II LATIN AMERICAN AND THE CARIBBEAN OIL AND GAS SEMINAR

CHALLENGES AND OUTLOOK ON THE DEVELOPMENT OF UNCONVENTIONAL HYDROCARBONS

Hydrocarbon Developmental Challenges and Opportunities for Guyana

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Economic growth and social development cannot be sustained with our current consumption and production patterns. Globally, we are extracting more resources to produce goods and services than our planet can replenish, while a large share of an increasingly urban world population is still struggling to meet basic needs.

Therefore, Guyana will become resource efficient in order to allow for the critical opportunity to address this unsustainable path and build a green economy in which economic growth is decoupled from environmental harm. By enabling the design and production of low-impact products and services, resource efficiency can help us meet human needs while respecting the ecological carrying capacity of our nations and the earth, as a whole.

From the Government of Guyana to the research community to business and consumer groups, we will use expertise, experience and convening power to create tools and build partnerships that accelerate the transition to the Green Economy and resource efficient societies.

To facilitate this effort, the Ministry of Natural Resources and the Environment (MoNRE) have responsibilities for forestry, mining, environmental management, wildlife, protected areas, land use planning and coordination, and climate change.
Focus on Guyana

- Guyana; officially the Co-operative Republic of Guyana, is a sovereign state on the northern coast of South America that is culturally part of the Anglophone Caribbean.

- Guyana was a former colony of the Dutch and (for over 200 years) of the British. It is the only state of the Commonwealth of Nations on mainland South America, and the only one on that continent where English is an official language.

- It is also a member of the Caribbean Community (CARICOM), which has its secretariat headquarters in Guyana's capital, Georgetown.

- Guyana achieved independence from the United Kingdom on 26 May 1966, and became a republic on 23 February 1970.

- Historically, the region known as "Guiana" or "Guayana" comprised the large shield landmass north of the Amazon River and east of the Orinoco River known as the "Land of many waters".

- Historical Guyana is made up of three Dutch colonies: Essequibo, Demerara, and Berbice.

- Modern Guyana is bordered to the east by Suriname, to the south and southwest by Brazil, to the west by Venezuela, and on the north by the Atlantic Ocean.

- At 215,000 km2, (83,000 sq. mi) Guyana is the third-smallest independent state on the mainland of South America (after Uruguay and Suriname). Its population is approximately 770,000.
Focus on Guyana

- **Capital (and Largest City):** Georgetown (6°46’N 58°10’W)
- **Official Language:** English
- **Recognized Regional Languages:** Portuguese, Hindi, Spanish, Akawaio, Macushi, Wai Wai, Arawak, Patamona, Warrau, Carib, Wapishiana, Arekuna
- **National Language:** Guyanese Creole
- **Ethnic Groups:** East Indian 43.5%, Black (African) 30.2%, Mixed 16.7%, Amerindian 9.1%, Other 0.5%
- **GDP (Purchasing Power Parity):** 2010 estimate
  - Total: $5.379 billion
  - Per capita: $6,964
- **GDP (nominal):** 2010 estimate
  - Total: $2.215 billion
  - Per capita: $2,868
- **Human Development Index (2010):** 0.611 (medium) (107th)
- **Currency:** Guyanese dollar (GYD)
- **Foreign Exchange Rate:** G$1 = USD 203.49, CAD 203.39, EUR 269.59, GBP 322.80
- **Exports:** $1.059 billion (2011 est.)
- **Exports - commodities:** sugar, gold, bauxite, alumina, rice, shrimp, molasses, rum, timber
- **Exports - partners:** Canada 24.6%, US 24.6%, Ukraine 6%, Netherlands 4.9%, Trinidad and Tobago 4.6%, Portugal 4.5%, Jamaica 4.5%, UK 4.1% (2010)
Map of Guyana
Petroleum Development

- Monitoring of Apoteri K2 drill hole which was completed in June 2011.
- Investigation of Shallow Gas Occurrences on the E.B.D, West Demerara, Essequibo Islands and Pomeroon.
- Commencement of an exercise to determine the resistivity characterization of Shallow Gas Bearing sand intervals.
- Petroleum skills development opportunities provided i.e. seismic interpretation methods; and Managing Offshore resources.
- Exploration drilling of Apoteri K2 by Takutu Oil and Gas Inc/Canacol.
- Completed for Jaguar 1 Exploration Well by Repsol et. al.
- Completed work for Eagle 1 Exploration Well by CGX Resources Inc.
- Acquisition of infill 2D Seismic data over the Esso/Shell Stabroek block.
- Petroleum Prospecting Licence under consideration.
- Continuing negotiations for Petroleum Prospecting Licence and agreement in respect of Anadarko Petroleum Corporation.
- A variety of interests in speculative exploratory activities from significant international and major companies.
Current Status of Offshore Oil and Gas Development in Guyana

Illustration of Old Boundary Situation

Illustration of New Boundary Situation
Location of Seismic Acquisition

2D spec shoot (PGS)
Esso 2D Shoot (PGS)
3D SHOOT FOR YPF & CGX
ESSO: New 2D marine seismic (Sep 2008, PGS was contractor), infill 2D Nov. 2010 (CGG Veritas was contractor)

PGS: (Dec 2008) Speculative 2D seismic in unlicensed area

CGX: 3D seismic (Dec 2008) - FugroGeoteam AS subcontractor — In a seamless but separately contracted acquisition with REPSOL et.al. over their adjacent Block S. This was the first time 3D seismic was acquired in Guyana. In Jan. 2012 another 3D shoot for CGX was done for a total of 3000 plus sq.km

Repsol et.al: Completed drilling Jaguar 1 HPHT wildcat

CGX - completed drilling Eagle 1 wildcat

Anadarko - in discussions for Licence in deep water

Nabi Oil & Gas: has a small coastal interest at Drill and once approved could be drilling within the year

TOGI/Canacol: drilled Apoteri K2 offset well in Takutu Basin inland
Current Status of Offshore Oil and Gas Development in Guyana

- ESS-2: TRIP GAS (UPP-LOW K)
- ESS-1: GAS-OIL SHOWS (UPP, K, MIOC)
- BER-1: F-G OIL-GAS SHOWS (EOC-MIO) REC. 800 BW IN PROD. TEST (PLIO)
- BER-2: OIL-GAS SHOWS OIL IN SWC (OLI-PLIO) REC. 2.5 BO IN DST (PLIO)
- NCO-1: GAS SHOWS (LOWER K)
- ABA-1: DEAD OIL STAINS (EOC-MIOC) GAS KICKS (UPP. K), OIL TO SURFACE
- CO-1: OIL-GAS IN MUD (UPP K-LOW T)
- TAMBAREDJO OIL FIELD 900 MMBOIP 167 MMBORC RES.
- I23-1: OIL SHOWS, (UPPER K)
- B34-1: F-G OIL SHOWS (K)
Map Showing Locations of Gas Seeps on Guyana’s Coast
Objective remains to acquire discovery evidence of petroliferous occurrences in the basin fringe.

Division drilling to basement in the North West District; modest results expected; tar, gas shows? Biogenic?.

Investigations in pursuit of fossil fuels continue at Essequibo Islands, and Diamond, East Bank Demerara.

Deployment of gas capture devices continue as is the pilot project for such gas utilization.

Drilling at Lethem by the Petroleum Division of the Guyana Geology and Mines Commission for potash/other evaporite.
Guyana provides a number of opportunities for investors within the energy sector, particularly with regards to petroleum and gas.

Oil and gas deposits in Guyana’s offshore reserves are estimated at 2.2 billion barrels and 6 trillion cu. ft (28.3 billion meters approx.) respectively. These deposits occur in the Guyana Basin which covers the entire coastal region and extend 150 km out into the Atlantic Ocean.

Full exploitation of the hydrocarbon resources within Guyana’s Exclusive Economic Zone and Continental Shelf.

Development of an Oil Refinery

Improve Support Services for the potential Oil and Gas Sectors

Enhancing the Infrastructural Development

Technical Assistance from the private sector, other Caricom countries and extra-regionally.

Development of an effective governance framework for the oil and gas sector with assistance from the Commonwealth Secretariat.
Opportunities for the Hydrocarbon Sector

- When managed properly and in an environmentally responsible way, oil and gas production can provide substantial benefits to a country like Guyana.
- The Government of Guyana will facilitate and enabling environment for the private sector to finance and manage oil and gas activities, while the Government concentrate on protecting the public interest through effective regulation and monitoring, as well as sound revenue management.
- The Government of Guyana Oil, Gas, and Mining Policy will allow for an integrated set of services, technical assistance, guarantees and knowledge products to provide advice on legal, fiscal and contractual issues, regulation, sector restructuring, and privatization.
- Reducing the drain on the public sector, lowering costs of production, and providing a level playing field that encourages entrepreneurs to enter a competitive market.
- The Government will always have a key role through regulation and monitoring, ensuring that monopolistic abuses are avoided.
- Extraction contracts must benefit Guyana and support future exploration and production, and tax revenue from any projects will be carefully accounted for and be maximized for the benefit of the country.
- The Government of Guyana will be working with the Extractive Industries Transparency Initiative, to implement the transparency principles of the EITI process.
CARICOM Oil and Gas Development

- Coordination of the Oil and Gas sector in the Caribbean Region (Barbados, Dominica, Grenada, Guyana, St. Lucia, St. Vincent, and Trinidad & Tobago).
- Improve energy trade with Trinidad & Tobago and Venezuela (PetroCaribe).
- CARICOM countries are impacted by increased price of oil on the world market.
- Increasing the drive to pursue sustainable energy development.
- Both oil producing CARICOM countries and non oil producing countries are intensifying their quest for more oil and gas exploration.
- The CARICOM Oil producers of Trinidad and Tobago, Suriname, Belize and Barbados will continue exploration.
- Guyana provides the opportunities for increasing the level of investment in ongoing deep-water petroleum exploration.
Other Developmental Collaboration

- Energy Development and Cooperation with the USA.
- The United Stated Department of the Interior and the Bureau of Safety and Environmental Enforcement.
- The Commonwealth Secretariat
- The Canadian High Commission (Guyana)
Policy: Mineral and Petroleum Policies and Fiscal Regimes set out by the Minister in January 1997 and amended from time to time.

Principal Legislation: Guyana Geology and Mines Commission Act 1979, which is read as part of the Mining Ac 1989; Mining Act 1989 and Regulations; Geological Surveys Acct; Guyana Gold Board Act, Occupational Safety and Health Act, Environmental Protection Act and Industries Aid and Encouragement Act
The Natural Resources and Environmental Governance sub-programme focuses on strengthening national, regional and local environmental governance to address agreed environmental priorities. The sub-programme has seven key goals:

1. Sound science for decision-making:
2. National and international cooperation
3. Poverty alleviation
4. National development planning
5. National and international policy setting and technical assistance
6. Sustainable national and regional development
7. Strengthen and harmonization of national laws and institutions
The resource efficiency sub-programme focuses on reducing the adverse environmental impacts of producing, processing and using goods and services, while also meeting human needs and improving well-being. The sub-programme has four key goals:

1. Building capacity for policy action
2. Seizing investment opportunities
3. Stimulating demand for resource efficient goods and services
4. Assessing critical trends: To strengthen the knowledge base on Resource Efficiency, the MoNRE will assesses and reports on trends in how resources are extracted, processed and consumed.
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Innovativeness together with sustainable and responsible operations are essential to future success. Natural resources can in this way be used as a source of diverse well-being and to create sustainable business operations that will also safeguard the natural environment and its diversity.

Well-being and prosperity must be created in a more sustainable way, and for this reason new operating models are needed in business, policies and daily operating behaviour.
Guyana is the second most attractive under-explored basin in the world with a potential of 15.2 billion barrels of oil and were a discovery to be production targets would be estimated at 50 million barrels per year.