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Trinidad and Tobago: Selected Issues

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TRINDAD AND TOBAGO

Selected Issues

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Approved by the Western Hemisphere Department

March 15, 2012

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I. The Heritage and Stabilization Fund: Key Issues for the 2012 Review[1]

A. Introduction

1. **The Heritage and Stabilization Fund (HSF) of Trinidad and Tobago, established in 2007, is an important national asset, which has broad-based political and social support.** Its creation reflects the country's high dependence on energy (see Chapter II). The fund, with assets of US$4.1 billion (18 percent of GDP) at end-September 2011, is currently under review by the authorities in line with legislative requirements. The HSF has performed well despite adverse global economic conditions and volatile financial markets since its creation, and compares favorably to other Sovereign Wealth Funds (SWFs) in transparency and governance.

2. **Notwithstanding the HSF's strong record, this note provides a number of recommendations in the context of the review.** In particular:

- The design of the HSF could be **aligned with the government's broader strategy for managing public finances and the sovereign balance sheet**. In light of depleting energy reserves, a medium-term fiscal strategy outlining how much to save, consume, and invest will be essential to support the HSF savings and withdrawal rules.

- Sustained transfers to the HSF could be based **on a return to fiscal surpluses** over the medium term to increase net wealth.

- The HSF Act could be amended to **establish a clearer focus on the heritage objective** while **preserving the stabilization objective of the HSF** to provide some scope to manage the impact of high volatility of energy price on public finance.

- Given a heritage focus and the HSF's current size, the **minimum HSF balance and maximum withdrawal rules are outdated** and could be adjusted to provide a tighter constraint on withdrawals.

- A clearer focus on savings together with more constraints on withdrawals would support **an investment strategy with a longer-term focus**.

- The **rules for calculating deposits into the HSF could be clarified and made public**, by specifying which prices are used, lengthening the time horizon for

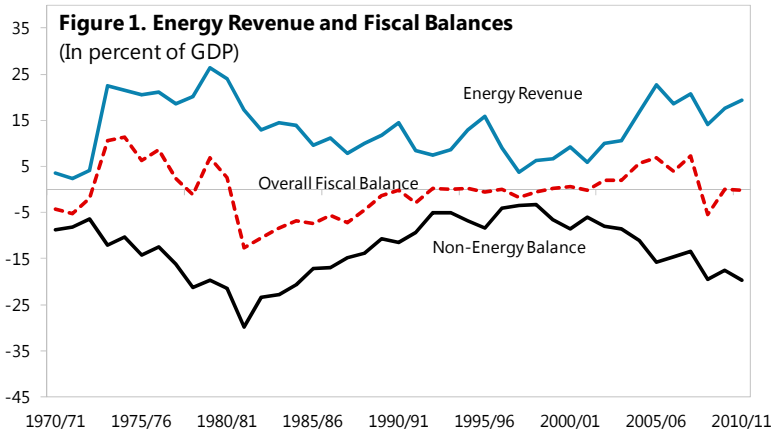
[1] Prepared by Joel Okwuokei, Hunter Monroe, and Judith Gold.

calculating average prices, and adjusting the time frequency and lags for making deposits.

B. Background and Portfolio Performance

3. **The HSF was established to save and invest energy revenue in excess of budgetary projections.** In March 2007, the Parliament passed the HSF Act replacing the Interim Revenue Stabilization Fund (IRSF) with the HSF. The IRSF was introduced in 2000 to promote fiscal discipline, cushion the impact on the budget and the economy of unexpected drops in oil prices, and strengthen public sector savings. In the same year, the government transferred US$66 million (1 percent of 2000 GDP and about 5 percent of official reserves) into the IRSF.

4. **The HSF, like the IRSF, has a stabilization objective, but the HSF also has a heritage objective with an emphasis on accumulating net savings over time for future generations.** The creation of the HSF reflects in part past experience. In the 1970s, the country benefitted from substantial increases in energy revenue as a result of high oil prices, and at the same time embarked on expansionary fiscal policies. In the absence of significant savings of energy revenue, the country was forced to undertake painful fiscal adjustment when oil prices dropped in the early 1980s.



Source: Ministry of Finance of Trinidad and Tobago, and Fund staff estimates

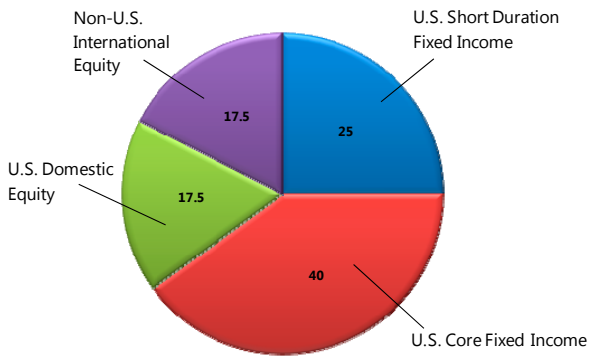
5. **The HSF Act introduced changes to strengthen the management of excess energy revenue through improved governance and rules for transfers into and out of the fund.** The HSF governance structure compares well to international best practices for SWFs, set forth in the Santiago principles,[2] especially on transparency and accountability. The Parliament's role is to define the legal framework and to perform oversight. The HSF Act provides for a five-member Board of Governors. There are currently four serving members, consisting of two representatives from the private sector, including the Chairman, and one representative each from the Central Bank of Trinidad and Tobago (CBTT) and the Ministry of Finance. According to the HSF Act, members of the board should be persons of proven competence in finance, investment, economics, and business management or law and should

[2] These principles were developed by the International Working Group on Sovereign Wealth Funds, which includes Trinidad and Tobago, and are also known as the Generally Accepted Principles and Practices (GAPP).

satisfy the criteria for a fit and proper person under the Financial Institutions Act. The Board members are appointed by the President on the advice of the Minister of Finance for a three-year term and are eligible for reappointment. The Board determines the operational and investment guidelines and reviews portfolio performance. In line with the HSF Act, the Board delegates operational responsibility for management to the CBTT, which recruits external fund managers and custodians and produces quarterly and annual financial reports. The Minister of Finance approves deposits and withdrawals, and presents annual reports, including audited financial statements to Parliament. Following Parliamentary approval, the reports, which detail the HSF's transfers, fund size, investment strategy and portfolio performance, are published in line with the Santiago Principles. The Auditor General audits the fund. The HSF scores well in terms of public information disclosure almost on par with the more established SWFs, such as the Norway Government Pension Fund and the Alaska Permanent Fund.[3]

6. **The savings (withdrawal) rule is triggered when actual energy revenue exceeds (falls below) budgeted energy revenue by at least 10 percent.**[4] The estimated energy revenue is calculated on the basis of an 11-year centered moving average of crude oil and gas prices, i.e., with 5 years of history and 5 years of projections in addition to prices for the current year. The savings rule stipulates that a minimum of 60 percent of excess energy revenue would be transferred to the HSF in any fiscal year, while in the event of a shortfall in energy revenue, the withdrawal rule permits a withdrawal of up to 60 percent of the shortfall, or 25 percent of the value of the HSF, whichever is lower. Although these rules provide framework for stabilization, in practice conservative energy price assumptions have led to the accumulation of savings. There is also a minimum balance rule (capital floor), which requires that no withdrawal should reduce the HSF's balance below US$1 billion.

Figure 2. The HSF Strategic Asset Allocation
(In percent)



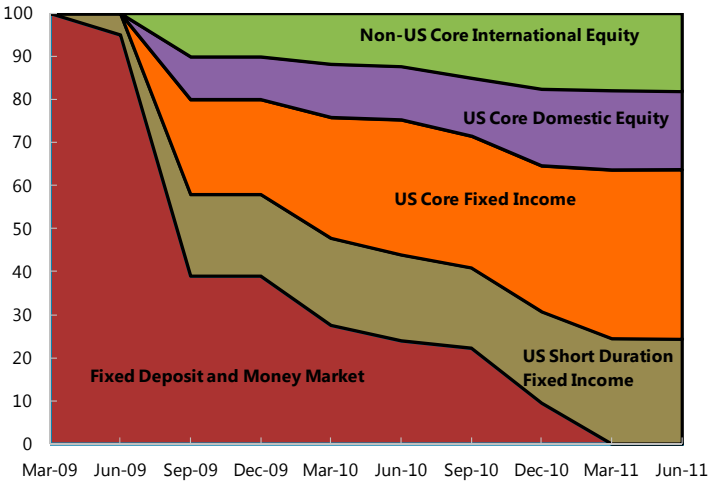
Source: Heritage and Stabilization Fund

[3] See Truman (2010).

[4] For the purpose of transfers to the HSF, energy revenue includes the Petroleum Profits Tax (PPT), Supplemental Petroleum Tax (SPT), and Royalties. Unemployment Levy, Oil Impost and Signature Bonuses are excluded.

7. **The HSF portfolio was highly concentrated in short-term assets up to August 2009, reflecting a conservative investment strategy in the face of financial market turmoil**. Assets are held abroad, providing a line of defense against volatile external flows, and preventing the repatriation of proceeds from contributing to the deterioration of competitiveness of the nontradable sector. The HSF's investments are guided by the Strategic Asset Allocation (SAA) determined by HSF Board. Its objectives aim to maintain sufficient liquidity for potential withdrawals, while also preserving and augmenting its long-term real value. Consistent with this, the SAA envisages a portfolio of 65 percent fixed-income securities and 35 percent equities. In September 2007, the HSF Board approved a 3-year transition plan for the SAA from a fully liquid portfolio composed of fixed-income securities. However, following the onset of the global financial crisis, the Board decided to postpone its implementation until markets stabilized. Implementation of the new SAA began in September 2009, and was completed in January 2011. In the interim, the HSF was managed conservatively in the mode of the country's foreign reserves during the crisis.

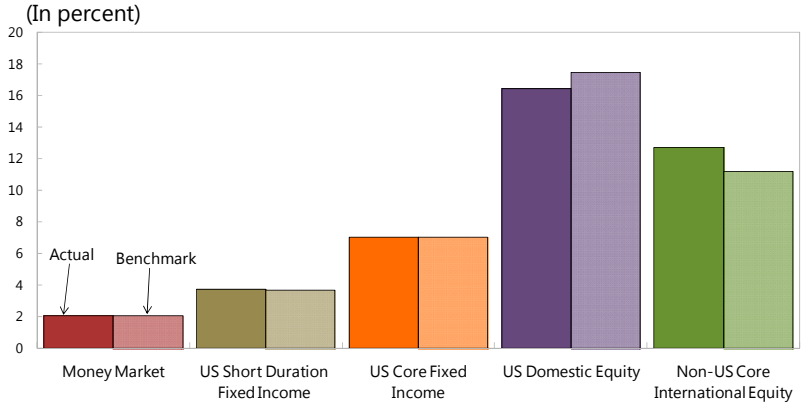
Figure 3. Evolution of the HSF Portfolio
(In percent)



Source: Heritage and Stabilization Fund

8. **The HSF has performed well despite the adverse and volatile global financial environment.** At inception in March 2007, the accumulated assets in the IRSF transferred to the HSF were US$1.4 billion (about 8 percent of GDP). At end-September 2011, HSF assets have increased to US$4.1 billion (about 18 percent of GDP), reflecting a total transfer of US$2.3 billion, and investment income and capital gains of US$374 million. Over the period March 2007 to July 2011—a period which largely overlapped the 2008/09 global financial

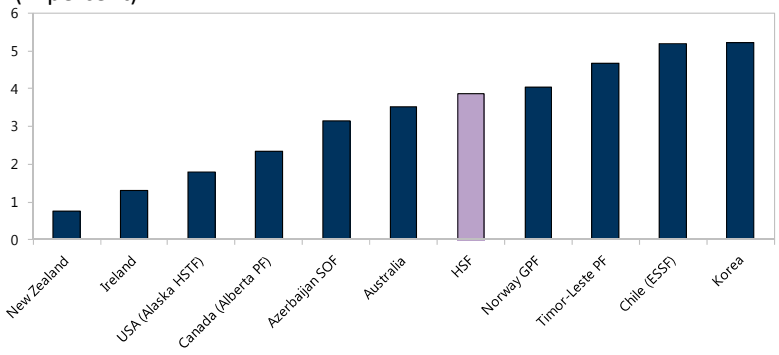
Figure 4. HSF Portfolio Performance, March 2007 - July 2011
(In percent)



Source: Central Bank of Trinidad and Tobago

crisis and its aftermath—the CBTT estimates an average annual nominal return on the HSF of about 5.27 percent, slightly above its benchmark of 5.24 percent. The equity portfolio, while more volatile, was the main driver of the return. This performance compares well to that of other SWFs, but largely reflects the modest share of investments in equities during this period. As a result, the HSF was among the few SWFs that did not suffer losses in any one year during the global financial crisis.[1]

Figure 5. Selected SWFs: Average Annual Rate of Return, 2007-2010
(In percent)

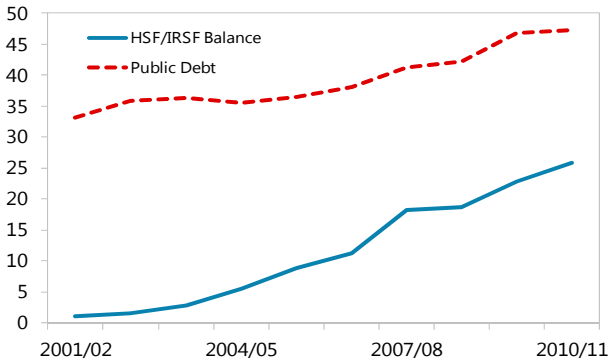


Source: SWFs' annual reports and reviews

C. Issues and Recommendations

9. **The HSF needs to be considered in the context of the government's medium-term fiscal strategy.** The HSF, as an instrument for savings, is only one element of government finances and the sovereign balance sheet, and its role should be assessed in the broader context of the government's overall fiscal strategy. Given declining energy reserves, this strategy will need to specify an appropriate balance between saving, consuming, and investing energy revenue, including in the HSF. The evolution of other items on the sovereign balance sheet, such as official reserves and public debt, will also need to be considered in developing a comprehensive approach to building savings for future generations. ***Recommendation:*** *Root the HSF's design within the*

Figure 6. HSF/IRSF Balance and Public Debt
(In billions of TT dollars)



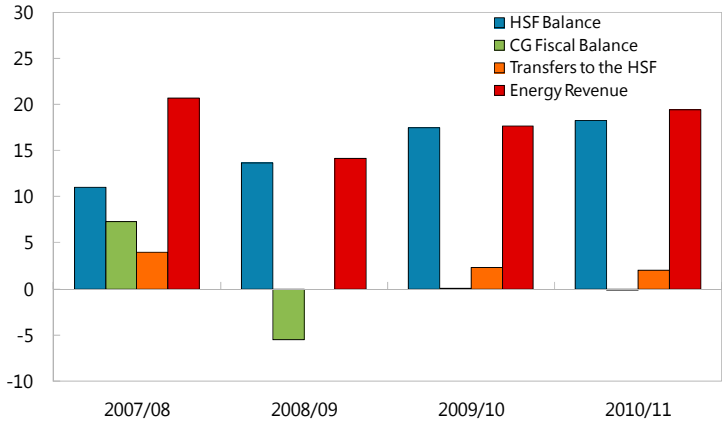
Sources: Ministry of Finance of Trinidad and Tobago, and Fund staff estimates.

[1] SWFs' performances are not easily comparable because of differences in objectives, and investment strategies. Data limitations also preclude performance analysis over a long period of time.

government's medium-term fiscal strategy, to align the savings objectives with the broader strategy for managing public finances and building the nation's net wealth.

10. **In the context of a more comprehensive approach to building net wealth, the rules on transfers to the HSF could also take account of how the transfers are to be financed.** When the public finances are consistently in deficit or in balance, deposits into the HSF would likely need to be financed by borrowing.[2] While borrowing to save may be appropriate for a limited period to maintain a savings habit, this strategy is not sustainable over the medium term as it would not improve the net asset position of the sovereign, and would entail losses if the HSF's investment returns were lower than borrowing costs. In the end, net savings of energy wealth will require returning public finances to surplus. ***Recommendation:*** *Base sustained transfers to the HSF on a return to fiscal surpluses.*

Figure 7. Energy Revenue, CG Fiscal Balance, the HSF Portfolio Size and Transfers
(In percent of GDP)



Sources: Ministry of Finance of Trinidad and Tobago, and Fund Staff Estimates

11. **Although the HSF has dual heritage and stabilization objectives, in practice it has served more as a heritage fund.** The lack of withdrawals when energy revenues have fallen sharply together with conservative budget assumptions for energy prices suggest a strong preference to safeguard and to increase savings rather than to rely on the HSF for fiscal stabilization. In particular,

Table 1. Energy Revenue and Transfers to the HSF 1/
(In billions of TT dollars)

	2006/07	2007/08	2008/09	2009/10	2010/11
Energy Revenue					
Budgeted	14.9	16.7	17.8	10.4	13.5
Actual	17.8	27.5	13.6	15.4	18.4
Excess Revenue	**2.9**	**10.8**	**-4.2**	**5.0**	**4.9**
Transfers to the HSF					
Actual	2.0	6.6	0.0	3.0	2.9
Expected 2/	1.7	6.5	-2.5	3.0	2.9
Excess Transfers	**0.3**	**0.1**	**2.5**	**0.0**	**0.0**

Sources: Central Bank of Trinidad and Tobago, Ministry of Finance, and Fund staff calculations
1/ Fiscal year ending September.
2/ Calculated as 60 percent of the excess energy revenue.

[2] Over the past few years, the transfers into the HSF were financed by drawing down government deposits at the central bank, and therefore did not entail an increase in public borrowing notwithstanding the absence of fiscal surpluses.

the government chose to adjust the budget and draw down deposits in the CBTT in 2008/09 when oil and gas prices fell by nearly half percent, although a withdrawal equivalent to 2½ percent of GDP would have been permitted. In addition, the budget assumptions for energy prices have tended to be more conservative than the 11-year centered average fuel price would suggest (see also paragraph 16 below).[3] Nevertheless, given the high volatility and dependence on energy revenue, the stabilization objective remains important. ***Recommendation:*** *Amend the HSF Act to provide a greater weight to the savings objective in line with current practices while preserving its stabilization objective to provide some scope to manage the impact of high volatility of energy price on public finance.*

12. **The large accumulation of assets since 2007 would suggest a need to increase the minimum balance of the HSF.** Given that the assets of the HSF are now over US$4 billion, the US$1 billion minimum balance could be raised, particularly if greater emphasis is given to the savings objective. If the ratio of the minimum to the actual balance were maintained at the level at inception in 2007, the new floor could be set at about US$2.9 billion. Furthermore, the floor could be adjusted upward automatically each year by maintaining a fixed share of the accumulated saving, which has been about 71 percent. ***Recommendation:*** *Increase the minimum balance and consider establishing a floor that is a percentage instead of or in addition to an absolute dollar value.*

13. **By the same token, the 25 percent ceiling on the maximum withdrawal during a given year could be reduced.** If greater emphasis were given to the savings objective, this limit could be revised downward to 10 percent of the HSF balance in any one year, with a cumulative withdrawal of at most 25 percent, which would be also consistent with the proposed capital floor. This would imply a narrowing of the space for withdrawals if there are several years of weak energy prices. At the same time, a persistent need for withdrawals could indicate a need to revise the assumed energy price projections. ***Recommendation:*** *Limit the maximum withdrawal to 10 percent of the HSF balance in a given year and 25 percent on a cumulative basis.*

14. **Clarity over the HSF objectives together with updating of the withdrawal rules is essential in determining the investment strategy.** The current portfolio allocation is broadly consistent with the HSF's dual objectives. However, the current rules are stabilization oriented and could permit a withdrawal as high as US$1 billion (5 percent of GDP) and withdrawals nearly as large in subsequent years which could rapidly deplete the HSF. By contrast, if there were a greater focus on long-term savings together with an updating of the withdrawal rule, then the investment strategy could shift toward targeting a

[3] However, the calculations in this paper may be based on different crude oil prices than those used by the authorities.

higher return over a longer horizon with greater risk tolerance.[4] ***Recommendation:*** *Clarification of the HSF's objectives together with tighter constraints on withdrawals would provide a basis for pursuing a longer-term investment strategy.*

15. **The precise data and approach used to compute the energy price assumptions announced in annual budgets could be spelled out more clearly.** In practice, the budget oil price assumptions have been more conservative than implied by the rules in the HSF Act (Table 2), and may have reflected judgments about market conditions and factors such as the quality of the country's crude oil relative to international benchmarks (or a desire to achieve savings as noted above). The situation for natural gas prices is even more complex as it is no longer straightforward to identify which is the relevant price for the country's LNG exports. Until recently, the U.S. market accounted for nearly all of gas exports, and the price at the U.S. port (Henry Hub) was clearly the relevant price.[5] However, only 20 percent of gas exports in 2011 were to the United States with the remainder going to Latin America, Europe and Asia, each of which have their own reference prices which have diverged substantially from the Henry Hub price. In this context, it would be advisable to retain flexibility in determining the budget energy prices. However, greater clarity on price setting would enhance public understanding and accountability. ***Recommendation:*** *Spell out more clearly the calculation of the budget energy prices used to estimate energy revenues to make it easier to determine ex post the prices used.*

Table 2. Budgeted and Actual Crude Oil Prices

(US$ per barrel)

	2006/07	2007/08	2008/09	2009/10	2010/11
Budgeted 1/	45.0	50.0	70.0	55.0	65.0
11-Year Average 2/	50.1	57.6	79.5	71.8	76.6
15-Year Average 2/	45.2	47.8	64.7	59.7	63.9
20-Year Average 2/	38.4	40.3	52.8	49.2	52.9
Actual	**64.8**	**107.7**	**57.3**	**77.1**	**93.9**

Sources: Central Bank of Trinidad and Tobago, Ministry of Finance, and Fund staff calculations

1/ In 2008/09, the budget oil price was revised downward within the year to US$45/barrel and subsequently raised to US$55/barrel.

2/ This includes 5 years of projections based upon the given year's Fall World Economic Outlook projections for Dated Brent, West Texas Intermediate, and Dubai Fateh.

16. **There is scope to enhance the rule for projecting energy prices.** If a choice is made to follow a more rule-based strategy to determine the budget price, the 11-year centered average may not be optimal. It is short-term oriented as futures prices, which account for almost half of the sample to calculate the average, trend closely with current prices. This could increase volatility in estimating energy revenue, and could lead to less

[4] More time may be needed to evaluate the experience with the SAA, as it was only fully implemented in January 2011.

[5] The natural gas price assumption announced in the budget is not Henry Hub but the netback price, which deducts the cost of liquefaction, transportation, storage, and regasification.

savings over time. Averaging energy prices over a longer period, with 10 or 15 years of historical and 5 years of projected data, while consulting with sector experts will provide a more stable, longer-term, and conservative basis for energy revenue projections (see table above). Indeed, the 15-year average (including 5 years of future prices) closely align with the budget prices since 2006/07. ***Recommendation:*** *Consistent with giving greater emphasis to the HSF's savings objective, lengthen the time horizon for setting the budget energy price.*

17. **There is also scope to adjust the procedures for calculating and making deposits into the HSF to increase transparency and to reduce the administrative burden.** The HSF legislation requires that deposits be made on the basis of actual energy revenue received in each quarter, which may be volatile, and it is not sufficiently clear in the legislation whether the calculation should be made based on the year-to-date outturn or not. Further, it can be challenging to complete the required deposits by the end of the fiscal year before data on actual energy revenue is finalized. ***Recommendation:*** *Make deposits into the HSF semi-annually rather than quarterly, on a year-to-date basis, and with a lag after the end of the period so that deposits can be made based on finalized data.*

18. **Although the HSF scores high in terms of its adherence to the Santiago Principles, it could strengthen the provisions for auditing.** The HSF is currently audited by the Auditor General. However, especially with the move toward a more diverse portfolio, the HSF could benefit from the services of an external auditor with experience in asset management given the complexities of auditing foreign investments. ***Recommendation:*** *Engage the services of a private sector auditor with experience in asset management.*

D. Conclusions

19. **The HSF has developed a strong record since its creation in 2007.** It has performed well as measured by the accumulation of savings, the portfolio return, and adherence to the Santiago Principles for transparency and governance. This is particularly commendable given the global and domestic financial crises. The former provided a particularly challenging environment for managing HSF's investments, while the latter could have resulted in withdrawals or substantially more modest accumulation. The fact that not only were there no withdrawals from the HSF during these difficult times, but that substantial additional savings were accumulated attest to the strong social consensus to save for future generations. This note has sought to identify some areas for improvement based on the experience to date that would contribute to achieving the HSF's long-term objectives. The key recommendations are summarized in Box 1.

Box 1. Key Recommendations

- Root the HSF's design within the government's medium-term fiscal strategy to align the savings objectives with the broader strategy for managing public finances and building the nation's net wealth.
- Base sustained transfers to the HSF on a return to public finance surpluses (Achieve net savings of energy wealth by improving the fiscal position.)
- Amend the HSF Act to clarify that the savings objective is primary while preserving the stabilization objective of the HSF to provide some scope to manage the impact of high volatility of energy price on public finance.
- Increase the minimum balance and consider establishing a floor that is a percentage instead of or in addition to an absolute dollar value.
- Limit the maximum withdrawal to 10 percent of the balance in a given year and 25 percent on a cumulative basis up to a floor.
- With an increased focus on savings, and tighter withdrawal rules, consider pursuing a longer-term investment strategy.
- Spell out more clearly the calculation of the budget energy prices used to estimate energy revenues to make it easier to determine ex post the prices used.
- Lengthen the time horizon for setting the budget energy price.
- Make deposits into the HSF semi-annually rather than quarterly, on a year-to-date basis, and with a lag after the end of the period so deposits can be made based on finalized data.
- Engage the services of a private sector auditor with experience in asset management.

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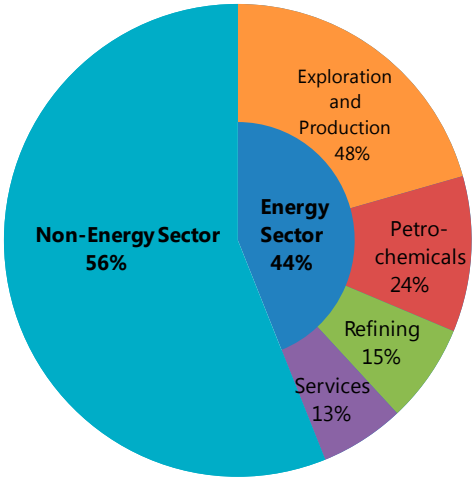
II. Developments and Prospects in the Energy Sector[1]

In recent years, the energy sector has seen falling production, limited exploration activity, and declining reserves. The government is addressing these challenges, including through revisions to the fiscal regime and initiatives to promote upstream and downstream activity. Uncertainty in global energy markets and growing competition from shale gas pose additional challenges.

A. The Structure of the Energy Sector

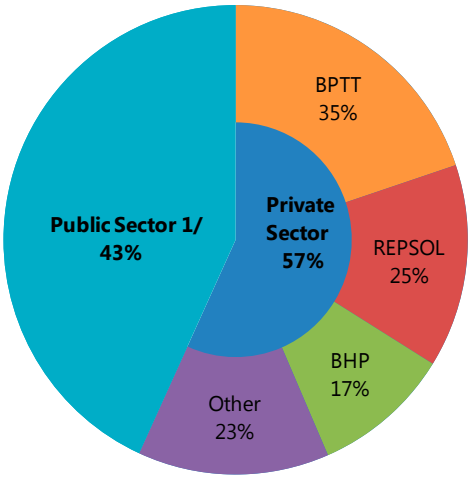
1. **The energy sector is critical to the economy of Trinidad and Tobago.** The energy industry accounted for 44 percent of nominal GDP (2010), 83 percent of merchandise exports (2010), and 58 percent of government revenue (2010/11). The sector is comprised of exploration and production of crude oil and natural gas (47 percent of energy sector GDP), petrochemicals (24 percent), refining (15 percent), and services (13 percent) (Figure 1). Notwithstanding its central role in the economy, the sector employs only 3 percent of the labor force.

Figure 1. Gross Domestic Product by Sector (In 2010)



Source: Central Statistical Office

Figure 2. Crude Oil Production by Company (In 2010)



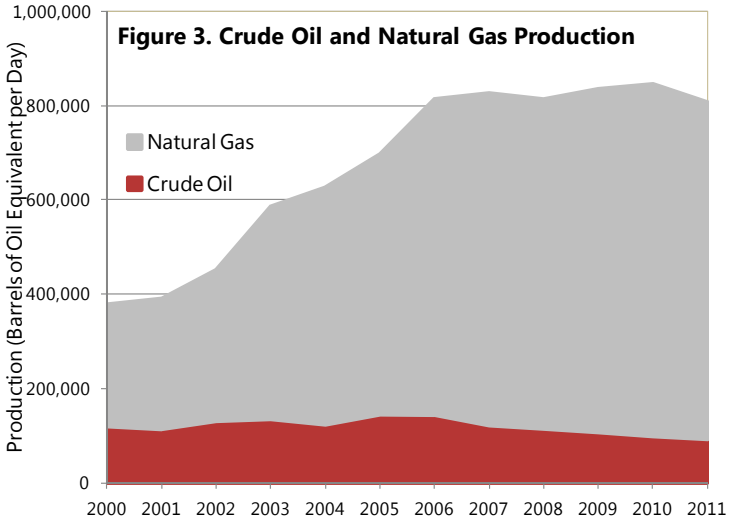
Source: Ministry of Energy and Energy Affairs
1/ Petrotrin, including its Trinmar operations.

2. **Petroleum is produced by both private and public companies, with significant foreign participation.** In 2010, about 60 percent of crude oil was produced by private companies, of which almost 80 percent was accounted for by three foreign companies (BP Trinidad and Tobago, REPSOL, and BHP Billiton) (Figure 2). The remaining 40 percent was

[1] Prepared by Machiko Narita and Judith Gold.

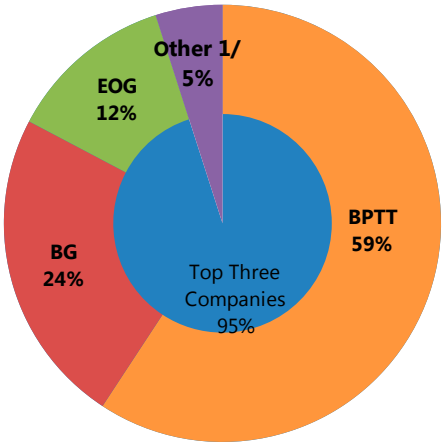
produced by the state-owned oil and gas company, Petrotrin (including its Trinmar operations). About half of crude oil produced in the country is refined locally by Petrotrin, which also refines imported crude oil.

3. **Natural gas extraction has become more important than crude oil in the past two decades.** Oil production has been on a declining trend since the 1980s, while natural gas has become the dominant sector in the past decade. Currently, natural gas output (oil equivalent) is about eight times the magnitude of oil (Figure 3). Natural gas production is dominated by three foreign companies (BP Trinidad and Tobago, British Gas, and EOG Resources Trinidad) which account for 95 percent of production (Figure 4). About 60 percent of natural gas output is used for export of liquefied natural gas (LNG) and the rest is for the domestic petrochemical industry and power generation (Figure 5). Atlantic LNG, a joint venture which is the sole producer of LNG in



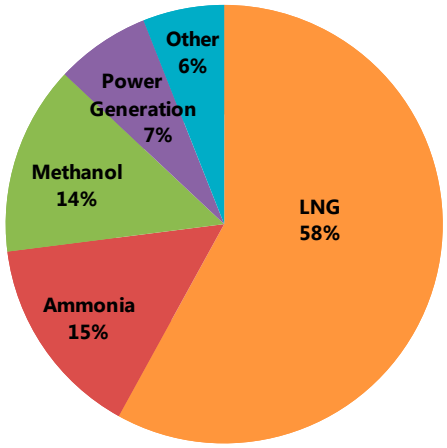
Sources: Ministry of Energy and Energy Affairs

Figure 4. Natural Gas Production by Company (In 2010)



Source: Ministry of Energy and Energy Affairs
1/ BHP Billiton, Repsol, and Petrotrin including its Trinmar operations.

Figure 5. Natural Gas Utilization by Sector (In 2010)



Source: Ministry of Energy and Energy Affairs

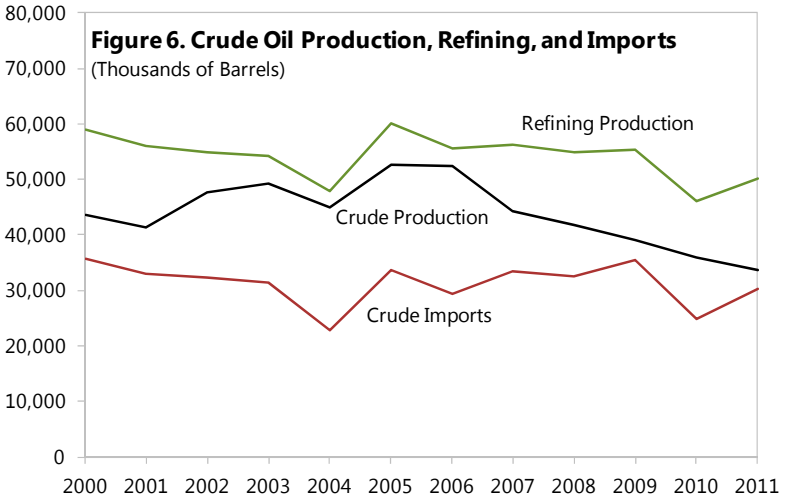
Trinidad and Tobago, operates four LNG processing trains located at Point Fortin in Trinidad, including the second largest train in the world (Train 4).[2]

4. **The main petrochemical products are methanol, ammonia, and urea, which are derivatives of natural gas.** Growth in production of petrochemicals has mirrored growth in the production of natural gas. Private companies account for most of the production of these petrochemicals,[3] with multiple producers of ammonia and methanol[4] and only one for urea. Trinidad and Tobago is the world's leading exporter of ammonia and methanol.

B. Recent Developments

5. **In recent years, oil production fell below 100,000 barrels per day (bpd) from 145,000 bpd in 2005.** Total output averaged 92,000 barrels per day (bpd) in 2011, a decline of 6,000 barrels compared to 2010. In addition to the fall in production from the maturing oil fields, these declines reflected the installation of new equipment by BHP Billiton in late 2010, and maintenance related shutdowns at BPTT, Petrotrin, and other small oil producers in 2011.

6. **Refinery production recovered in 2011 after a steep fall in 2010.** Reflecting the resolution of the 2010 water problems, refinery output increased by 8.5 percent in 2011 following a decline of 16.7 percent in 2010 (Figure 6). The latter was mainly due to a water shortage and flooding at Petrotrin's Pointe-à-Pierre refinery. Use of low quality alternative water supplies during September 2010 to May 2011 drought severely damaged the water treatment and steam generating equipment. In addition, the flooding in August 2010 affected the



Source: Ministry of Energy and Energy Affairs.

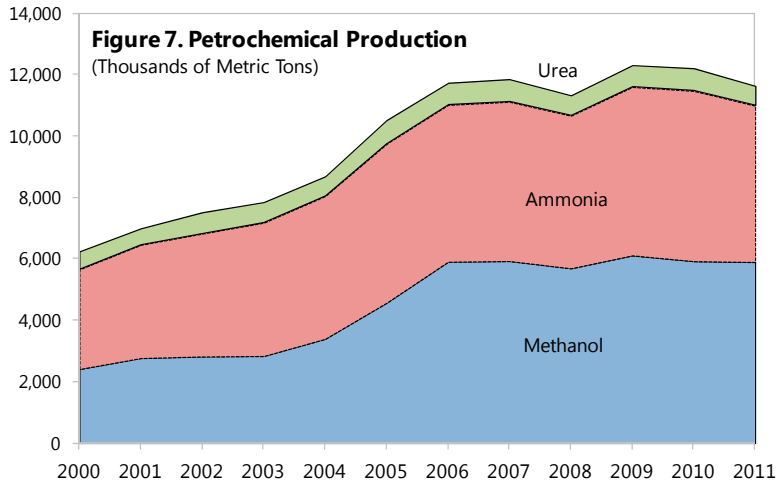
[2] Train 4 was the largest in the world until May 2011, when Qatar brought a larger train on line.

[3] National Enterprises Ltd (NEL), a government holding company, owns 51 percent of Trinidad Nitrogen Company Ltd Plants I & II, which produce ammonia.

[4] The largest producer of methanol is Methanol Holdings (Trinidad) Limited (MHTL), which is owned by CL Financial Limited in partnership with Consolidated Energy Limited.

power station that supplies electricity to the Pointe-à-Pierre refinery, resulting in a temporary shutdown of operations which curtailed refining activity. These problems led to large scale repair and maintenance as well as upgrading activities. Since a sizable portion of the crude oil refined is imported, crude oil imports significantly declined in 2010. The medium-term outlook for the refinery has been enhanced by a Gas Optimization project that is improving the quality and quantity of gasoline products for exports.

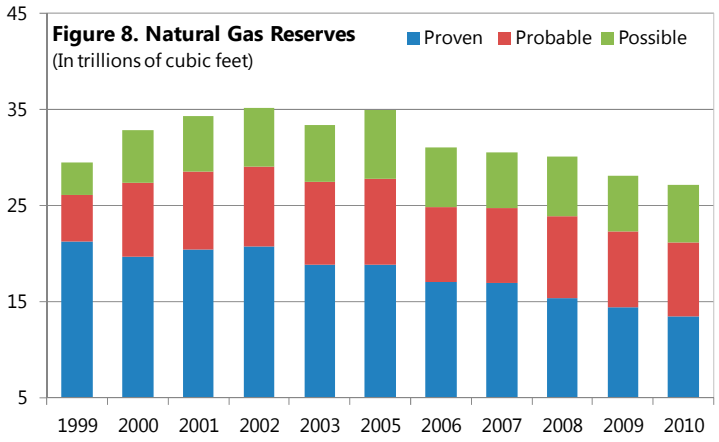
7. **Natural gas and petrochemical production have been adversely affected by maintenance activities in 2011.** Natural gas and petrochemical production fell by 4.3 and 4.7 percent respectively in 2011, as BP Trinidad and Tobago started safety inspections and upgrades on its natural gas platforms following the 2010 Gulf of Mexico oil spill. This, together with other companies' maintenance activities, caused a sizable curtailment in natural gas deliveries and shutdowns of petrochemical plants at the Point Lisas chemical complex. These led to large declines in petrochemical output in 2011 (Figure 7). In addition, methanol production also declined in 2010 due to the shutdown of the largest plant for maintenance operation during the second half of 2010.[5] The maintenance activities in the upstream sector are expected to continue in 2012 and further coordination between the upstream and the downstream sectors will be required to equilibrate the supply and demand of gas. In this regard, the Ministry of Energy and Energy Affairs (MEEA) has recently established a committee to coordinate upstream maintenance shut downs and downstream turnarounds to "equilibrate the supply and demand of gas".



Source: Ministry of Energy and Energy Affairs.

[5] The M5000 plant, owned by the MHTL, was closed for two weeks in July 2010 and for the month of October 2010 for maintenance activities.

8. **There has been limited exploration activity and investment in recent years.** The 2010 competitive bidding round was the first to allocate new acreage for exploration and production since 2005. This appears to reflect a combination of factors: no blocks were awarded for the 2006 round for ultra deep water; and there were no further blocks offered for bidding thereafter, perhaps in part due to the onset of global economic crisis and the collapse in energy prices in mid-2008. As a result, the total natural gas reserves in Trinidad and Tobago have been declining since 2005 (Figure 8). Total natural gas reserves declined from 34.9 trillion cubic feet (tcf) in 2005 to 27.1 tcf in 2010. As of end-2010, proven gas reserves were equivalent to about 9 years of production, based on natural gas production of 1.5 trillion cubic feet.[6] Total oil reserves also declined from 2.7 billion barrels in 2005 to 2.5 billion barrels in 2007 as existing fields matured (Table 1).[7] As of end-2007, proven oil reserves were equivalent to about 14 years of production, based on crude oil production of 4.4 million barrels a year.



Source: Ministry of Energy and Energy Affairs. Note: There was no audit in 2004.

Table 1. Oil and Gas Reserves

	Proven	Probable	Possible	Total
Oil (million barrels of oil)	606	335	1,561	2,502
In years of production 1/	14	8	35	57
Gas (tcf)	13.5	7.6	6.0	27.1
In years of production 1/	9	5	4	18

Sources: Ministry of Energy and Energy Affairs (2007 Oil Audit) and Ryder Scott Company (2010 Gas Audit).
1/ Based on oil production of 44.3 million barrels in 2007 and gas production of 1.5 tcf in 2010.

9. **The subdued exploration and production activities are reflected in the decline of foreign direct investment (FDI) to the industry.** From 2004, there was a declining trend in the inward FDI in the petroleum industry, with a sharp drop in 2008, reflecting the impact of global financial crisis (Table 2). FDI into the sector only moderately recovered in 2009, and by 2010, it was just over half of the level in 2004.

[6] The Ryder Scott Report, August 10, 2011, Presentation by the Ministry of Energy and Energy Affairs.

[7] The government initiated an independent oil audit in 2008/09, but the results were not made public. Commercial production of oil started in 1908, reaching its zenith between 1974 and 1981. With the maturing of oil fields, development of new oil fields has become more expensive and technically challenging as they located deep in the ground or in deep water.

Table 2. Inward Foreign Direct Investment in Petroleum Industries
(In millions of US Dollars)

	2004	2005	2006	2007	2008	2009	2010
Petroleum Industries	913	857	795	763	589	647	501
Mining, Exploration and Production							
Refineries, Petrochemicals	867	813	736	711	533	610	471
Service Contractors, Marketing							
and Distribution	46	44	59	53	56	37	30

Source: Central Bank of Trinidad and Tobago.

10. **To promote upstream activities, the government decided in 2005 to review the petroleum fiscal regime every three years, and the initial review was conducted in 2009.** The subsequent revision, which was implemented in 2010, reduced the Petroleum Profit Tax (PPT) for deep water acreage from 50 percent to 35 percent, reflecting the higher cost of exploration and development; simplified the bidding process for Production Sharing Contracts (PSC); provided a 20 percent discount on Supplemental Petroleum Tax (SPT) rates for mature and small marine oil fields; and offered an investment tax credit of 20 percent on qualifying capital expenditure for mature oil fields (either land or marine) to encourage their rehabilitation. Under the new fiscal regime, there have been two competitive bid rounds, with six of seven shallow and average-water blocks and two of eleven deepwater blocks awarded. In the future, the MEEA plans to conduct one or two competitive bid rounds each year.

11. **In order to further diversify the energy sector, the MEEA is promoting growth in downstream industries.** Construction of two energy-based downstream projects, Methanol Holdings AUM II (US$1.9 billion) and Carisal Calcium Chloride

Table 3. Planned Energy-Based and Downstream Projects

Project	Estimated Employment		Projected start of construction	Period of construction
	Peak	Permanent		
MHTL AUM II	3,500	450	2012	3 years
Methanol To Petrochemicals	3,000-4,000	300-500	2013	3 years
Methanol To Olefins	3,000-4,000	300-500	2013	3 years
Carisal Calcium Chloride	150	75	2012	2 years
Maleic Anhydride	1,000	60	2013	2 years
Melamine Derivatives Facilities	200-300	100	2012 - 2014	1-2 years
Reliance Industries Limited -				
Bitumen To Synthetic Crude	15,000-20,000	500	2013	3 years
Sitek	3,000	2000	Not confirmed	Not confirmed

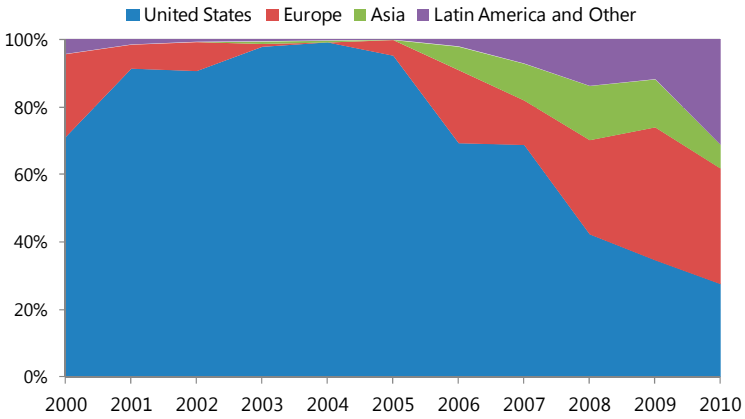
Source: Energy Chamber of Trinidad and Tobago.

(US$435 million), are planned to commence in 2012.[8] In addition, there are a number of planned projects for later years, including Eastern Caribbean Gas Pipeline (US$900 million), a Methanol to Petrochemicals project, and a Methanol to Olefins plant (Table 3).

C. LNG Exports

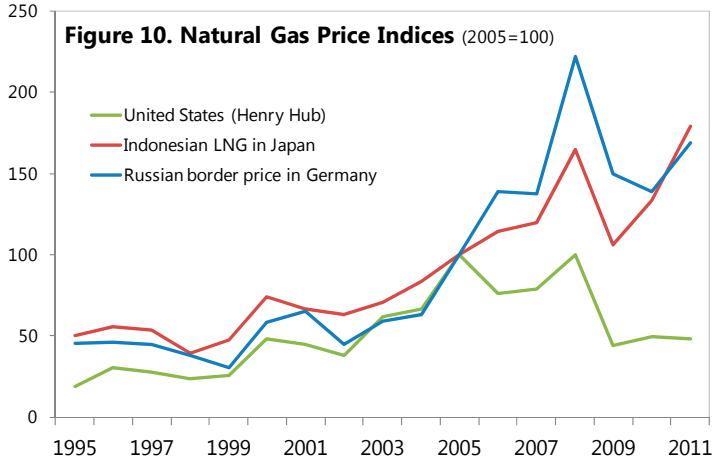
12. **The markets for LNG exports from Trinidad and Tobago have shifted dramatically in recent years** (Figure 9). The Unites States had been the largest destination of LNG exports from Trinidad and Tobago since the start of LNG production in 1999. However, the advent of shale gas production in the United States sharply lowered its demand for LNG, while demand from Latin America, Europe, and Asia has increased. Although most LNG has been sold under long-term contracts, Trinidad and Tobago's LNG exporters and their U.S. buyers have reached diversion agreements under which they share the benefits of selling LNG at higher prices on the spot markets in other regions, and increasing government tax revenues. As a result, the share of the United States has fallen from 99 percent of exports in 2004 to 19 percent in 2011.

Figure 9. Percentage of Exports of LNG by Trading Partner



Source: World Integrated Trade Solution (UNCTAD and World Bank)

13. **Recent global gas market developments have created higher short-term price uncertainty for Trinidad and Tobago's LNG exports** (Figure 10). Shale gas production in the United States together with the economic slowdown has led to a collapse of the Henry Hub price to below US$3.00 per million British thermal units (MMBtu) in January 2012, down from US$8.64 per MMBtu on average in 2005. However, the gas



Source: World Economic Outlook.

[8] The construction of the first downstream Ammonia-Urea Ammonium Nitrate-Melamine (AUM) Complex by Methanol Holdings Trinidad Limited was completed in 2009.

prices in Europe, Latin America, and Asia have been higher because of higher demand, supply transportation constraints, and pricing regimes.[9] The increase in LNG demand in Japan has been particularly large since the earthquake and tsunami in March of 2011. In 2011, the National Balancing Point (NBP) and Zeebrugge prices in Europe were US$8–10 per MMBtu, the spot LNG prices in Latin America were US$11–14 per MMBtu, and the average price of the LNG exported from Trinidad and Tobago to Asian market was around US$13.5 per MMBtu with prices of around US$16.50 per MMBtu in Japan.

14. **Notwithstanding the successful diversion of LNG exports to other regions, there are increased risks in the near term.** On the supply side, there has been an expansion of about 40 percent in global liquefaction capacity in the last two years, which was mainly accounted for by Qatar. Balancing this on the demand side, there was a 7.4 percent recovery in global gas consumption in 2010 and a further increase in 2011, and LNG markets are expected to further tighten over the coming 2–3 years due to a strong increase in LNG demand, notably in Asia. At the same time, it is also important to take account of trends in oil prices, because gas prices are indexed to crude oil prices in some regional markets.

15. **Over the longer term, diffusion of shale gas technology and substantial higher production could adversely affect LNG prices worldwide.** According to an initial assessment of world shale gas reserves by the U.S. Energy Information Administration (EIA), about 6,600 trillion cubic feet (tcf) are estimated to be "technically recoverable" (Table 4).[10] The largest identified resources were in China (1,275 tcf), followed by the United States (862 tcf), Argentina (774 tcf), Mexico (681 tcf), and South Africa (485 tcf). Consistent with this, press reports indicate that gas producers are already looking at long-term contracts to lock in the favorable prices now because of concerns about a future glut.[11] At the same time, the regulatory and environmental barriers to shale gas production in the various regions could constrain production.[12]

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[9] About 20 percent of global gas consumption is priced on the basis of crude oil prices, particularly in Latin America and Asia, about 30 percent is priced on a spot basis, around 40 percent is subject to direct price regulation, and the remainder is sold at subsidized prices (International Energy Agency, 2009).

[10] The EIA commissioned an external consultant, Advanced Resources International, Inc, to develop an initial set of shale gas resource assessments, which covered 48 shale gas basins in 32 countries.

[11] Bloomberg reported that Qatar—the world's largest producer of LNG—is seeking contracts for as long as 20 years, in the face of prospect of booming supplies from Australia, the US and Africa that raise the likelihood of a slide in prices. There are concerns that the world may face an LNG "glut" in the next eight years as production from hydraulic fracturing, or fracking, of shale deposits swells inventories, which has led U.S. gas traded at the lowest level in 10 years on January 23, while Brent crude jumped to a 3 1/2-year high on March 1.

[12] Since fracking requires a large amount of water and chemicals, fracking technology could cause ground water pollution. The environmental risks of the fracking method are still uncertain.

Table 4. Technically Recoverable Shale Gas Resources by Country

(In trillions of Cubic Feet)

Country	Resources	Country	Resources	Country	Resources
Algeria	231	Germany	8	South Africa	485
Argentina	774	India	63	Sweden	41
Australia	396	Libya	290	Tunisia	18
Bolivia	48	Lithuania	4	Turkey	15
Brazil	226	Mexico	681	United Kingdom	20
Canada	388	Morocco	11	Ukraine	42
Chile	64	Netherlands	17	United States	862
China	1,275	Norway	83	Uruguay	21
Colombia	19	Pakistan	51	Venezuela	11
Denmark	23	Paraguay	62	Western Sahara	7
France	180	Poland	187	Total	6603

Source: The U.S. Energy Information Administration.

D. Conclusions

16. **Trinidad and Tobago's energy sector remains at the center of the country's economy.** It has benefitted from a cycle of high energy prices thanks to significant investment in previous decades. The country has moved to update its fiscal regime and increased the frequency of bidding rounds after virtually no bidding activity in the second half of the last decade. It has also promoted downstream investment to increase value added and to strengthen linkages between the energy sector and the rest of the economy. After a lull of several years, there are substantial planned investment projects.

17. **The energy sector is poised to recover, but it is also facing significant risks.** Notwithstanding a number of setbacks in recent years, natural gas output is expected to rebound in 2012 as upgrade and maintenance work in the upstream sector is completed. The petrochemical sector is also forecast to resume operating at more normal levels with a recovery in the availability of gas. Refinery output is expected to benefit from increased capacity and more environmental friendly products as a result of the Gas Optimization project. In the short term, there are upside risks associated with high global energy prices and market diversion of LNG exports, but also downside risks from the aging infrastructure requiring frequent maintenance, which could lead to more disruptions in the supply of natural gas. Over the longer term, increased exploration in Trinidad and Tobago could reverse the downward trend in oil and gas reserves. However, uncertainties in the global gas market, on account of the potential of rapid growth of shale gas production worldwide, pose a challenge for the development of longer-term investment plans.

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