



NATIONAL PETROLEUM INSTITUTE - MOZAMBIQUE

Presentation to the AAPG 2011 Conference



- ◆ Introduction to Mozambique
- ◆ Legal Framework
- ◆ Petroleum Activities
- ◆ Database
- ◆ Current Exploration Activities & Perspectives
- ◆ Natural Gas Project Development
- ◆ Challenges
- ◆ Futures Plans
- ◆ Final Remarks



- ◆ **Location:** South-eastern Africa
- ◆ **Land area:** approximately 800,000 Sq.km
- ◆ **Coastline:** Approximately 2,700 Km
- ◆ **Onshore sedimentary area:** 290,122 Sq.km
- ◆ **Offshore sedimentary area:** 282,227 Sq.km
- ◆ **Population:** 21.8 million (2009)
- ◆ **Capital:** Maputo (3 million people)
- ◆ **Natural Resources:** Hydropower, natural gas, coal, minerals, raw wood, agriculture
- ◆ **Export:** natural gas, prawn, cashew, sugar, tea, coconut oil and cotton
- ◆ **President:** Armando Emilio Guebuza





- ◆ Is the regulatory authority for the petroleum operations (exploration, production and transport of hydrocarbons).

Mission

- ◆ *To manage the petroleum resources of Mozambique and administer the related operations for the benefit of the Society, and in compliance with the existing laws, government policies and contractual commitments.*

Vision

- ◆ *As the Regulatory Authority for petroleum exploration and production, ascertain that petroleum operations are conducted in accordance with laws, regulations and international best practices, with special emphasis on optimal resource management, health safety and the protection of environment*



ENH - National Hydrocarbon Corporation



- ◆ Is the state oil company established by the Law 3/81
- ◆ Formerly with exclusivity rights, is now mainly commercially focused
- ◆ Participates as a stakeholder, in the natural gas project
- ◆ Participates in the exploration, with carried interest, in association with oil companies in exploration.

Mission

- ◆ *To develop into a competent petroleum company with a profitable portfolio of business activities ranging from Oil & Gas E&P, Gas Transmission, Distribution and Gas Utilization, mainly within Mozambique but also including neighboring countries if feasible*

Vision

- ◆ Optimize the value that can be generated for Mozambique through commercial participation in Exploration & Production as well as in the total Petroleum Value Chain
 - ENH has two affiliated companies (CMH & CMG)



◆ Exploration Strategy

- ✓ To maximise value creation from the petroleum resources in the country

◆ Licensing Policy

- ✓ Licensing through open bidding rounds
 - ✓ Access to data / prepared data packages
 - ✓ Sufficient time/resources for promotion
- ✓ Direct negotiations

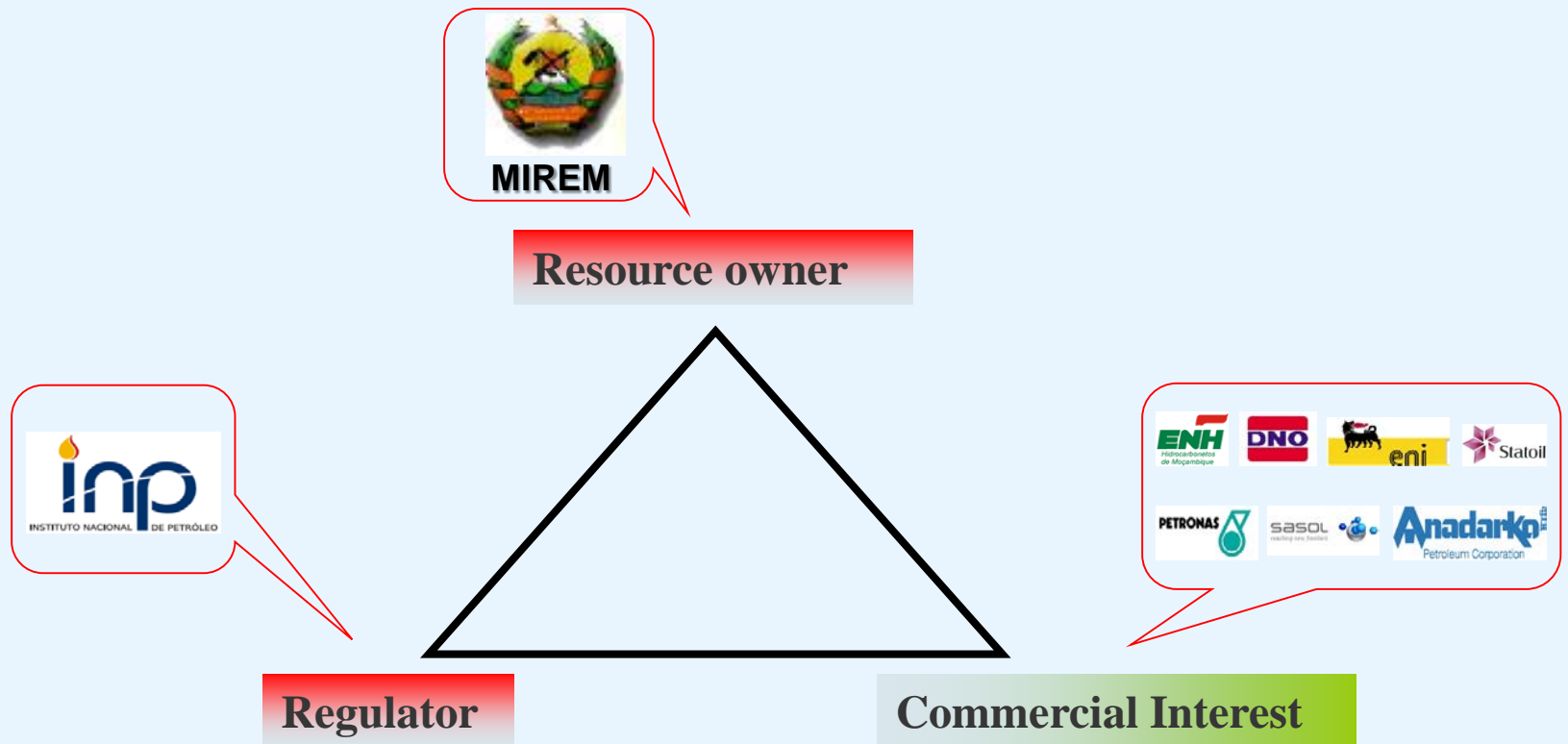
◆ Main Requirements

Technical expertise and financial capacity including competence and experience of applicant's former activities (ex: Deep Water and HSE)

LEGAL FRAMEWORK

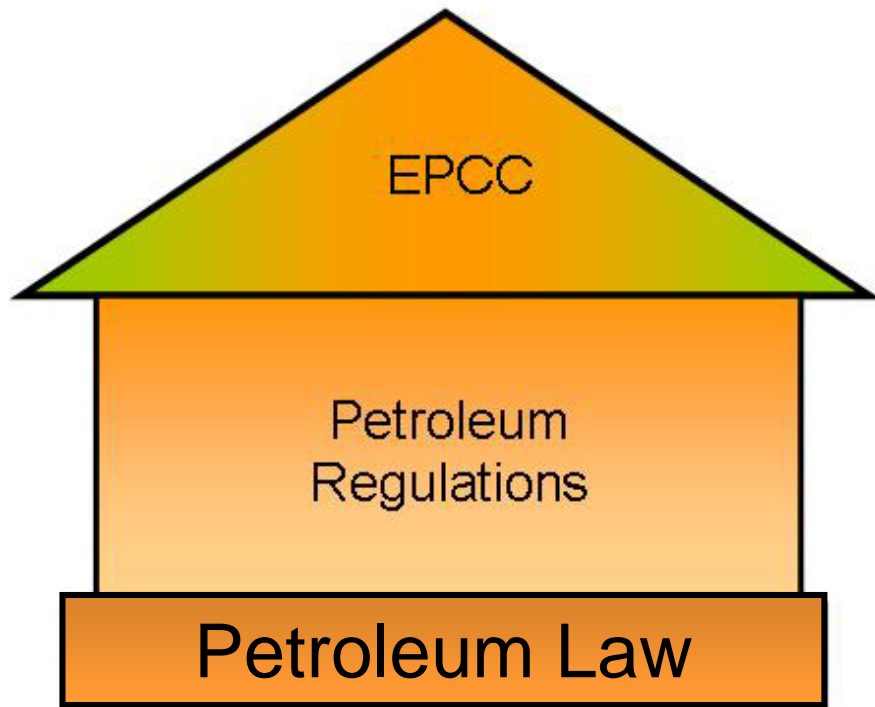


The Petroleum law is the legal foundation for the governance structure of petroleum activities, clarifying roles and interests:





Core Elements of the Legal and Regulatory structure



Legend

Administrative law

Contract law

- New Model Exploration and Production Concession Contract (EPCC) – 2005.
- Petroleum Law 3/2001.
- Regulation for Petroleum Operation , Decree No.24/2004.
■ Strategy for Concession Areas for the Petroleum Operations, Resolution No. 27/2009.
■ Strategy of Development of Natural Gas Market in Mozambique, Resolution No. 64/2009
■ Regulation for licensing Petroleum installation and activities, Ministerial Diploma No. 27/2009.
■ Environmental Regulation Specific for Petroleum Activity
■ Fiscal Law on Petroleum activities: Law 12/2007.
■ Mining and Petroleum Tax Incentives: Law 13/2007
■ Petroleum Production Tax Regulations, Decree No. 4/2008

FISCAL REGIME

TAXATION	%
Income Corporate Tax	32 %
VAT	17 %
Royalty - Gas	6 %
Royalty - Oil	10 %

Laws 12 & 13/2007



Reconnaissance Contract

- ◆ Exclusivity right 2 years to conduct survey studies and drill wells up to 100 meters

Exploration and Production Concession Contract (EPCC)

- ◆ Exclusive right to conduct petroleum exploration and production as well as a non-exclusive right to construct and operate oil or gas pipeline systems
- ◆ The exclusive exploration rights shall not exceed 8 years, and shall be subject to provisions concerning abandonment. The exclusive right to develop and produce shall not exceed 30 years.

Oil and Gas Pipeline Contract

- ◆ Grants the right to construct and operate an oil or gas pipeline for the purpose of transporting hydrocarbons

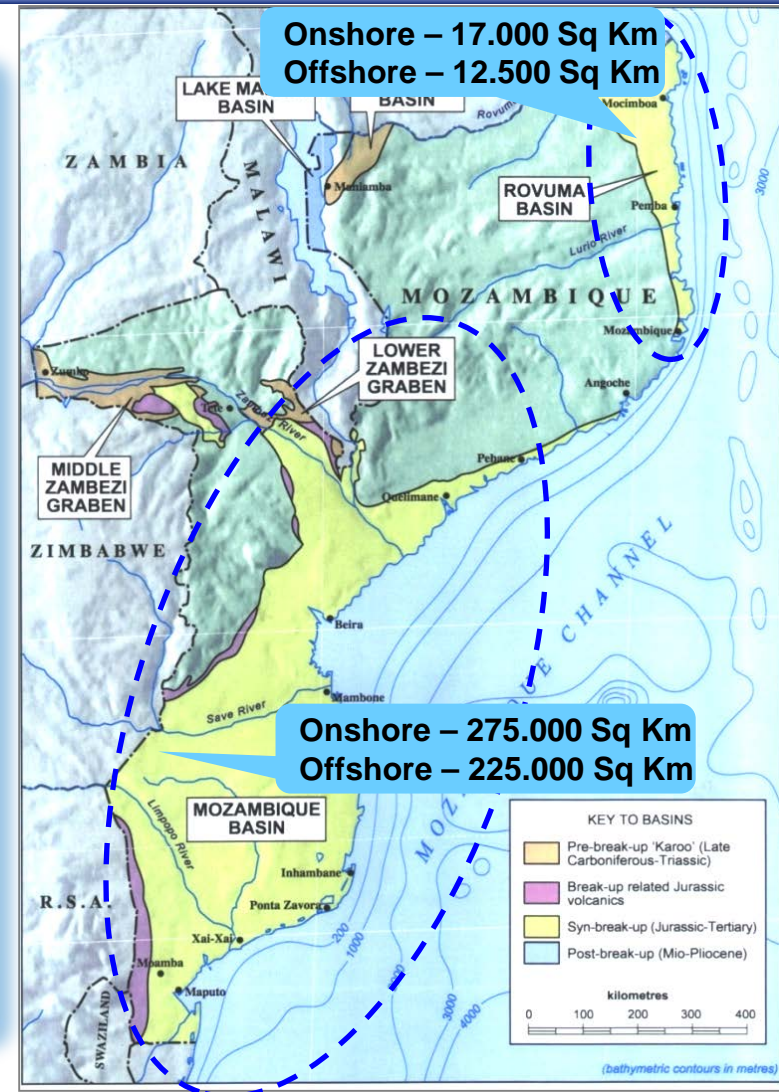


PETROLEUM ACTIVITIES



- ◆ Mozambique Basin
 - ◆ Lower Zambeze Graben
 - ◆ Middle Zambeze Basin

- ◆ Rovuma Basin
- ◆ Maniamba Basin
- ◆ Lake Niassa Basin



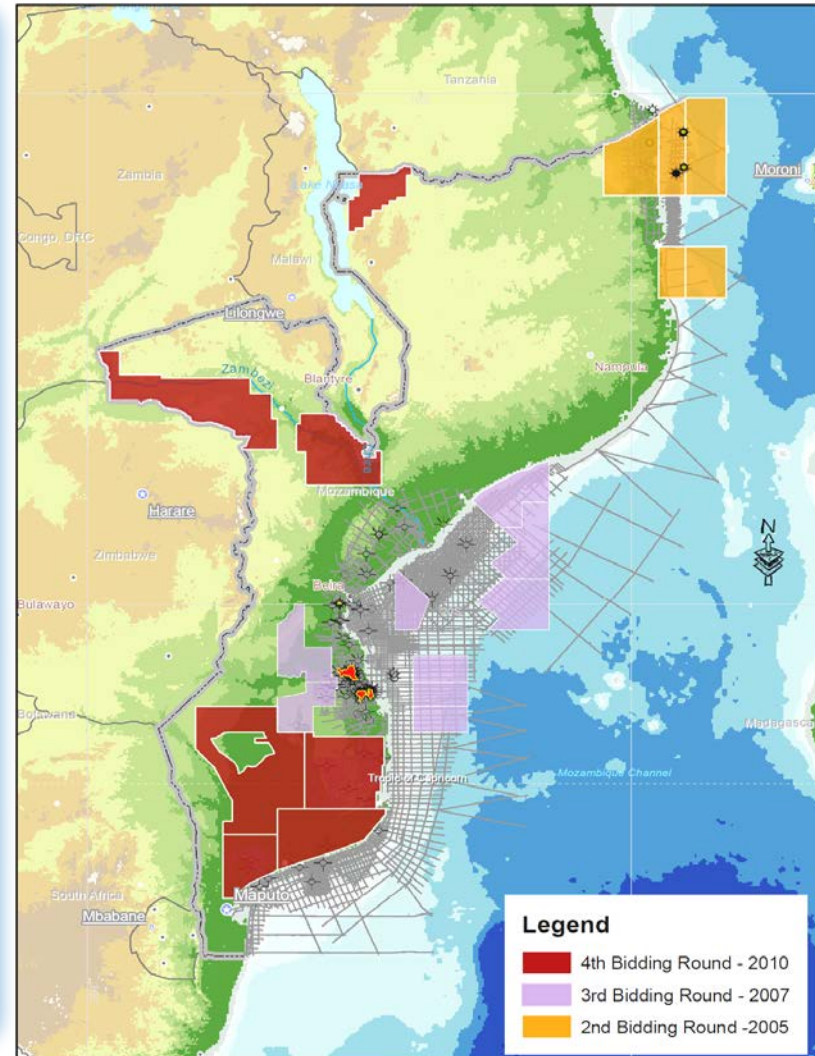


2005 - 1st Licensing Round (Mozambique Basin)

2007 - 2nd Licensing Round (Rovuma Basin)

2008 - 3rd Licensing Round (Mozambique Basin)

2009 - 4th Licensing Round (Onshore Basin) -





DATABASE

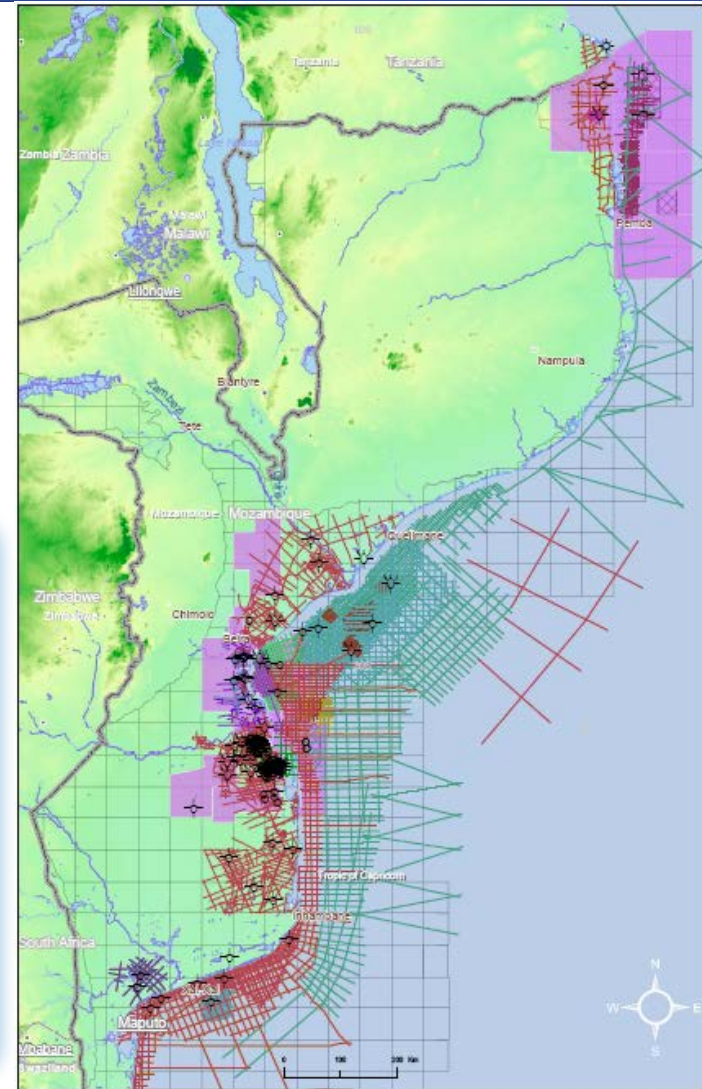


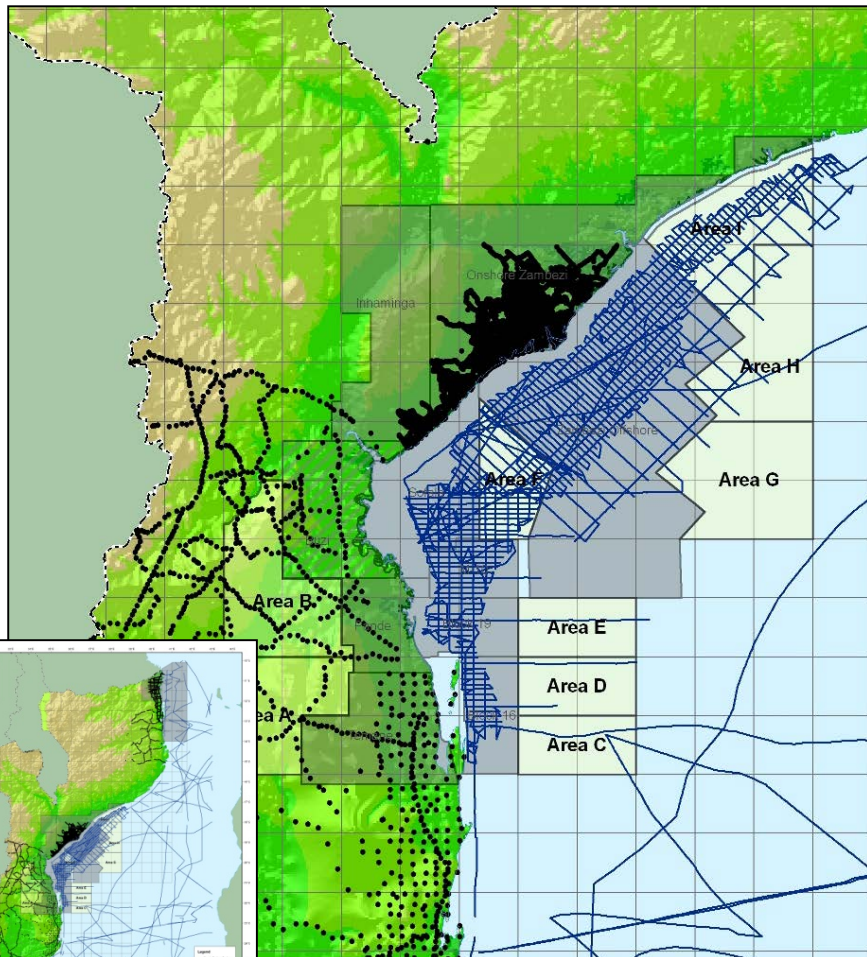
Total of 141 wells drilled (onshore/offshore):

- ◆ 81 wells – wildcat
- ◆ 24 wells – production
- ◆ 34 wells – appraisal
- ◆ 2 wells - Injection

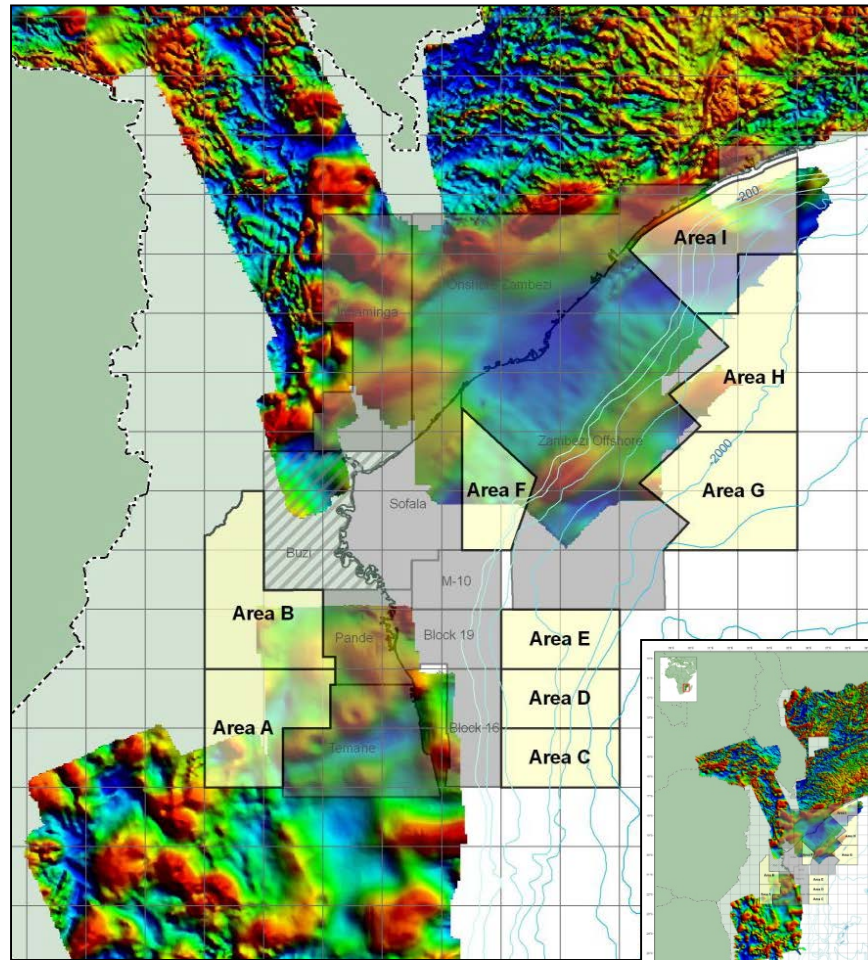
Total of Acquired Seismic

- ◆ Approximately **114.000 km** of **2D** seismic acquired from 1950's to 2010 (onshore/offshore)
- ◆ Approximately **15.000 Sq. km** of **3D** seismic (offshore).

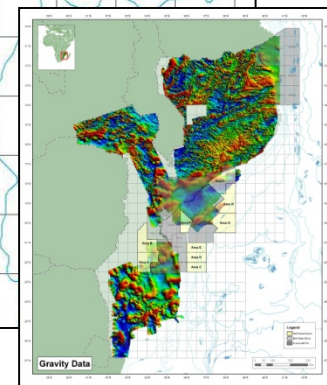




Gravity profiles



Magnetic coverage



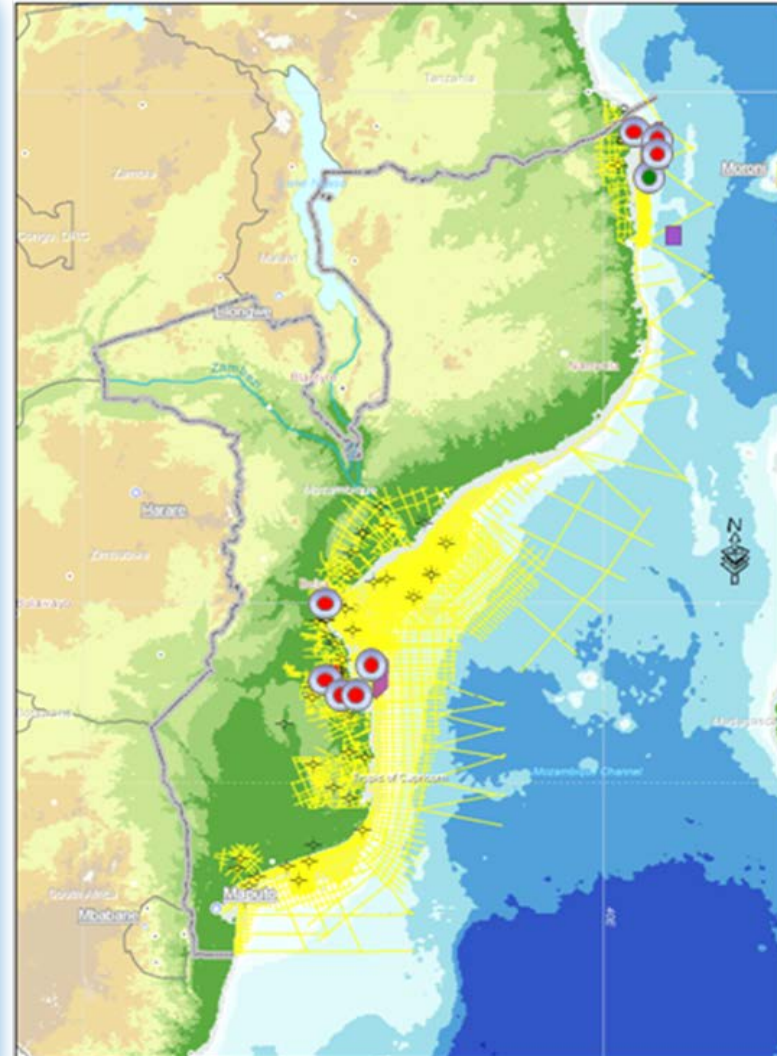


Mozambique Basin

- ✓ 1961 - 1st Discovery – **Pande**
- ✓ 1962 - 2nd Discovery – **Buzi**
- ✓ 1967 - 3rd Discovery – **Temane**
- ✓ 2003 - 4th Discovery – **Temane East**
- 5th Discovery – **Inhassoro**
- ✓ 2008 - 6th Discovery – **Block 16&19**

Rovuma Basin

- 2009 – One Gas shows - **Onshore Area**
- 2010 – One Oil Shows – **Ironclad well**
- 2010 – 1st Discovery in February – **Windjammer**
- 2nd Discovery in October – **Barquintine**
- 3rd Discovery in November – **Lagosta**
- 2011 – 4th Discovery in December – **Tubarão**





◆ Mozambique Basin – Pande & Temane fields

Natural Gas Fields	Discovery	Operator	Resources GIIP (TCF)	Proved Reserves		Beginning / Duration
				Gas (TCF)	Condensate (106 Barrels)	
Pande	1961 -Gulf	SASOL	3.407	1.86	6.0	2007 / 25 Years
Temane	1967 - Gulf	SASOL	1.377	0.83	8.0	2004 / 25 Years
Grand Total			4.784	2.74	14.0	

◆ Additional potential of about 1.8 TCF is present at the Pande/Temane PSA Area

◆ Rovuma Basin – Discovered Resources under evaluation

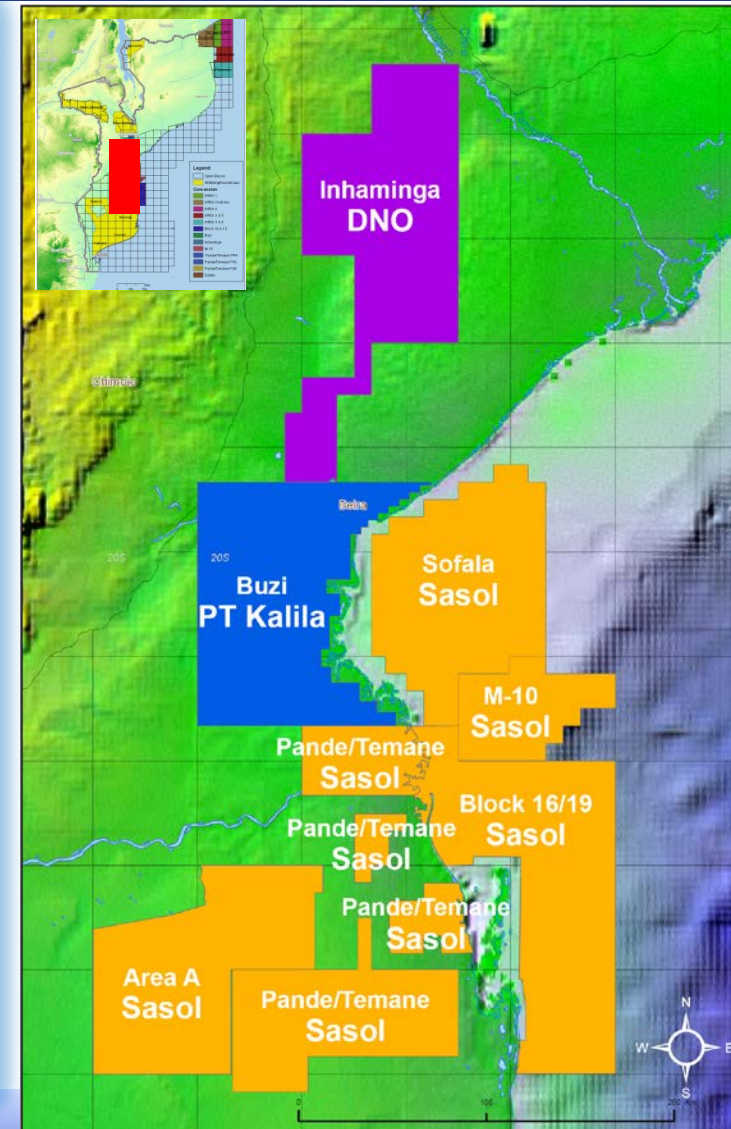


CURRENT EXPLORATION ACTIVITIES AND PERSPETIVES



MOZAMBIQUE BASIN (8)

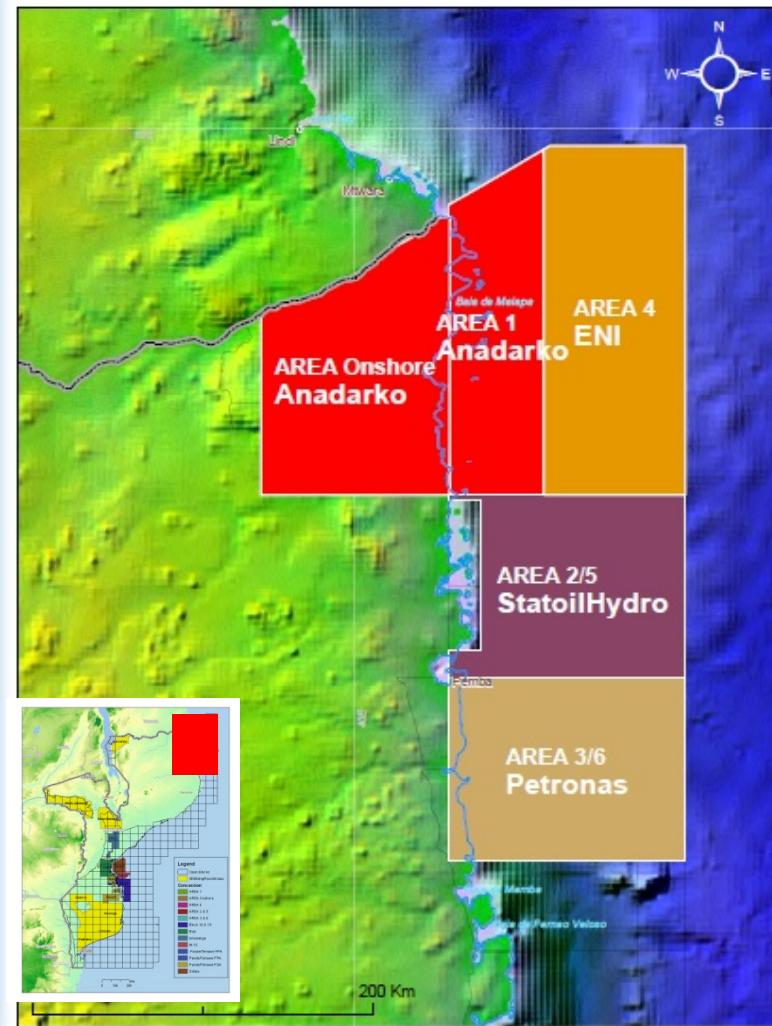
Concession	Partners
Pande/Temane (PSA)	Sasol (100%)
Pande/Temane (PPA)	Sasol (70%), ENH (25%) & IFC (5%)
16 & 19	Sasol (50%), Petronas (35%) & ENH (15%)
Inhaminga	DNO (55%), Harmattan (5%), New Age (40%)
Baia de Sofala	Sasol (85%) & ENH (15%)
M-10	Sasol (42.5%), Petronas (42.50%) & ENH (15%)
Area-A	Sasol (85%), ENH (15%)
Búzi	PT Kalila (70%) & ENH (30%)





ROVUMA BASIN (5)

Concession	Partners
Area Onshore	Anadarko (35.7%), Artumas (15.3%) Maurel & Pron (24%), ENH (15%) & Cove Energy (10%)
Area 1	Anadarko (36.5%), Mitsui (20%), ENH (15%), BPRL (10%), Videocon (10%) & Cove Energy (8.5%)
Area 4	ENI (70%), ENH (10%), KOGAS (10%) & Galp Energia (10%)
Area 2 & 5	Statoil (90%) & ENH (10%)
Area 3 & 6	Petronas (90%) & ENH (10%)



Pande & Temane – Sasol

- ◆ Acquired and interpreted 933km of 2D seismic in 2009.

Drilled during 2003/8

- ◆ 13 Exploration Wells -
- ◆ 17 Production Wells
- ◆ 14 Appraisal Wells

Drilled during 2010:

- ◆ 17 Production Wells
- ◆ 2 Exploration Wells
- ◆ Work over in 6 Production Wells 2010/11

16&19 Block– Sasol

- ◆ Acquired 2 040 Km² of 3D seismic
- ◆ Acquired 2 031 Km of 2D seismic
- ◆ Two Exploration Wells drilled in 2008 and both were gas discoveries
- ◆ EIA to drill 2 exploration wells

Inhaminga Block

- ◆ 3 wells drilled (2005 – 2007)
- ◆ A Total of 760km of 2D seismic (2007-2009),
- ◆ 1 Exploration Wells drilled in 2010
- ◆ 1 Exploration well drilled in 2011

Buzi Block – PT Kalila (Buzi Hydrocarbons)

- ◆ Finished EIA to seismic acquisition and to drill 1 Exploration Well
- ◆ Completed reinterpretation of previously existing 1650 km 2D seismic

Sofala Bay & M-10 Blocks – Sasol

- ◆ Re-processed & interpreted 2729 km of 2D seismic for prospect maturation
- ◆ Finished EIA to drill Exploration Wells



Area Onshore - Anadarko

- ◆ Acquired 648 Km of 2D seismic
- ◆ Drilled 1 Exploration Well in 2009 (Mecupa -1)

Area-1 - Anadarko

- ◆ Acquired 6000km of 2D seismic & 3400 SqKm of 3D seismic data
- ◆ Drilled 6 Exploration 2009-2010 with 4 gas discoveries and 1 technical oil discovery
- ◆ Ongoing appraisal activities

Area 2&5 - Statoil

- ◆ Acquired 3000 Km of 2D seismic
- ◆ Acquired 1407 Sq Km of 3D seismic and it is being processed
- ◆ Completed Ocean studies for tide currents.

Area 3&6

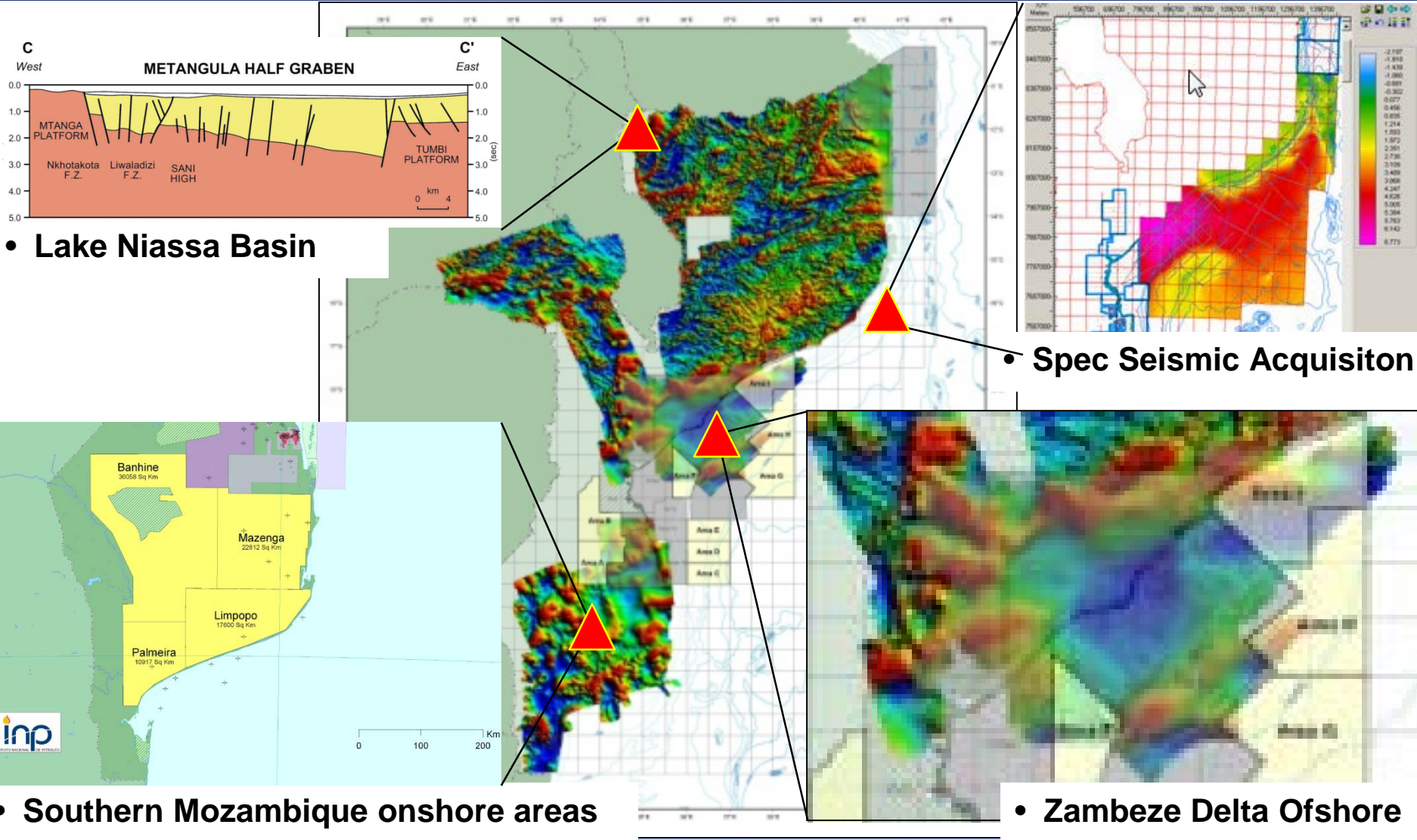
- ◆ Acquired 7287 km of 2D seismic

Area 4

- ◆ Acquired 1047 Km of 2D seismic
- ◆ Acquired 1520 Sq km of 3D seismic and it is being processed and interpreted
- ◆ 2 well to be drilled in 2011



Exploration Opportunities



• Lake Niassa Basin

• Spec Seismic Acquisition

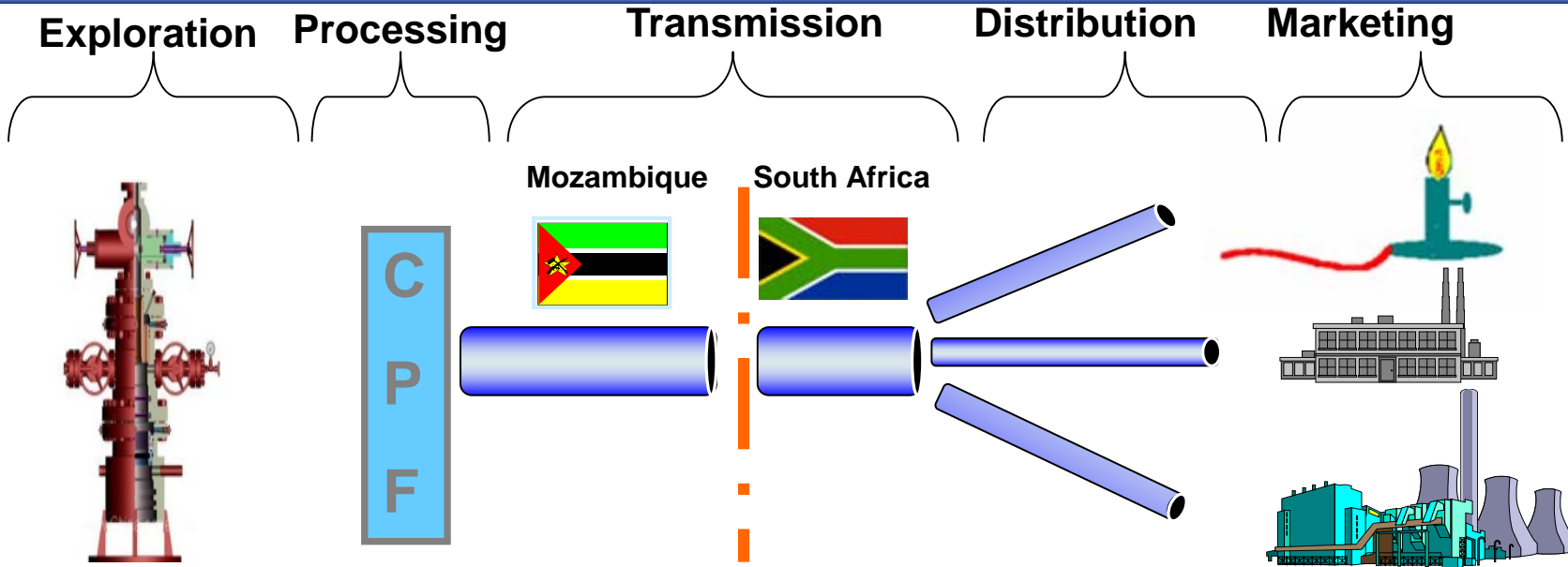
• Southern Mozambique onshore areas

• Zambeze Delta Offshore



NATURAL GAS PROJECT

STRUCTURE OF NATURAL GAS VALUE CHAIN

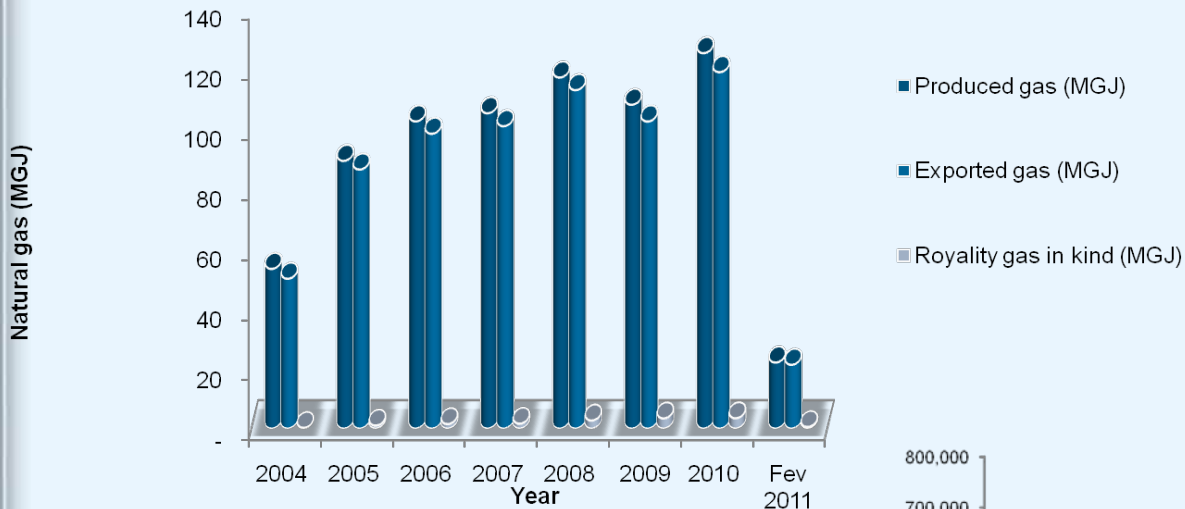


INP (Regulator in Mozambique)		NERSA (Regulator in SA)	
<p>Field</p> <ul style="list-style-type: none"> ▪ Sasol Petroleum Temane 70% ▪ Moz Govt 25% (Via ENH/CMH) ▪ World Bank / IFC 5% 	<p>CPF</p> <ul style="list-style-type: none"> ▪ Sasol Petroleum Temane 70% ▪ Moz Govt 25% (Via ENH/CMH) ▪ IFC 5% 	<p>Pipeline (ROMPCO)</p> <ul style="list-style-type: none"> ▪ Sasol Gas Holdings (50%) ▪ SA Govt 25% (Via CEF/Gas) ▪ Moz Govt 25% (Via ENH/CMG) 	<p>Market</p> <ul style="list-style-type: none"> ▪ Sasol Gas external markets ▪ Sasol Gas internal markets: <ul style="list-style-type: none"> • Spring Lights Gas (49%) • Sasol Synfuels • Sasol Oil <ul style="list-style-type: none"> - Tshwarisano 25% - LFB 75% • Sasol Chemical Industries
<p>External Financiers</p>			

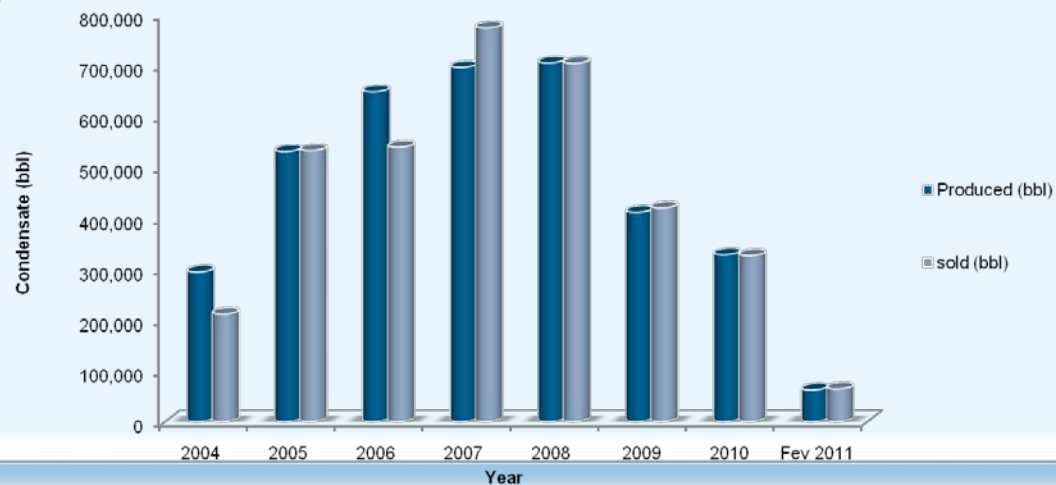




Natural Gas Yearly Production



Condensate Yearly Production



CNG Buses, 2007



Compressed Natural Gas System, 2007





Ongoing the expansion of the natural gas project from 120 to 183 MGJ/year:

- ◆ Development of the gas fields
- ◆ The Central Processing Facility (CPF)
- ◆ The gas transmission pipeline.

◆ Further expansion is being considered in the near future to increase capacity to 300 MGJ/year.

◆ Foreign investors interested in implementing new projects in Mozambique based on natural gas:

- ◆ Iron reduction
- ◆ Fertilizers
- ◆ Power generation
- ◆ Possible LNG

CHALLENGES



◆ **New offshore seismic data acquisition & reprocess some of old seismic data**

◆ **National capacity building to operate the fields, CPF and pipeline**

◆ **Maximize the use of natural gas in the country**

◆ **Promote the local processing of hydrocarbons to add value to indigenous resources**

◆ **Medium and long term training of national for management of petroleum resources**



FINAL REMARKS



Mozambique offers good exploration opportunities:

Good prospective acreage available

Favourable legal, regulatory and fiscal framework

Adequate infrastructure for natural gas transmission;

Political stability

Mozambique offers good investment opportunities:

The socio-economic indicators are steadily growing

GDP is growing on average of 7 to 8% per year

The inflation rate is under control and the local currency the new metical is stable

The fiscal incentives for foreign investment are attractive

The infrastructures such as roads, telecommunications are improving substantially

You are Welcome to Mozambique

Thank You!

