Petroleum Licensing in Ethiopia: Current activities and opportunities

By

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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.
PETROLEUM Licensing IN ETHIOPIA: Current Activities and Opportunities

Federal Democratic Republic of Ethiopia

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Outline of the presentation

- Background
- Petroleum Potential of Ethiopia
- None Conventional Petroleum Resources
- Recent Activities and Successes
- Opportunities
- Conclusion
Background

Location: Ethiopia is Located in the Horn of Africa

Neighbours: Kenya, Djibouti, Somalia, Sudan, South Sudan and Eritrea

Surface Area = 1.13 million km²

Climate: Two seasons;
  - Dry season: Oct. – May
  - Wet season: June – Sept

Population: > 90 million

Capital city: Addis Ababa

Economic growth: Double digit GDP growth for the past 10 years
Licensing Policies

- For only a single interest – one to one negotiation can be carried out after the proposal submission to the Minister (MOM).
- If more than one company interest for a block exists, bid round will be floated.
- Notice will be floated on the “Ethiopian Herald” – the English version of the Ethiopian National News Paper.
- The notice will also be floated in the Ministry’s website http://www.mom.gov.et
Investment policies

Conducive investment policies are already established for various sectors in Ethiopia.

Role of the Government as a Regulatory Body:-

The Government issues licenses and administer the contracts in accordance with the agreements through the Licensing Authorities. There are two regulatory directorates under the MoM:

i) Mineral Licensing & Administration Directorate

ii) Petroleum Licensing & Administration Directorate
Licensing

- Bid documents will be prepared and can be collected from the Ministry (MOMPNG).
- The notice will stay at least for 45 days.
- The beginning and ending dates will be specified.
- Evaluation will follow based on the scored cards set at beginning.
- The winner will be notified officially to all bidders.
- Signing date will be fixed with the winner.
- Signing ceremony with the Minister and authorized company representative will be followed.
Licensing

• If there is only one interest
• Negotiation will be carried out between the company team and Ministry of Mines team
• When agreement is reached on various fiscal terms and articles of the PPSA, report will be submitted the Ministers offices (MOM).
• The PSA will be endorsed to the Council of Ministers
• The Council of Ministers, chaired by the PM will approve the PPSA.
• After the approval of the Council, the Minister and the authorized company representative will sign the agreement.
Fiscal Regime

- The Petroleum Laws/Proclamations

- Types of Agreements
  - Petroleum Production Sharing Agreement (PPSA)
  - Petroleum Development Agreements (PDA)
  - Joint Study Agreements (JSA)
Fiscal regime

• Exploration
  • Initial Exploration Period - Up to 4 years
  • Extension – Up to 4 years
• Production – 25 years
  • Extension – Up to 10 years
• Royalty – Negotiable
• Production Sharing – Negotiable
• All petroleum operation costs – 100% recoverable
• Income tax – 30% - fixed
• Training fund – Negotiable
• Community Development - Negotiable
• Annual land rent - Negotiable
• Bonus (Signature/Production) - Negotiable
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PROCLAMATION No. 295/1986
A PROCLAMATION TO REGULATE PETROLEUM OPERATIONS

"ETHIOPIA TIKDEM"
NEGARIT GAZELA

CONTENT

1986

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Petroleum Operations Income Tax Proclamation .... Page 71

PROCLAMATION No. 296/1986

A PROCLAMATION TO PROVIDE FOR PAYMENT OF INCOME TAX ON PETROLEUM OPERATIONS "ETHIOPIA TIKDEM"
Production Sharing Agreement is the main form of agreement currently implemented.
Regional Geology

- Largely extended basin and interconnected with many East African basins
- Older and recent structures and sediments exist throughout Ethiopia
- Modern rift system – a recent exploration target areas
Petroleum Potential of Ethiopia

- More than 30% Sedimentary cover
- Known Sedimentary basins
  - The Ogaden Basin
  - The Abay/Blue Nile Basin
  - The Gambela Basin
  - The Mekele Basin
  - SER and Metema
Petroleum Potential of Ethiopia

- Oil seeps in different parts of the country
- Oil and gas shows in many of the exploratory wells
- Recently found oil stained/impregnated reservoir rocks
<table>
<thead>
<tr>
<th>Approximate Age</th>
<th>Lithostratigraphy</th>
<th>Lithology</th>
<th>Depositional Environment</th>
<th>Structural Environment</th>
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<tbody>
<tr>
<td>Eocene - Palaeocene</td>
<td>Taleh Auradu</td>
<td>Open marine</td>
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<td>Late Tertiary uplift and volcanics - Tertiary East African rift phase</td>
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<td>Maastrichtian to Cenomanian</td>
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<td>Fluvial to marginal marine</td>
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<td>Local structural movements</td>
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<td>Albian to Aptian</td>
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<td>Shallow open marine to restricted lagoonal</td>
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<td>Stable carbonate platform overall shallowing upward</td>
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<td>Mustahil FM</td>
<td>Shallow open marine to restricted lagoonal</td>
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<td>Local reef development</td>
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<td>Barremian to Valanginian</td>
<td>Main Gypsum</td>
<td>Shallow open marine</td>
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<td>Regional Transgression</td>
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<td>L. Gorrahei</td>
<td>Open marine</td>
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<td>Stable carbonate platform</td>
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<td>Gabbredarre FM</td>
<td>Shallow open marine</td>
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<td>Uarandab FM</td>
<td>Open marine</td>
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<td>Upper Hamanlei</td>
<td>Shallow open marine</td>
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<td>Bathonian to Early Jurassic</td>
<td>Middle Hamanlei</td>
<td>Marginal marine to sabkha</td>
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<td>Early Jurassic Transgression (Regional)</td>
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<td>Lower Hamanlei</td>
<td>Fluvial to marine</td>
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<td>Sedimentation overstepping basement</td>
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<td>Transition</td>
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<td>Rift fill - tectonically stable</td>
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<td>Adigrat FM</td>
<td>Top Karroo</td>
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<td>Gumboro FM</td>
<td>Fluvial</td>
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<td>Bokh FM</td>
<td>Lacustrine</td>
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<td>Calub FM</td>
<td>Fluvial</td>
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<td>Triassic to ? Late Permian</td>
<td>Basement</td>
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<tr>
<td>Early Palaeozoic and Older</td>
<td>Basement</td>
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The Karoo and Jurassic/Cretaceous rift are poorly understood structurally and stratigraphically. Basins formed during this multiphase episode contain major oil accumulation in Sudan and Yemen and other countries. Understanding the age, rifting pattern, and basin development in the Ogaden basin is crucial.
Petroleum systems

- Four petroleum systems in the Ogaden basin
  - Bokh Shale _ Calub Sandstone
  - Urandab Shale – Upper Hamanlei Limestone
    - TOC 2.3 - 3 % as high as 7%
  - Transition zone – Adigrat Formation
  - The Middle Hamanlei Carbonates and Lower Hamanlei reefal build ups

- New petroleum system recently identified
  - Bokh Shale – Gumburo Sandstone
Petroleum Systems

- **Traps**
  - **Structural traps**
    - Faults, drag folds, domal features
  - **Stratigraphic traps**
    - Mesozoic beds
    - Pinch outs
      - In the SW part of the Basin

- **Seals**
  - Urandab Formation (Shale), Middle Hamanlei (Shale intercalation)
  - Bokh Shale, Transition zone, the Hamanlei Carbonates
The Ethiopian rift

- The Ethiopian rift
  - Provides new opportunities
- Recent mapping results indicated source and reservoir rocks
- More geophysical and geological data are needed
None conventional hydrocarbon potential

- Oil Shale
  - In different part of the country
  - High TOC – up to 55-60%
  - Oil generated – detected in some bore holes
- Thick Shale formations
  - Urandab Shale - ~ 400 m thick
  - Bokh Shale - up to 800 m thick
  - Shale formation - with in Carbonate rocks
- Coal in different parts of the Country
- Boifuel
Coal occurrences

- ~500 Million Ton reserve
- New deposits in other areas are also reported recently
Oil Shale Occurrences

- Miocene Oligocene
  - West South West part of Ethiopia
- Recent mapping results indicated outcrops in the northeast central part of Ethiopia
- ~1 billion Tons reserve
Data

- Geological and Geophysical data
- Rock samples from field
- Geophysical data – Old and New
  - Seismic data – raw and processed data
  - 9-track – SEG-D, SEG-Y
  - Tapes – Exabyte 8mm Tapes, IBM 3480, 3590, DLT
  - Gravity and Magnetic data
- Well data
  - Well logs – various types
  - Core samples
  - Cuttings
Seismic Data acquisition

Over 3000 line km seismic data is available.

New National Data Repository is under construction.
Database Center under construction
Community Development

GELADI HIGH SCHOOL HAND OVER December 14/2010

GELADI HIGH SCHOOL HAND OVER December 14/2010
Recent Activities & Successes

- More geophysical and geological data acquisition
  - Airborne geophysics
  - Gravity and magnetics
  - Seismic data acquisition
    - 2D seismic data acquisition
      - with 1 seismic crew
- Drilling activities
  - Two companies carried out drilling
  - Some companies – under preparation
- Farm out – farm in activities
Discoveries

- New discoveries
- Genale area – Block 4
- Stratigraphic trap
- New reservoir – Gumburo Sandstone
- Reservoir
  - Primary – Gumburo
  - Secondary – Calub
  - Porosity - 10 – 14%
- Estimated Reserve - 766BCF
- NewAge - El Kuran (Block 8)
Recent Success

- New discovery - Increased reserve
- Previous discoveries – Ogaden basin
  - Calub - 2.7 TCF
  - Hilala – 1.3 TCF
  - El- Kuan
- Several prospects and leads are delineated
- Companies are prepared for more drilling
Calub Gas Field

- Discovered in 1973
- 10 wells – all productive
- Two reservoirs
  - Adigrat – Condensate
  - Calub – dry gas
- Development plan under consideration
- Wells completed
Possible Production

- LNG
- GTL
- CNG
- Various liquid products – from the condensate
  - Benzene
  - Kerosene
  - Diseal oil
  - Jet fuel
  - LPG
Available Opportunities

- The greater Afar Block
- The Mekelle Basin
- The Segen rift basin
- Abay basin
- The Ogaden basin
Downstream Activities

- More local players are increasing

United Petroleum (Yetebaberut)
Conclusion

- More mapping activities were carried out and still going on
- Community development in some contract areas
- Several prospects and leads - delineated in different blocks
- Previous and New discoveries were made
- Valid geological model for stratigraphic traps in the Ogaden region is proved
- New petroleum system identified
- Two drilling rigs and five seismic crews are actively working
- Opportunities for investment (exploration, production and transportation) still available
Thank You