T as a conduit for regionally sourced natural gas to the USA and elsewhere, recognising that US demand for gas will be managed through strategies that facilitate the US’s security requirement for diverse supply sources. In this regard there are many opportunities available for partnering with Venezuela, Brazil and Western Africa which can result in the trade of energy services and products and provide mutually beneficial and profitable partnerships. The government has therefore publicly stated that there is now a need for a combined effort by its energy state enterprises, in the form of a single new national state energy enterprise, as it seeks, inter alia, to position itself, the country and its energy experiences, expertise and other resources, in the international arena. □

Table 3: Economic Contribution of Energy Sector, 2002-2007						
Item	2002	2003	2004	2005	2006e	2007e
	As a % of total					
GDP	26.2	33.9	37.1	42.9	46.8	43.0
Gov’t Revenues	27.8 ^r	42.8 ^r	42.4 ^r	53.6 ^r	61.9	56.5
M’dise Exports	75.9	83.3	85.8	85.9	91.0	86.7
Employment	3.4	3.2	3.6	3.4	3.3	3.3

Notes: r – revised
Source: Annual Economic Survey, 2006: www.central-bank.org.tt and G. McGuire