

# The Role of Exploration in Meeting Indonesia's Future Oil and Gas Needs

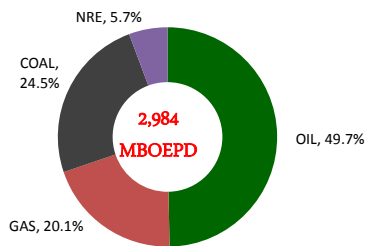
ESDM – IPA Exploration Forum  
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John Bates & Chris Newton



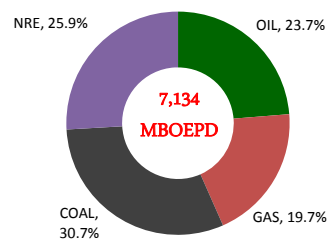
**Under the National Energy Council low growth case (efficiency) scenario the role of oil and gas in the national energy mix will decline but rise appx. 3.0% p.a. in absolute terms.**

**2010 National Energy Mix**



Oil & Gas = 2,083 MBOEPD  
(69.8% of 2010 Mix)

**2025 National Energy Mix**

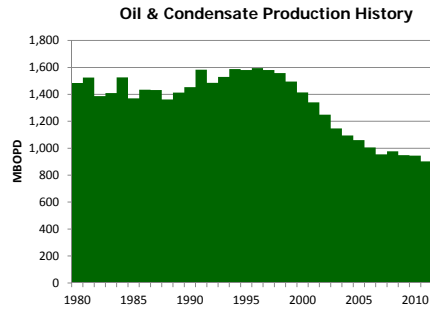
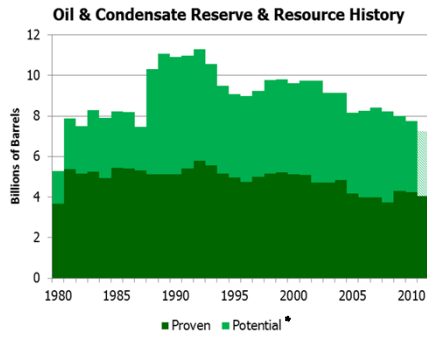


Oil & Gas = 3,096 MBOEPD  
(43.4% of 2025 Mix)

Source : National Energy Council's Low Case scenario of energy demand (efficiency case)



**Oil production has been falling since 1996 as oil reserves and resources have declined.**



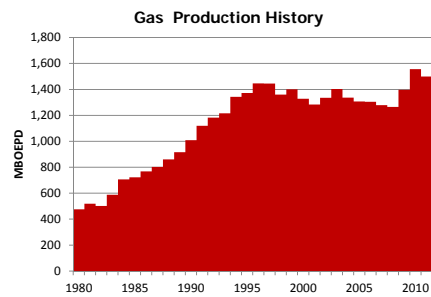
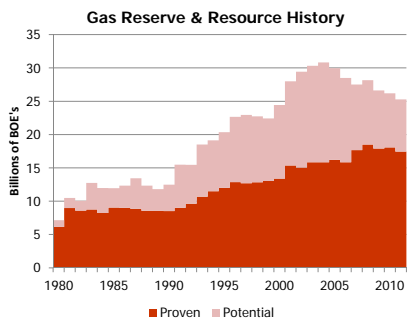
**Without oil reserve replacement there is little chance for increased oil production.**

*\*Note: Potential Reserves is a combination of Probable Reserves, Possible Reserves and Contingent Resources*

Source : Migas & BP Migas, IPA & Chris Newton



**Gas production has been rising as proven gas reserves have increased driven by exploration success & resource commercialization.**

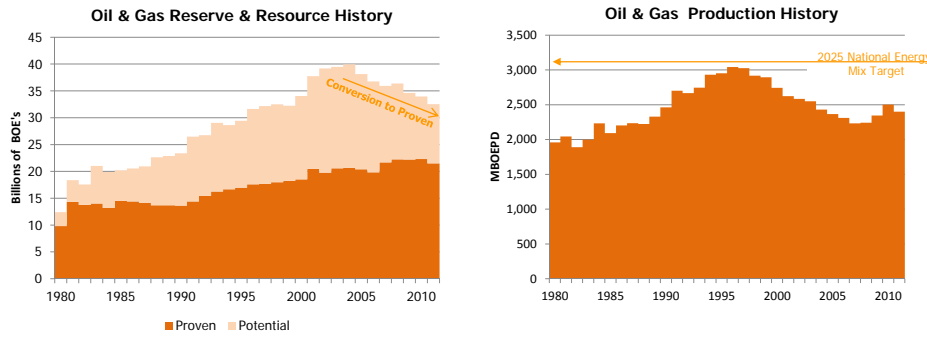


**Proven reserves have plateaued in recent years and this may constrain further gas production growth unless the "potential" reserves can be rapidly commercialized.**

Source : Migas & BP Migas, IPA & Chris Newton



The outlook for oil and gas reserves and production is now dominated by gas.

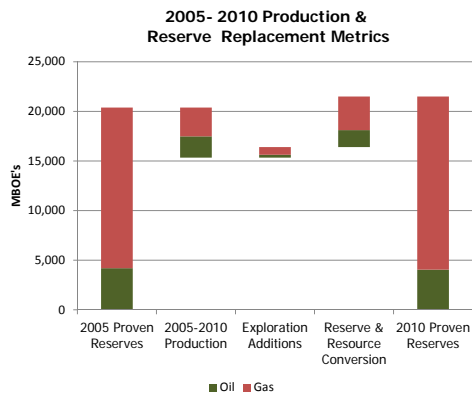


Recent gas driven production recovery driven by new domestic and export gas projects brought into production.

Source : Migas & BP Migas, IPA & Chris Newton



Over the period 2005-2010 the upstream business has had a positive proven reserve replacement ratio driven largely by conversion of potential reserves and resources as the industry invested heavily in production optimization, development and appraisal drilling.



- Production 5,057 MBOE and Proven Reserve Replacement 6,161 MBOE.
- 122% total Proven Reserve Replacement Ratio.
  - 93% for Oil
  - 143% for Gas
- 18% proven reserve replacement through exploration totaling 1,070 MMBOE.
  - 5% for Oil
  - 13% for Gas
- New Field Wildcat exploration drilling averaged 46 wells / year and delivered an exploration efficiency of 3.9 MMBOE/ NFW.

Source : Migas & BP Migas, IPA & Chris Newton



The long term decline in Indonesian exploration drilling has muted the impact of exploration on total reserve replacement.

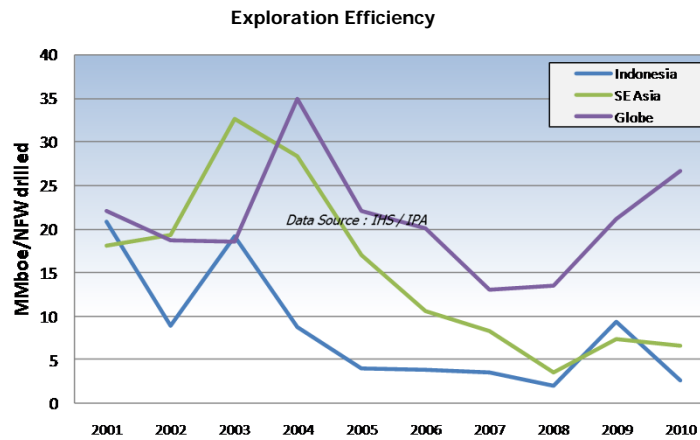


Note: \*Exploration Drilling \*includes New Field Wildcats, step outs and appraisal drilling

Source : IHS / IPA



Indonesian exploration efficiency has been a stand out underperformer again muting the contribution of exploration to production replacement.



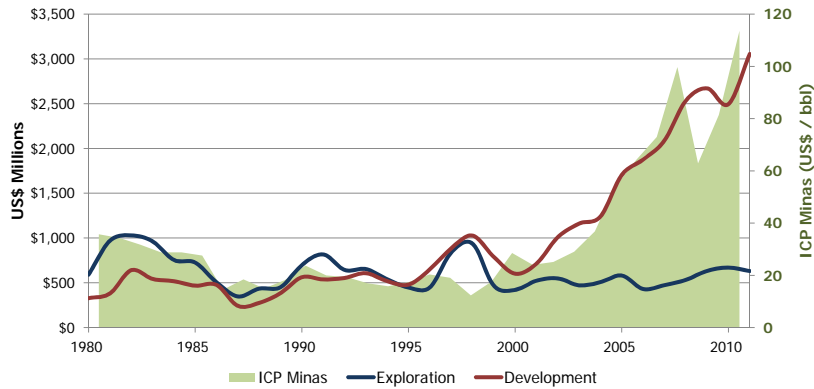
Data Source : IHS / IPA

Source : IHS



The industry has responded to increasing oil prices by investing in oil & gas development and conversion of non proven reserves to proven reserves an production.

Nominal Expenditures by Indonesian Production Sharing Contractors



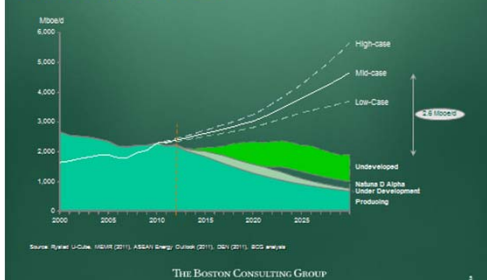
Exploration investment has not responded to rising prices and has declined in real terms.

Source : BPMigas / Migas / IPA



Demand and supply projections identify a significant supply gap in which exploration will have to play an increasing role.

Projected Indonesian oil and gas supply vs. demand (2000–2030)



Note: BCG low supply case approx. equivalent to NEC low / efficiency case

Supply Gap Opportunity for Conventional or Unconventional Exploration

Annual Supply Gap MMBOE				Annual Exploration Track Record (MMBOE)
Conventional /Unconventional Resource Target	2015	2020	2025	
Low	-130	-169	-393	2005-2010
Base	-165	-244	-565	178
High	-200	-320	-738	

The call on exploration will increase dramatically as the gap widens and existing reserves and resources are depleted.

Source : BCG / IPA Analysis



**The gap plus historic exploration performance and other assumptions shows a dramatic increase in NFW exploration drilling investment is needed.**

**Key Assumptions**

- Low, Base and High demand scenario
- Conventional Exploration satisfies only 50% of supply gap
- Recent exploration efficiency of 4.0 MMBOE/ NFW maintained
- New field plateau production at rate of 15% of reserves / year
- Minimal lag between discovery and production

NFW Exploration Drilling Requirement				Recent NFW Annual Drilling Rate
	NFW wells / Year			
	2015	2020	2025	
Low	108	141	327	
Base	137	204	471	46
High	167	266	615	

**By 2015 we need to be drilling at least 3 x the current number of NFW wells annually.**

Source : BCG / IPA Analysis



**Synopsis.....**

- Oil production and reserves are declining driven by negative proven reserve replacement ratio.
- Gas production is rising while proved reserves have plateaued. Positive proven reserve replacement ratio.
- 72% of proven reserve replacement during the last five years has come from conversion of non proven reserves to proven reflecting the industry's investment focus on development and production optimization.
- Exploration has played a minor role (18%) in proven reserve replacement reflecting declining exploration drilling, particularly wildcats and declining exploration efficiency.
- If exploration is to play a role in meeting national energy demand targets, new field wildcat exploration needs to increase 3X over current levels by 2015 and 5X by 2020.
- A step change in exploration investment attractiveness is required to achieve this.



**Oil and gas production is a depletion business and not investing is not an option if the industry is to be sustained.**



**Oil and gas exploration investment in Indonesia is in crisis and radical measures are need to enhance investment and ensure future oil and gas supply for the nations energy needs.**



Thank you  
and  
lets work together to revive exploration  
and  
deliver on  
Presidential Instruction 2/2012  
on  
Increasing National Oil Production

