



NAMPOA
NAMIBIA PETROLEUM OPERATORS ASSOCIATION

OIL & GAS UPSTREAM SECTOR PRESENTATION

NAMIBIA PETROLEUM OPERATOR ASSOCIATION

Mr Dennis Zekveld
Vice Chair NAMPOA
25 April 2018



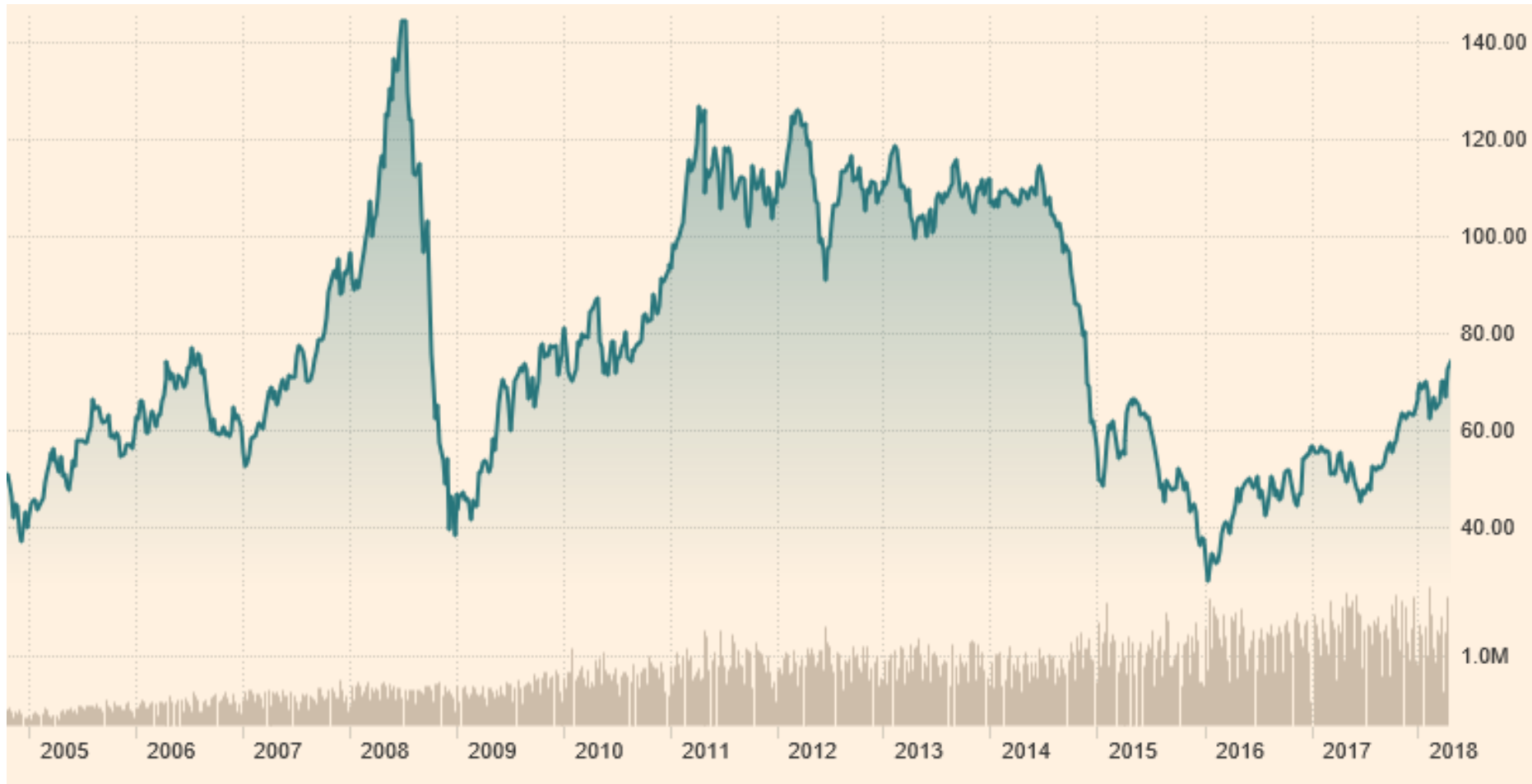
NAMPOA members

Dennis Zekveld Vice Chair	Uaapi Utjavari Chair	Maria Mbudhi Treasurer
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Acrep	Galp	Serica
Azinam	Impact	Shell
BW KUDU	Lekoil	Total
Eco Atlantic	Maurel et Prom	Tullow
Enigma/Chariot	NAMCOR	



Brent crude oil price (2005-2018)



Industry contributions to the country



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- ☐ Taxes and royalties to the State
- ☐ Significant export earnings
- ☐ Direct and indirect employment
- ☐ Supply of reliable and competitively priced energy
- ☐ Investment of risked capital



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A commercial oil discovery would be transformational for Namibia

The path towards a commercial oil discovery



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The first oil discovery in the North Sea was in 1969 (Ekofisk Field, Norway) after the drilling of many exploration wells

- ☐ Success breeds further success, bringing new investment and reinvestment in further exploration
- ☐ Multiple field discoveries saw the creation of the Norwegian Sovereign Fund

Encouraging exploration investment to achieve the first commercial oil discovery in Namibia is essential

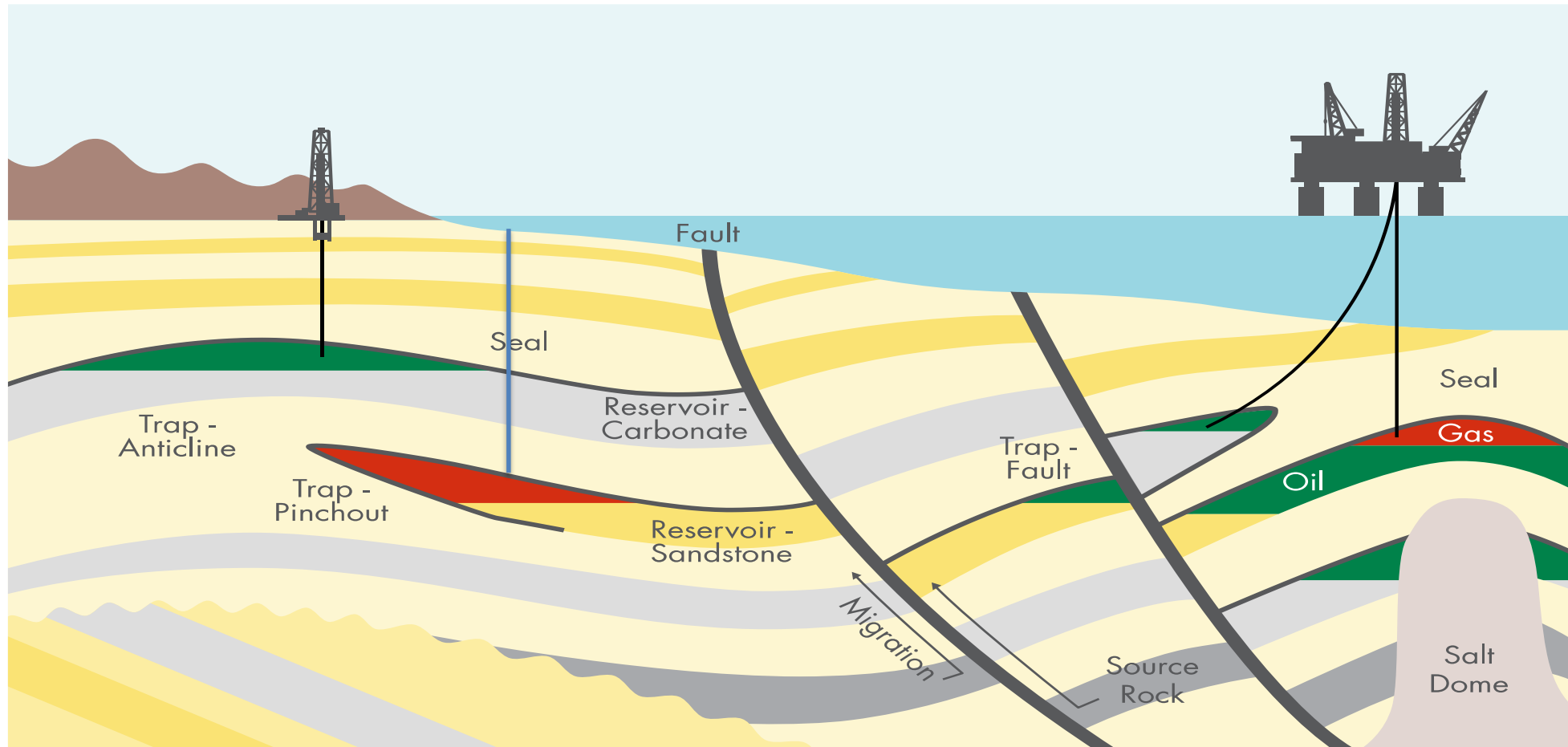
- ☐ It has the potential to transform the Namibian economy with significant increase in GRN revenues
- ☐ It will exponentially increase the opportunity for new businesses and skills development
- ☐ A large increase in spending power will grow economic activity in all parts of the economy

The process of exploration is hugely complex and high risk.

Understanding what it takes to explore is important.....



What do we look for?



Exploration fundamentals



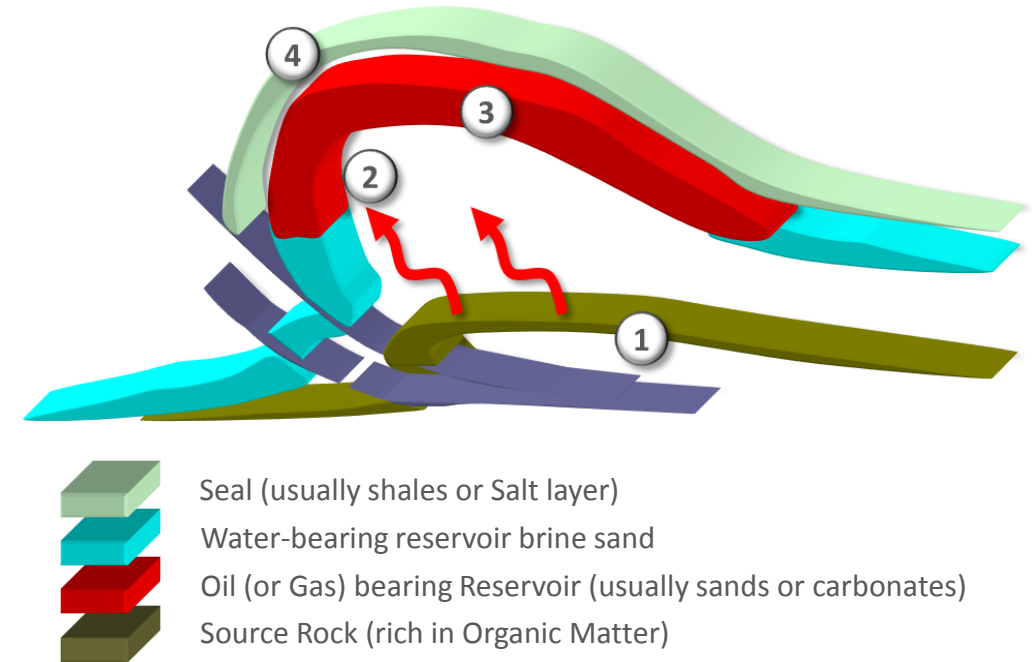
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What is exploration?

Find and appraise new oil and gas fields, using seismic and drilling wells

Exploring for oil & gas: 4 critical elements

- ☐ Hydrocarbon charge (1): Source rock, maturity and migration
- ☐ Trap (2): A configuration that can contain hydrocarbons
- ☐ Reservoir (2,3) : a porous container for hydrocarbons
- ☐ Seal (4): Capping the container, to prevent hydrocarbons moving upwards



The water bottle analogy ...

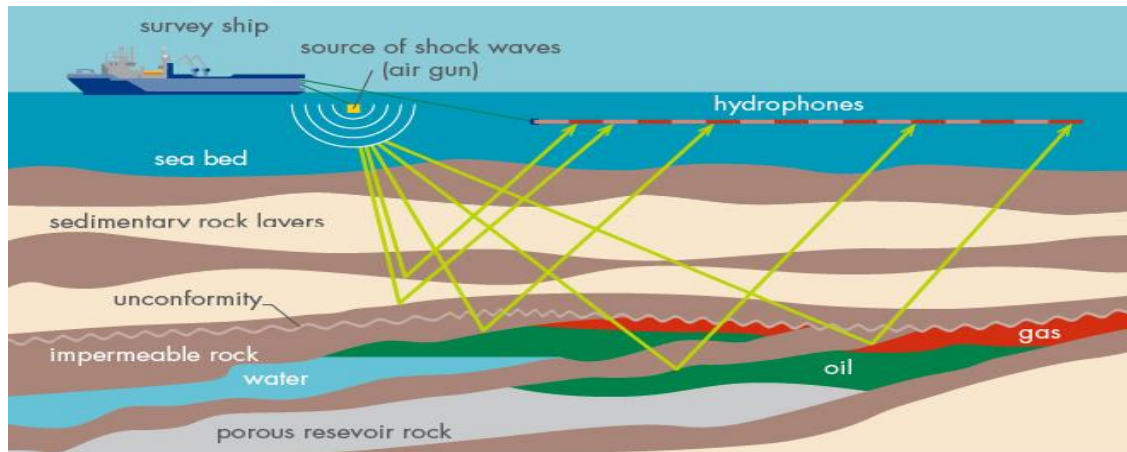
- 1 A "Natural Spring" (= Source Rock generating Hydrocarbons)
- 2 A "Water pipe" (= Migration/Structure concentrating Hydrocarbons)
- 3 A "Bottle" (= Reservoir rocks storing Hydrocarbons)
- 4 A "Cap" (= Seal trapping Hydrocarbons)



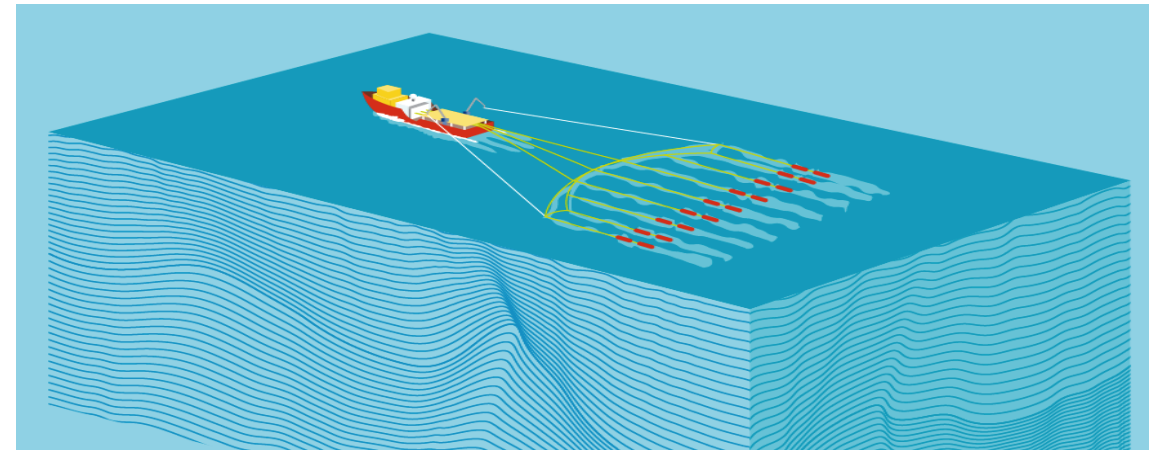


Seismic acquisition

OFFSHORE



3D SEISMIC CUBE



Drilling wells



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ONSHORE



OFFSHORE



TYPES OF WELLS

Exploration wells

Establish the presence of oil and/or gas in a structure

Appraisal wells

Define the volumes with more accuracy, in order to establish commerciality and the forward development plan

Production wells

Production wells are drilled when exploration and appraisal wells have been completed, proving commercial volumes of oil or gas, and a decision has been reached to develop the field.



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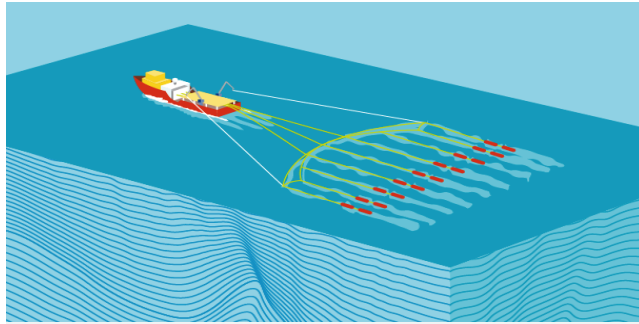
A solid understanding of oil and gas exploration gives an appreciation of the risks involved, and the massive investments needed

High-risk investments, but no guarantee of success



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DATA ACQUISITION



- Geoscience Studies
- Gravity/Magnetics
- Remote Sensing
- Seismic Data

Chance of success: 10-30%

**Investment: USD 10-40 mln
NAD 120 – NAD \$500 million**

Up to 4 years

EXPLORATION PHASE



- Establish presence of oil & gas
- Testing different models (plays)
- Initial volume estimates

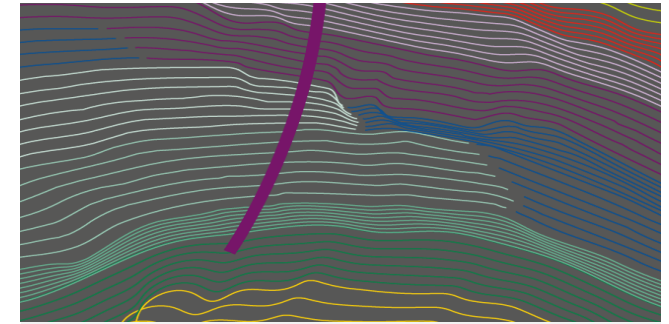
DRILL TARGET?

Chance of success: 10-25%

**Investment: USD 30-80 million per well
NAD 350 million – NAD 1 billion/ well**

Up to 4 years

APPRAISAL PHASE



- Commercial volumes
- Reservoir performance
- Fluid characteristics

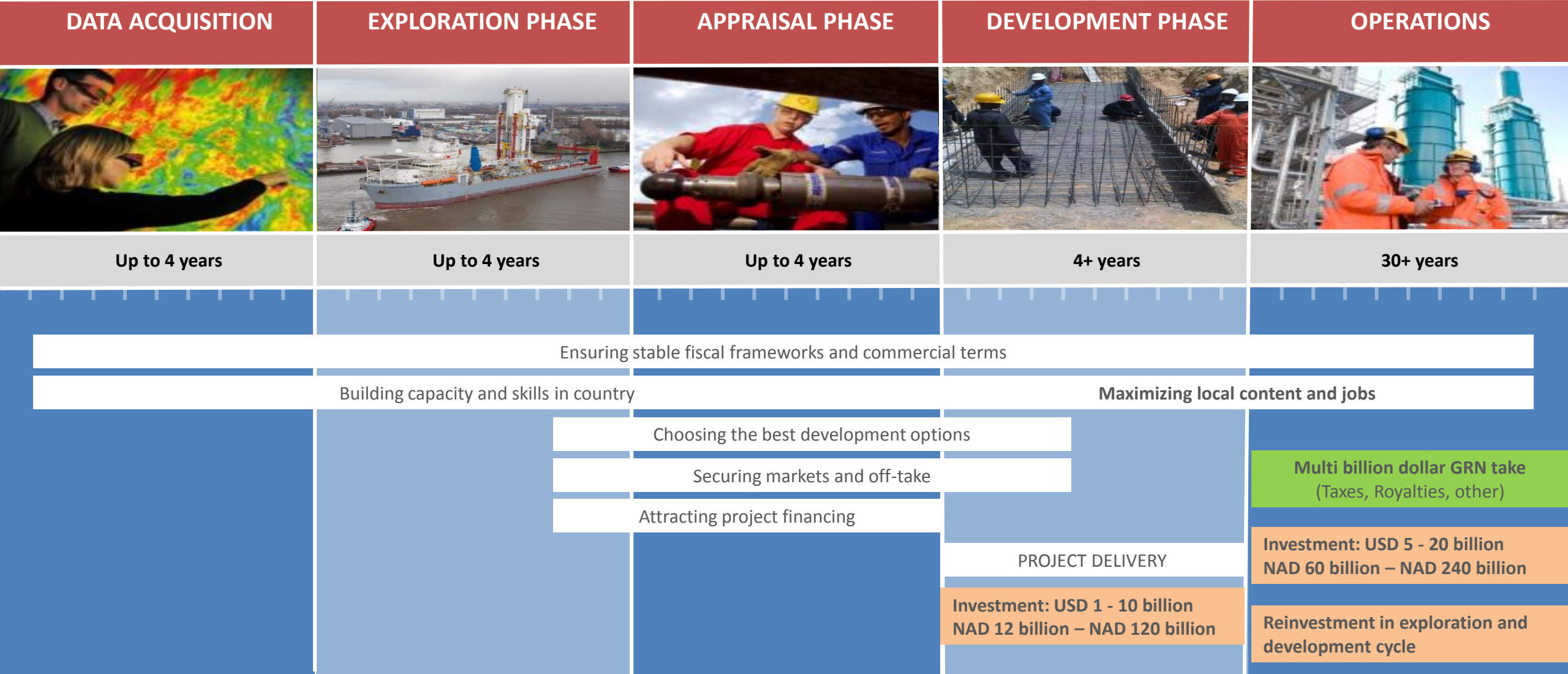
DISCOVERY?

Chance of success: 30- 50%

**Investment: USD 30-80 million per well
NAD 350 million – NAD 1 billion/ well**

Up to 4 years

Successful oil and gas industry has potential to transform the Namibian economy

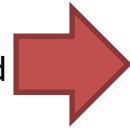




Namibia exploration: a historic overview

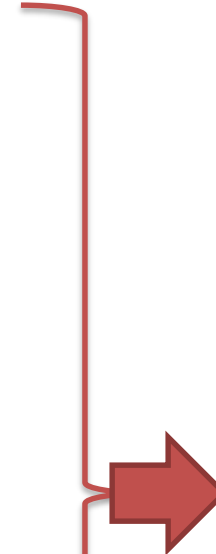
Petroleum Industry History till Independence

- ❑ 1967: Offshore exploration started
- ❑ 1974: Discovery of Kudu Gas Field by Chevron
 - Dry sweet gas with little condensate
- ❑ 1976: All licenses voided/ exploration stopped
 - Vienna International Conference for Independence of Namibia
- ❑ 1987/88: Kudu 2 & Kudu 3 wells drilled by SWAKOR
 - Gas shows



Post-Independence 19 wells drilled with no commercial discovery yet

- 1) 1993 Norsk Hydro
- 2) 1995 Norsk Hydro
- 3) 1995 Ranger Oil
- 4) 1995 Sasol
- 5) 1996 Chevron
- 6) 1996 Shell (Kudu 4)
- 7) 1998 Norsk Hydro
- 8) 1998 Shell (Shark)
- 9) 1998 Shell (Kudu 5)
- 10) 2002 Shell (Kudu 6)
- 11) 2002 Shell (Kudu 7)
- 12) 2007 Tullow (Kudu 8)
- 13) 2008 Energulf (Kunene)
- 14) 2012 Chariot (Tapir)
- 15) 2012 Petrobras (Kabeljou)
- 16) 2013 HRT (Wingat)
- 17) 2013 HRT (Murombe)
- 18) 2013 HRT (Moosehead)
- 19) 2014 Repsol (Welwitschia)



USD 2 billion (NAD 25 bln) invested by foreign investors since Independence

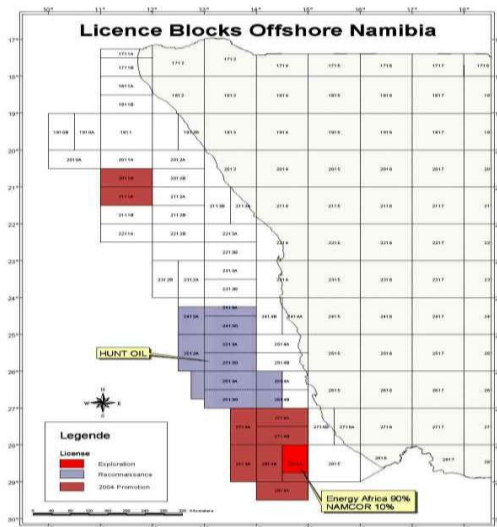
- ❑ Companies have invested billions of dollars in exploration activities, but there has been no commercial discovery since Independence



Significant increase in licenses issued

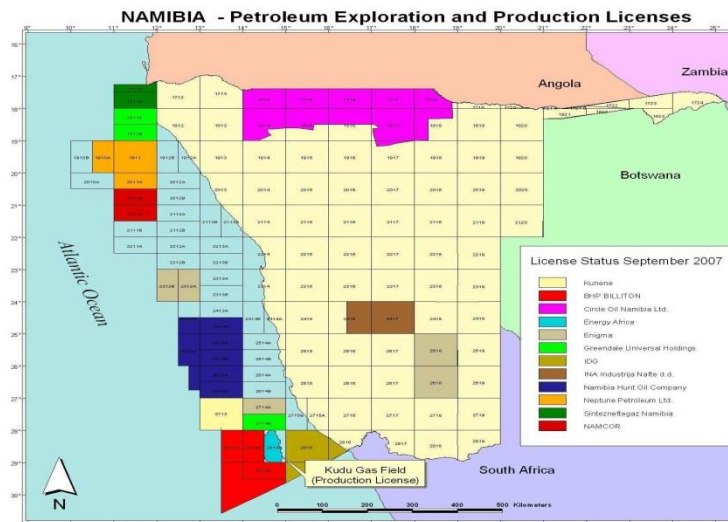
2004

- ❑ Offshore operations only
- ❑ 2 Exploration Licenses
- ❑ 1 Production license



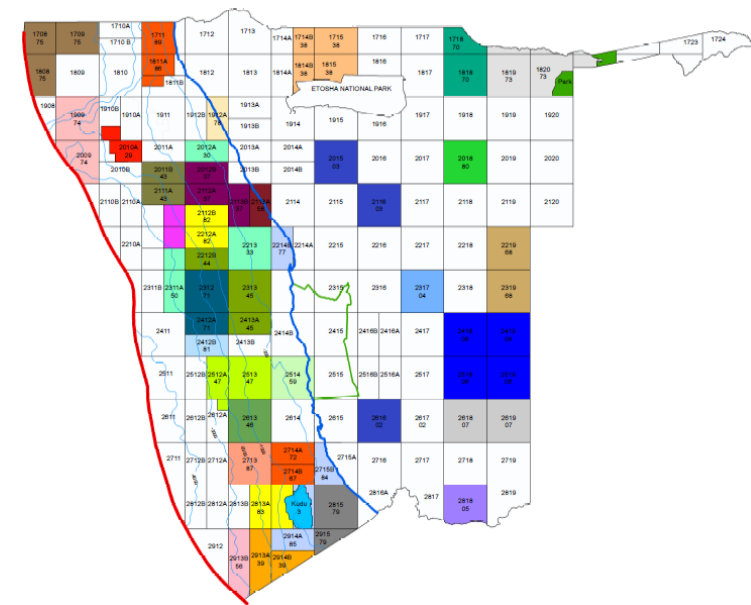
2007

- ❑ Offshore and Onshore operations
- ❑ 14 Exploration licenses
- ❑ 1 Production license



2018

- ❑ Significant increase in exploration interest both offshore and onshore
- ❑ 40 Exploration licenses (30+ Operators)
- ❑ 3 Reconnaissance Licenses
- ❑ 1 Production license

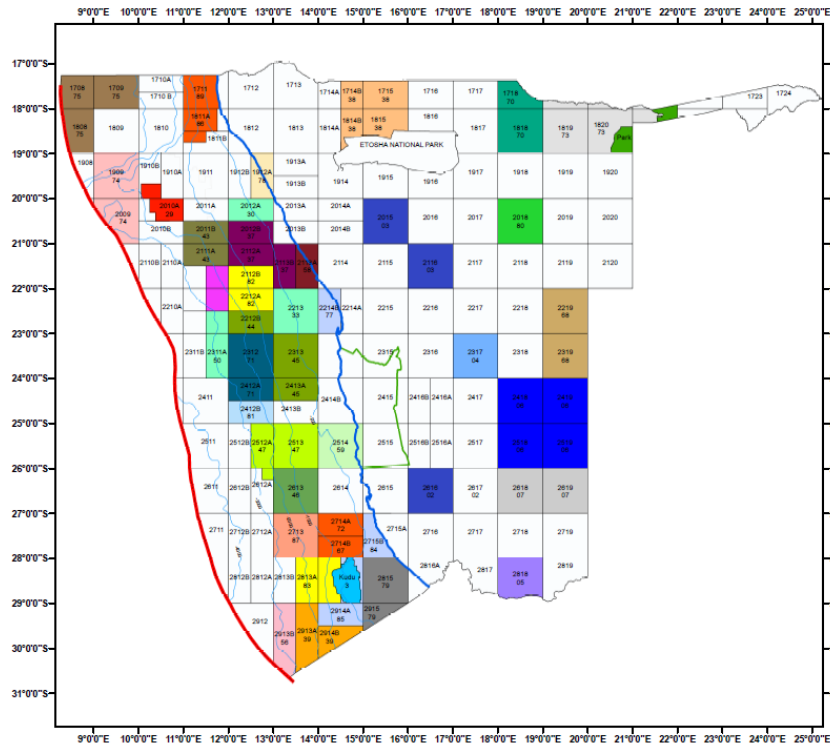


NAMCOR has 10% and local companies 5% interest in most licenses



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HYDROCARBON LICENSE MAP



Legend

- Limit Exclusive Economic Zone
- Isobath
- Shore line
- Etosha national Park
- World Heritage Zone

Production License

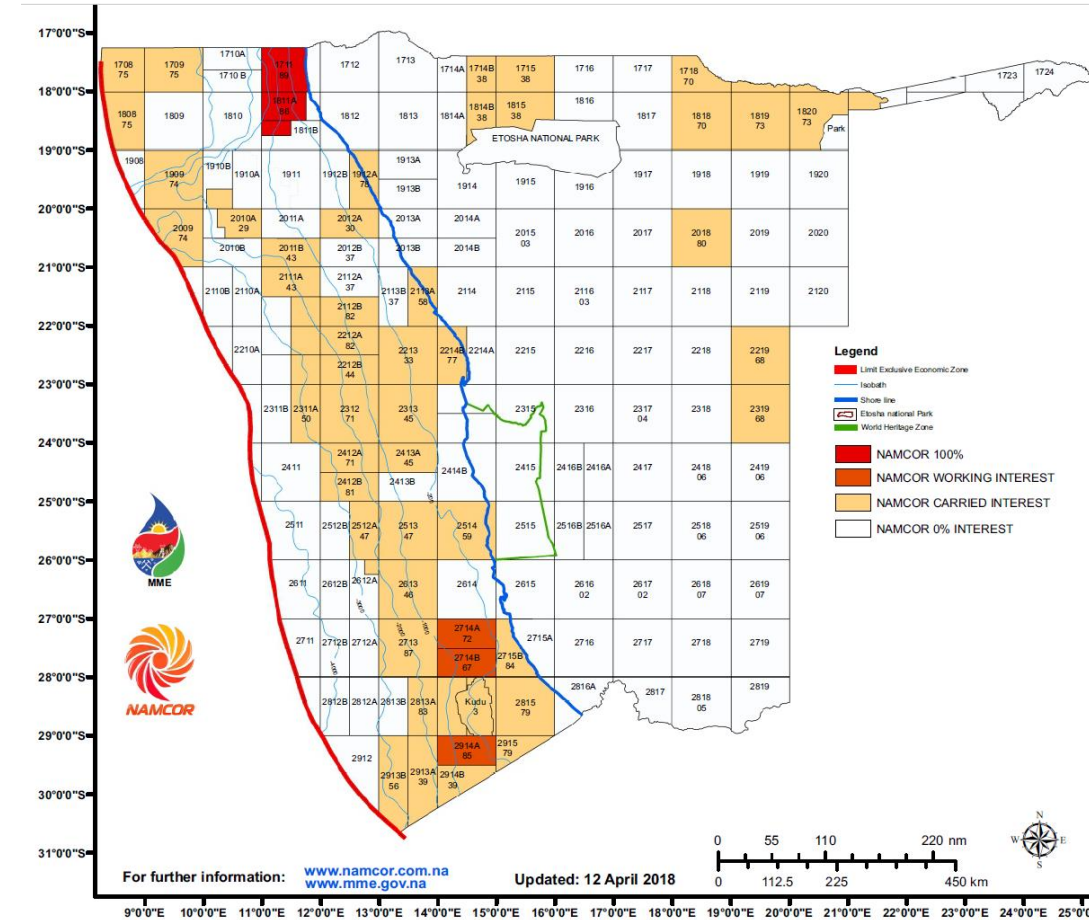
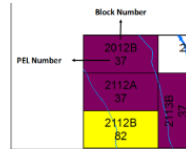
- (PL 3) BW Kudu / NAMCOR

Exploration License

- (PEL 20) Jupiter Petroleum Namibia
- (PELs 30, 33, 50) Eco Oil & Gas
- (PEL 34) Azinam / ECO
- (PEL 37) Tullow / ONGC / Pancontinental
- (PEL 38) Hydrocarb Namibia Energy Corp
- (PEL 39) Shell Exploration & Production
- (PELs 43) Oranto Petroleum
- (PELs 44, 45) Maurel & Prom Namibia
- (PEL 46) Cowan Oil and Gas Namibia
- (PEL 47) Serica Energy Namibia
- (PEL 56) Total / Impact
- (PEL 58) Nabrim Energy Services
- (PEL 59) Lekol E&P
- (PEL 67, 72, 86, 89) NAMCOR
- (PEL 68) Alumni Expl East Namibia
- (PEL 70) ACREP-Exploracao Petrolifera
- (PEL 71) Enigma Oil and Gas
- (PEL 73) Reconnaissance Energy
- (PEL 74) Tse Oil & Gas
- (PEL 75) Camelot Investment Group
- (PEL 76, 77, 84, 85) Rhino resources
- (PEL 78) Global Oil and Gas
- (PEL 79) Windfire Petroleum
- (PEL 80) Methacarb Investments
- (PEL 81) Sungu Sungu
- (PEL 82) Galp Energia / ExxonMobil
- (PEL 83) Galp Energia
- (PEL 87) Pancontinental Orange

Reconnaissance License

- (02, 03) Tristone Africa Namibia
- (04) Atlantic Petroleum
- (05) Oshikoto Power
- (06) Namibia E Source Petroleum
- (07) CGP Energy

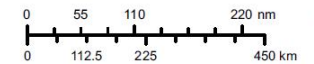


Legend

- Limit Exclusive Economic Zone
- Isobath
- Shore line
- Etosha national Park
- World Heritage Zone
- NAMCOR 100%
- NAMCOR WORKING INTEREST
- NAMCOR CARRIED INTEREST
- NAMCOR 0% INTEREST

For further information: www.namcor.com.na
www.mme.gov.na

Updated: 12 April 2018

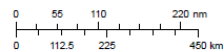


For further information:

www.namcor.com.na

www.mme.gov.na

Updated: 12 April 2018



Where is Namibia now on its oil & gas exploration journey?



Namibia's upstream oil & gas sector is evolving and requires an enabling environment

Prospectivity with considerable follow on potential

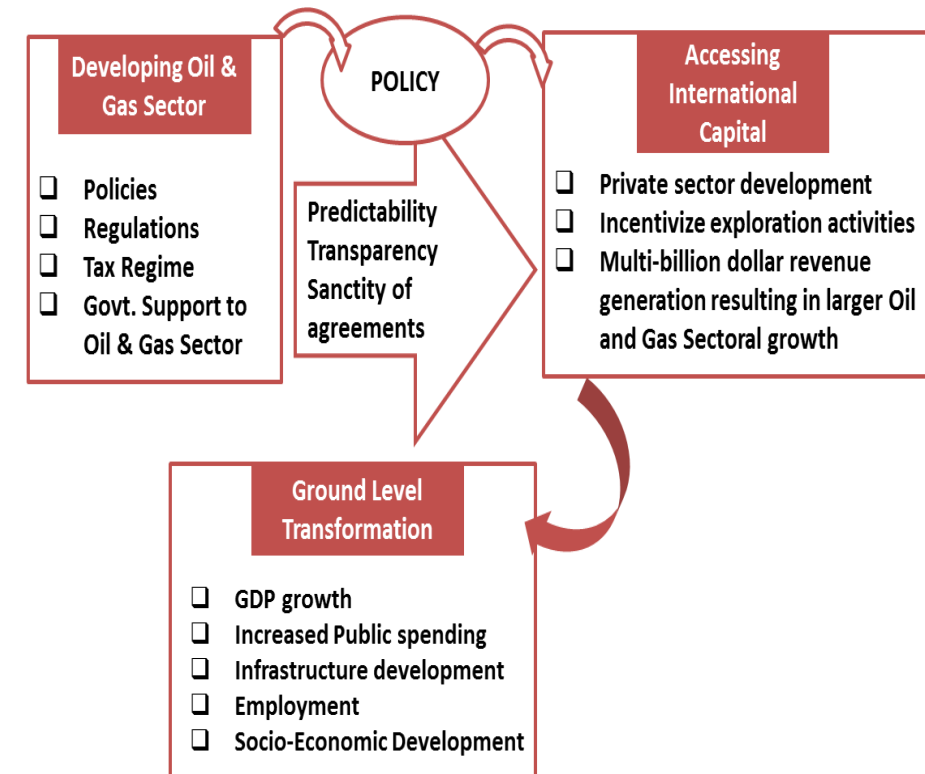
- ☐ Namibia has actively promoted its exploration and development potential
- ☐ Operators increased the understanding of the petroleum geology of the region
- ☐ Favorable terms and updated subsurface models have attracted major players

Challenges

- ☐ Number of dry wells with Kudu the only commercially viable find
- ☐ Large investments required to fund exploration activities with limited funds available globally for frontier exploration, for which Namibia competes

Namibia's investor climate needs to be highly competitive

- ☐ New investments will be heavily dependent on the country's policies which need to be predictable and competitive in the global context to attract exploration investments



Namibia's exploration activities: an overview



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Farm-ins

- ☐ Several Operators in farm-down process
- ☐ Recent successful farm-ins include ONGC, Total and ExxonMobil

Seismic campaigns

- ☐ 3D seismic programmes recently completed
- ☐ Several seismic campaigns planned for 2018/2019

Drilling campaigns

- ☐ No offshore wells drilled since 2014
- ☐ Tullow and Chariot/ Enigma preparing for 2018 drilling campaigns
- ☐ Potential multi-well drilling campaigns in 2019/2020 window



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Operators implement several CSR activities in-country based on societal needs and community priorities, all delivered in partnership with local organisations

Shared value creation – local content



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Upstream oil and gas capacity enhancement

Capacity enhancement and knowledge-sharing visits to Operators' facilities and head offices (UK, Netherlands, Portugal, USA, South Africa, Tanzania, Angola, Nigeria, other)

Established an inter-ministerial O&G working group chaired by MME PS and aligned with the critical development path of Namibia's upstream sector

Technical internships

In-country technical lectures by Operators

Tuition fees for Namibian university students

PETROFUND Contributions

The Petroleum Training and Education Fund was formed in 1993 to build capacity for the petroleum industry by offering training, scholarships and support in the scientific fields.

Operators contribute significantly to PETROFUND, with average per annum contributions of N\$ 600,000 per Operator (PETROFUND & In-House-Training)

Corporate Social Responsibility examples



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Science & Technology promotion

Support to local initiatives that promote science and technology subjects, an objective of Namibia's NDPs

Early childhood education

Support to education programme for children from impoverished backgrounds

Education facilities

Other examples

Offshore safety survival skills training
Disaster relief equipment
EIA training for MME
Health sector facilities

Road safety skills development

Support to initiatives of national road safety agencies

Sponsoring of defensive driving training courses



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The impact of an oil or gas discovery in Namibia would be significant in terms of providing access to energy, economic growth and social development

A successful oil and gas industry would be a game-changer for the country, which is what makes this such a worthy journey!