



## Asia in Focus: Panel Discussion

### Identifying Investment Opportunities in a Rapidly Changing Environment

- **Chris Newton:** Director @ Risco Energy and Lion Energy
- **Ali Sharifi:** Vice President @ Kerogen Capital
- **Kim Morrison:** Managing Director @ Lion Energy
- **Gabe Regus:** Industry Director, AME Oil and Gas Division

Good Morning Ladies and Gentlemen

This session focus on Asia and identifying investment opportunities in a rapidly changing environment.

The scale of the energy investment needs are immense in Asia, Non OECD Asia in particular is the key driver of both global GDP growth and hence energy demand growth.

## Identifying Investment Opportunities and Challenges in a Rapidly Changing Environment



- **Examining Asia's energy needs along with the supply required to meet those needs.**
- **What will be the role of unconventional oil and gas in meeting supply needs?**
- **Funding the energy supply requirements**
- **Assessing the impact of recent oil price movements on upstream investment, Asian energy security and the energy mix.**
- **SE Asia's largest market: Indonesia. What are its investment needs, challenges and opportunities?**

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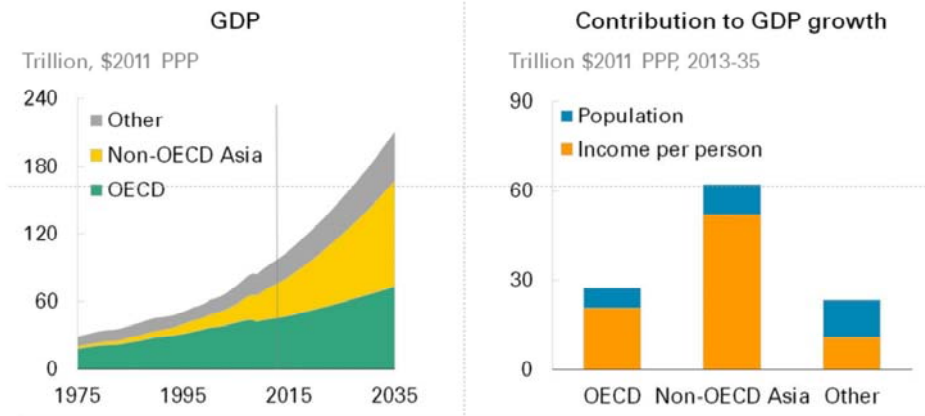
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**In this session we are going to touch on the following themes:**

- **Examining Asia's energy needs along with the supply required to meet those needs.**
  - The role of fossil fuels
  - The energy security, energy costs and environmental trade-offs
- **What will be the role of unconventional oil and gas in meeting supply needs?**
- **Funding the energy supply requirements**
  - NOC's vs IOC's
  - Role of Private Equity
- **Assessing the impact of recent oil price movements on upstream investment, Asian energy security and the energy mix.**
  - How quickly will oil price recover
  - What and who will be the winners and losers
- **SE Asia's largest market: Indonesia. What are its investment needs, challenges and opportunities?**
  - What are the implications of the change in government and policy / regulatory shifts to date?
  - What is needed to attract foreign capital
  - What are the opportunities upstream and downstream
  - What is happening in M&A

## Non OECD Asia Powering world GDP



Source: BP Energy Outlook 2035

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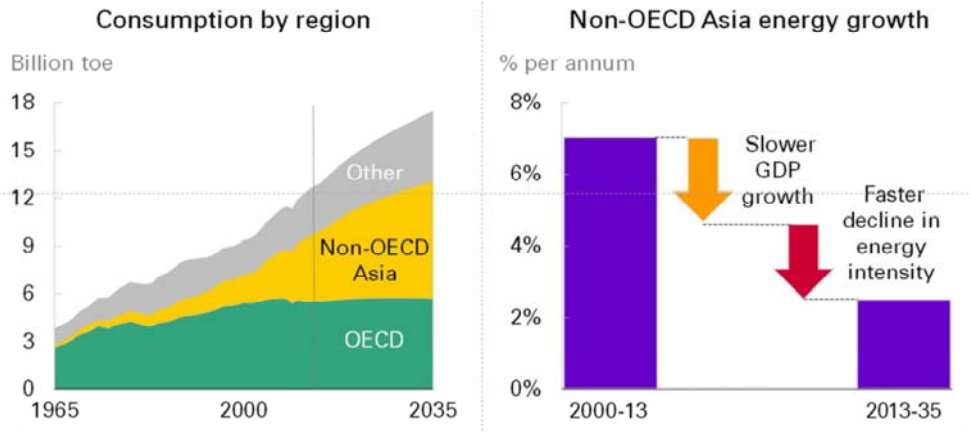
Non OECD Asia has been a key driver of global GDP growth and that is set to continue.

GDP growth is in turn driven largely by rising wealth in Non OECD Asia rather than population growth

## GDP growth slowdown has little impact



### Global Primary Energy Consumption



Source: BP Energy Outlook 2035

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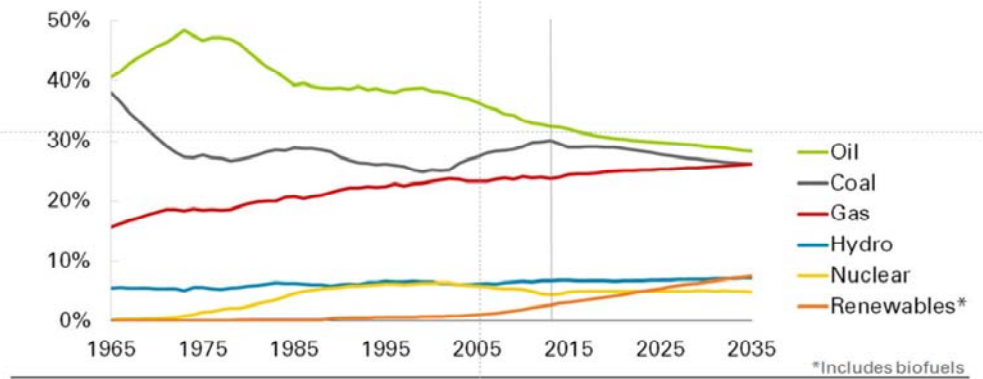
That rising GDP in Non OECD Asia will in turn be the key driver of global primary energy consumption.

The 8% p.a. growth in primary energy consumption of the last decade will moderate in the next decade as both GDP growth and energy intensity moderate. The latter being consistent with the decelerating industrialisation, increasing energy efficiency all round and growth in the service sector of the economies.

## The age of Coal, Gas and Renewables



Share of Global Primary Energy Consumption



Source: BP Energy Outlook 2035

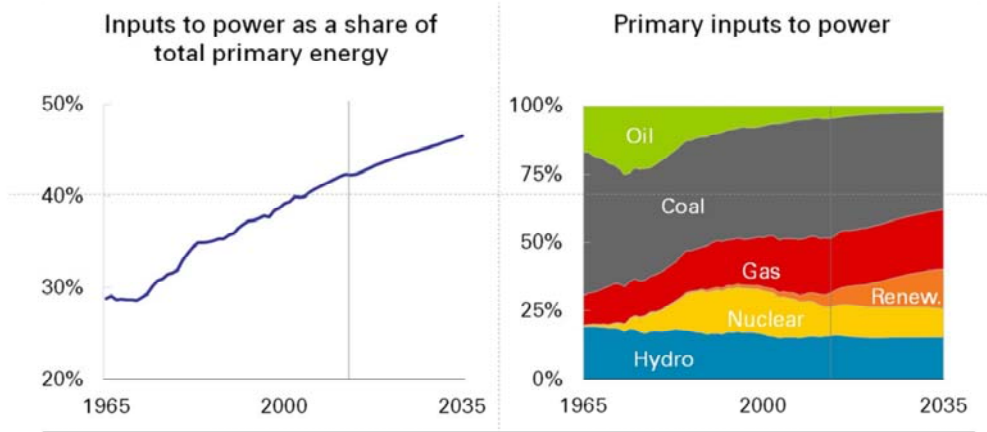
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Globally, only gas and renewables will increase their share of the primary energy mix although we will see how the recent growth of coal will continue in some major Non OECD Asian economies

## Power is the main global growth driver



Source: BP Energy Outlook 2035

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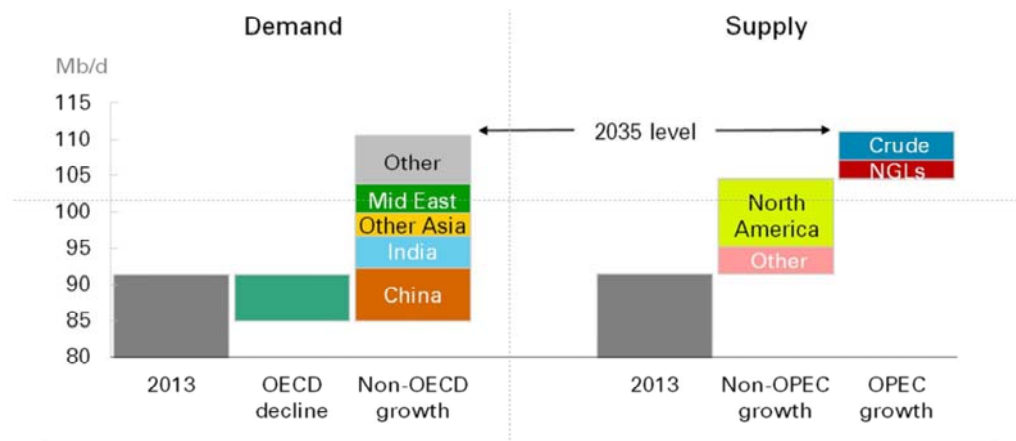
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Increasing electrification driver power generations share of primary energy consumption and this along with high oil prices explains the recent, and in some case continuing role of coal, in the primary energy mix.

If low spot Asian LNG prices continue however they may abate the role of coal in power generation.

## Liquids supply and demand

An Asian – North American demand – supply story



Source: BP Energy Outlook 2035

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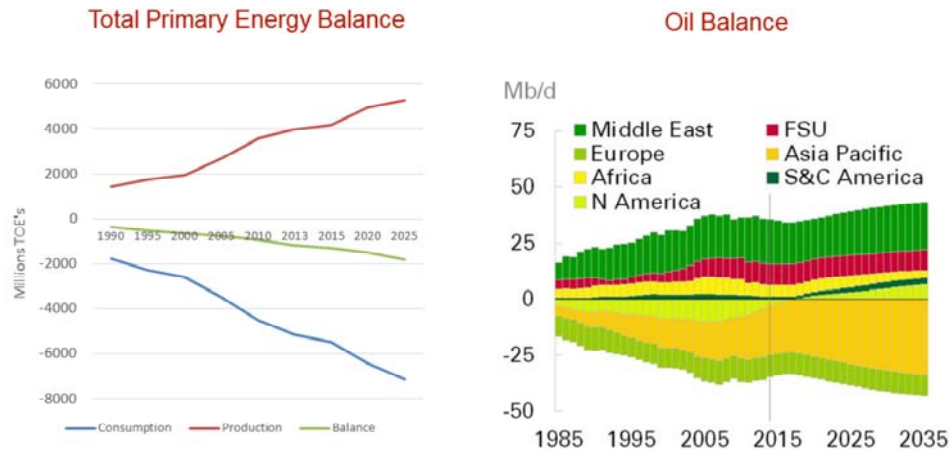
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Non OECD Asia is the main driver of global oil demand growth to 2035 with North American unconventional's being the main supplier of that demand growth.

This will have serious implications for trade patterns and infrastructure needs in consuming and supplying countries.

## Asia Pacific increasingly energy short



Source: BP Energy Outlook 2035

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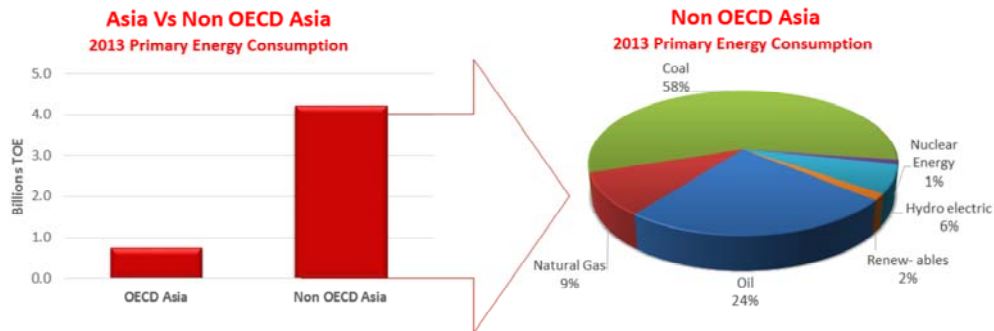
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Asia Pacific primary energy demand growth will outpace Asia Pacific supply and the region will continue to be the worlds largest net energy importing region.

The oil imbalance in particular will expand and further drive energy security and sustainability issues in consuming countries.



## Asia and Non OECD Asia in Perspective



Source: BP Energy Outlook 2035; Risco Energy Analysis

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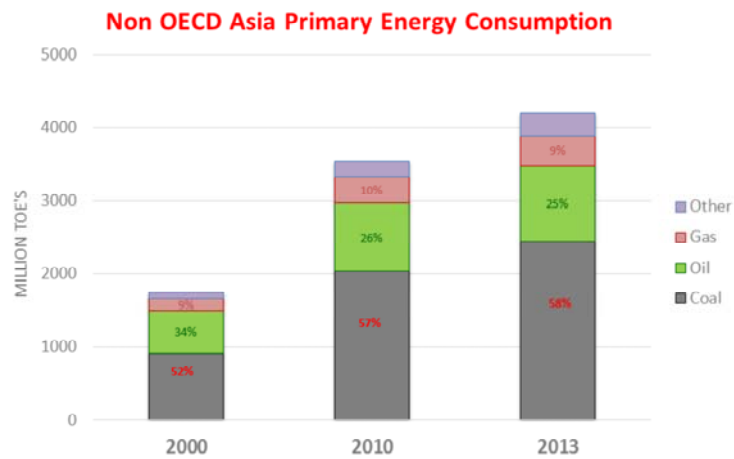
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Non OECD Asia comprises the Lions share of Asian Energy consumption, but not GDP, and in 2013 we can see that coal supplied 58% of Primary Energy consumption vs only 9% for gas.

## Non OECD Asia primary energy consumption

### Coal and renewables growing share



Source: BP Energy Outlook 2035; Risco Energy Analysis

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Coal has grown its share of the primary energy mix from 52% in 2000 to 58% in 2013.

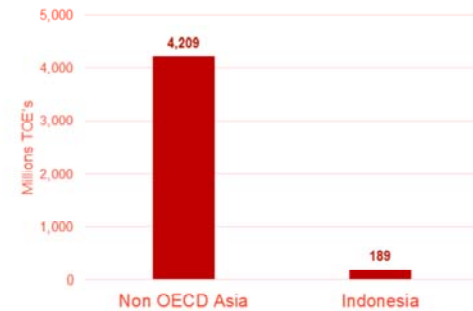
As mentioned, power generation, coals availability and cost competitiveness vs oil and gas are the major drivers of this growing share.

The air pollution consequences of this “coalification” are well known.

## Indonesia in Context



2013 Primary Energy Consumption

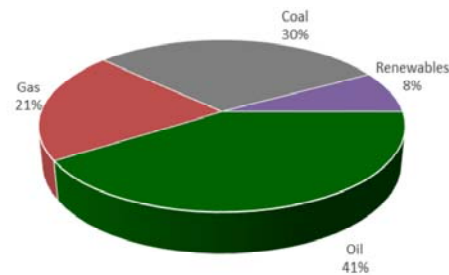


10 Year  
Growth Rate

10%

5%

Indonesia 2013  
Primary Energy Consumption



- Higher oil and gas weighting than Non OECD Asian average
- Coal growing fast

Source: BP Energy Outlook 2035; Indonesian Energy Council, Risco Energy Analysis

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Indonesia is the fourth most populous country in the world, Australia's neighbour and an economic power house now with a trillion dollar economy. The Economy / GDP and energy consumption have been growing at circa 5-6 % p.a since emerging from the 1998 Asian Financial Crisis.

In perspective, it's a small part of Non OECD Asia, dwarfed by China and India and historically being a large oil and gas producer and former OPEC member, oil and gas plays a larger role in the primary energy mix. Coal is growing fast however, again reflecting cost, local availability and needs in power generation

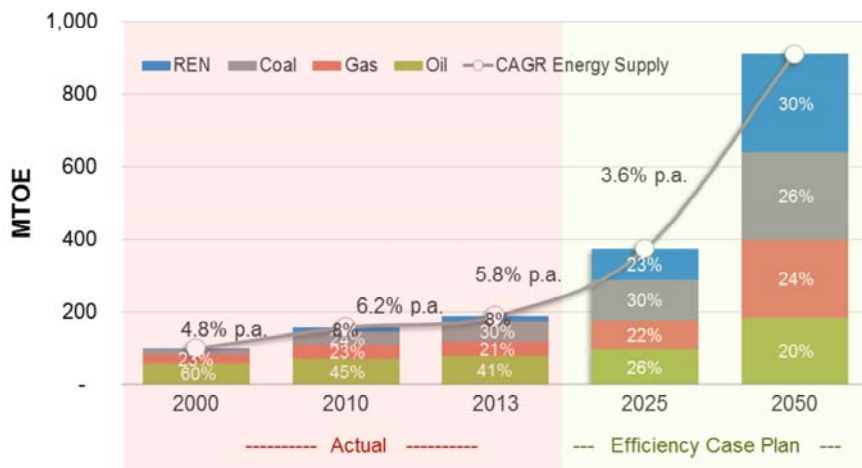
Lets now take a deeper dive and look at what happened and is forecast to happen in Indonesian Primary Energy consumption, as see by the Indonesian Energy Council and analysed by Risco Energy.

The energy investment opportunities and challenges of this are eye popping.

## Indonesian Primary Energy Outlook



National Energy Council Efficiency Case Primary Energy Consumption Mix



Source: Indonesian Energy Council, Risco Energy Analysis

**Assumptions:** Declining population growth, energy elasticity and energy intensity  
Rising GDP growth and large contribution from renewables

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The Indonesian National Energy Council in late 2014 revised its energy outlook projections with two cases. A Business as Usual Case (BaU) and an Efficiency Case. The efficiency case optimistically assumes more rapid reductions in energy intensity and elasticity and a rapidly increasing role of renewables in the primary energy mix.

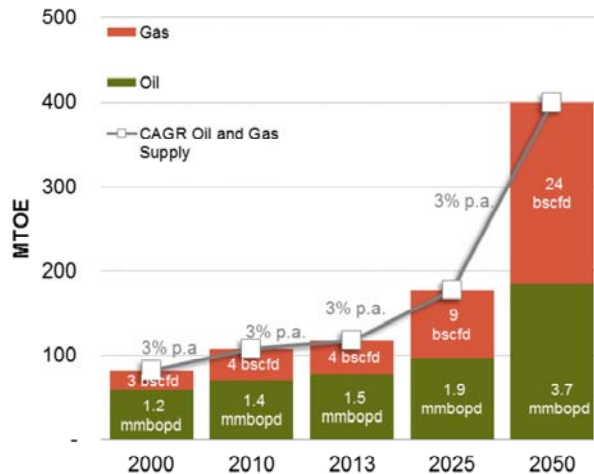
I show only the efficiency case here and also show the past to put the outlook in the context of past realities.

The efficiency case delivers 5.8 p.a growth in primary energy consumption to 2025, moderating thereafter, and a much declining role of oil that is now largely imported. Renewables optimistically make up 23% of the PE mix up from 8% in 2013, largely from hydro, geothermal and biofuels.

## Indonesian Oil & Gas Outlook



### NEC Efficiency Case Oil & Gas Supply



### Primary Energy Supply

- > Oil share declines
- > Gas Share rises
- > Combined growth rate still 3.0% p.a.
- > Production declining in a maturing industry

- > 2014 Production:
  - 0.8 mmbopd
  - 7.1 bscfd

Source: Indonesian Energy Council, Risco Energy Analysis

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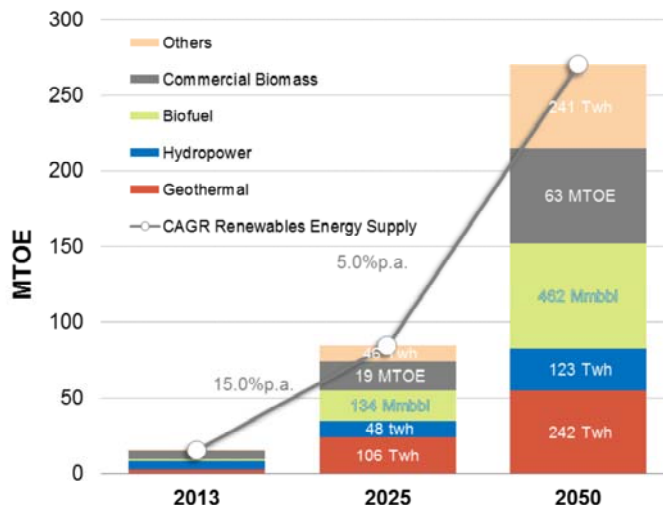
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The 2025 oil and gas needs are scary for a country that today is a net oil and gas exporter in \$ terms but not yet on a BOE basis.

Gas is increasing its role in the hydrocarbon mix and Indonesia, once the worlds largest LNG importer, becomes a net gas importer before the end of this decade. Today > 54% of gas production is consumed domestically.

3 domestic LNG re-gasification terminals are operational today and many more are under development.

## Efficiency case requires strong renewables growth and biofuel subsidies



Source: Indonesian Energy Council, Risco Energy Analysis

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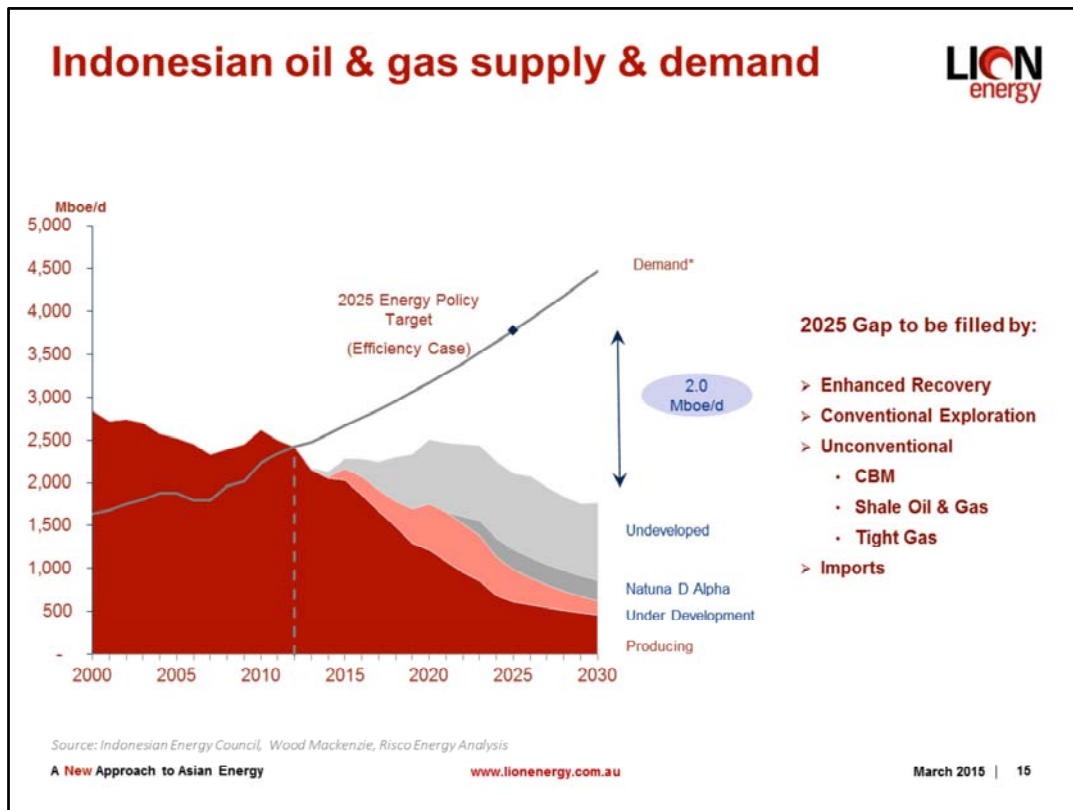
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By 2025 some 23% of the primary energy mix will come from renewables and the fastest growing segment will be biofuels. This is helped by a 15% (up from 10% recently) mandatory mix of bio diesel in the domestic diesel mix which will likely grow to 20%. This equates to nearly 100,000 bpd bio diesel in 2015.

Production is subsidised and is added to the diesel fuel mix. 367 KBPD forecast in 2025 and with a circa \$6.0Bn annual subsidy bill if current rates of subsidy continue.

If renewable and efficiency targets are not met, coal and oil take up most of the difference.



Given this is an Energy Oil and Gas conference let's take a look at the oil and gas supply – demand implications of this national energy plan.

On the supply side I show the existing oil and gas production and its continued decline and assume that all undeveloped resources are developed, including the Natua gas, or should I say a CO<sub>2</sub> field with a methane by product!

By 2025 the shortfall between supply is some 2.0 MM boepd, and demand nearly equals today's total supply.

This will have to come from :

- Enhanced recovery of existing reserves
- Conventional Exploration
- Unconventionals
- Imports

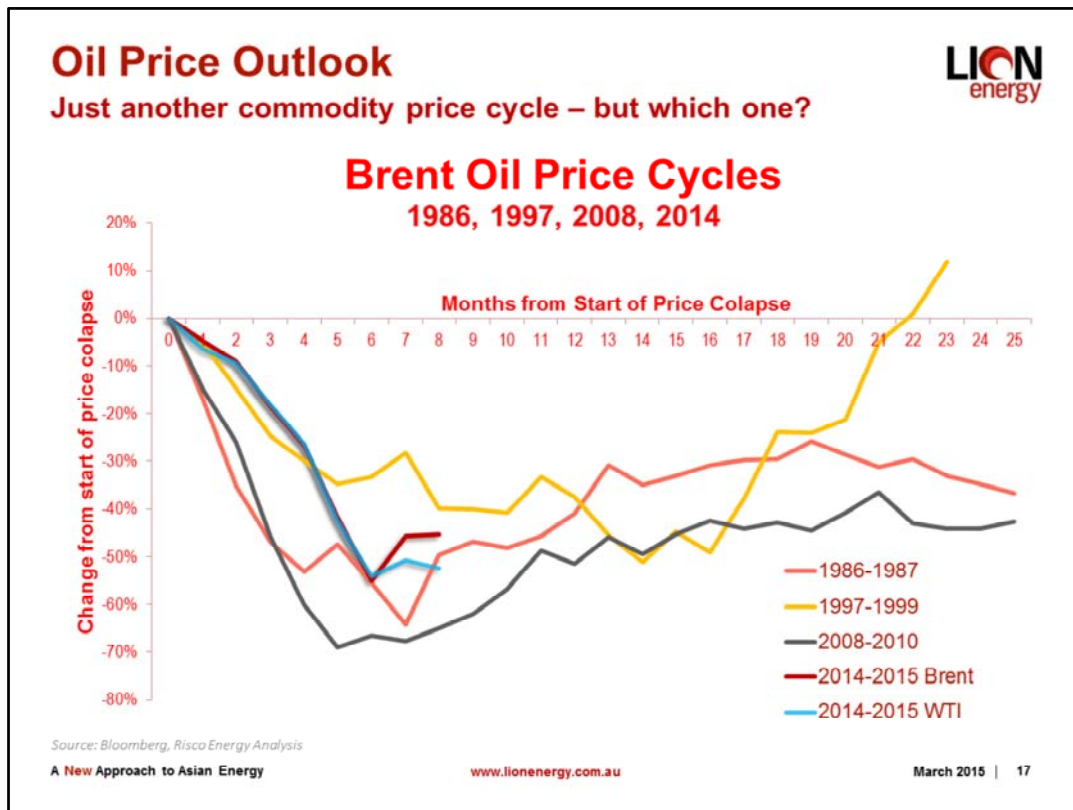
The default today is imports and if that is to be reversed we will need a dramatic improvement in the investment environment of which there are some encouraging signs from the new government.



## **Asia in Focus: Panel Discussion**

### **Oil Prices**





The recent collapse in oil prices is just another down cycle in our commodity industry.

To throw some light on this cycle vs past cycles I have plotted here the magnitude of the oil price collapse vs months from first down month.

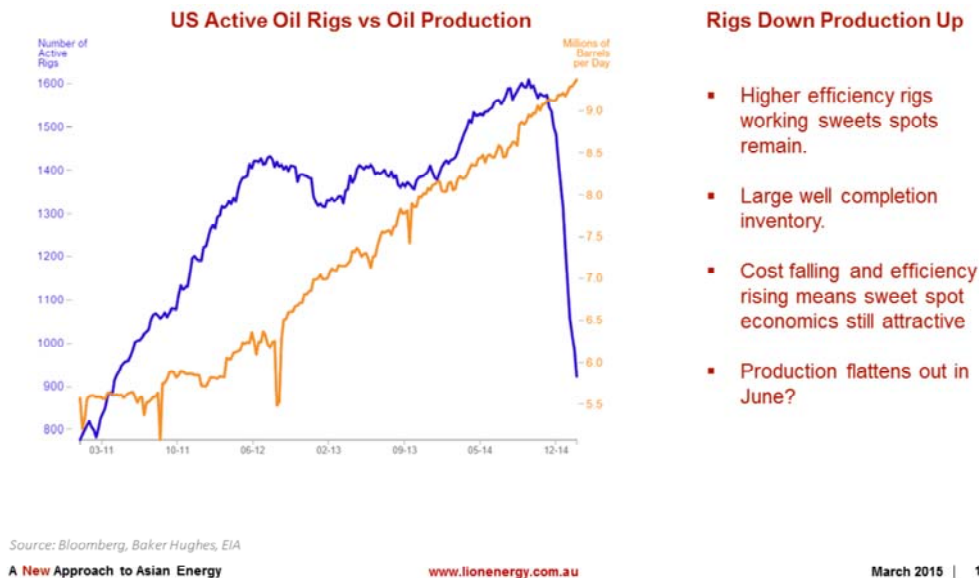
While all cycle are different in cause and recovery, oil always rebounds. How far and how quickly is the question.

It looks like we are following 1986-87, which was in fact the only other supply side shock, although there are also many significant differences between 1986 and now.

Either way now looks like a good time to invest.

## Oil Price Outlook

Too much being read into the US oil rig count



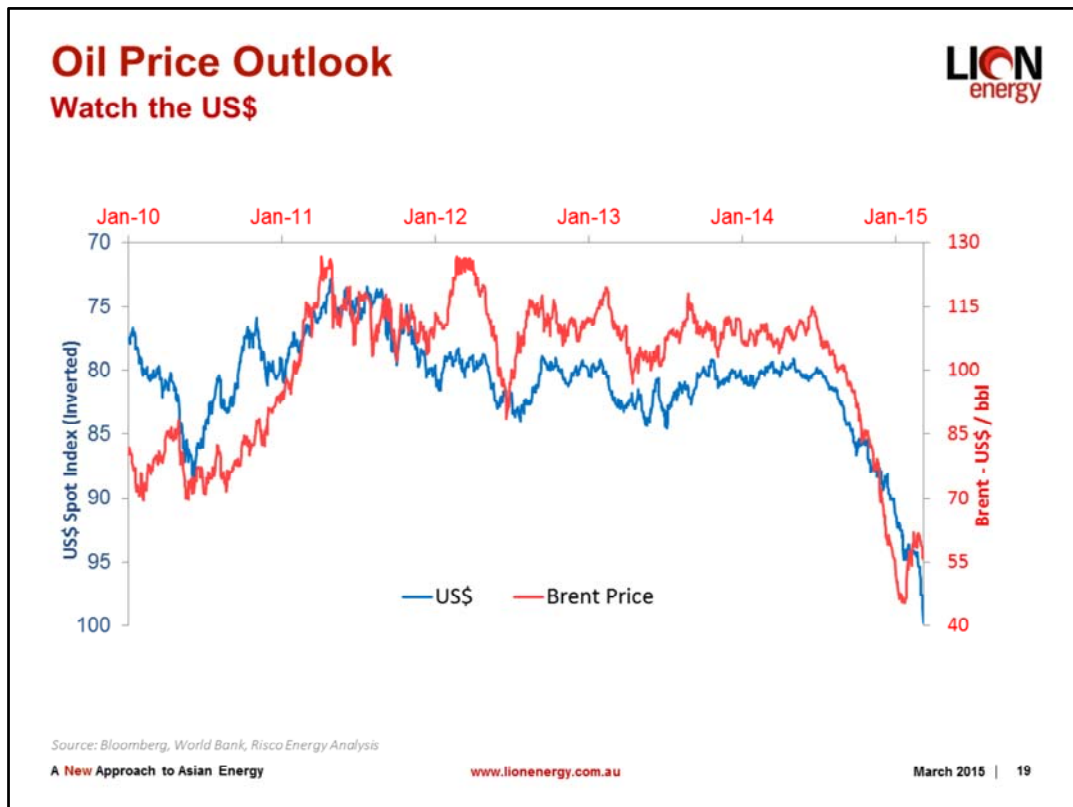
There is a huge focus on the US onshore oil rig count at the moment and how quickly it has fallen. This is because unconventional oil may not be the marginal cost barrel but the are the most responsive barrels.

Oil production however continues to rise.

The big question is when it will start to fall and by how much?

I have been saying for the last 3 months that the market is reading too much into this rig count fall, at least in terms of how soon oil production will start to fall, and the reality of continuing production increases is one of the factors behind the second dip in prices, especially WTI.

I maintain that production will however fall in 2H 2015.



If we cannot fathom the supply demand and pricing intricacies of oil we may be better looking at the US\$ (US\$ index) which has a very close inverse relationship with oil as this graphic shows. A 70% correlation coefficient in fact since 2010 and higher over the last 12 months.

I acknowledge a degree of cause and effect here however.

With US growing economic strength suggesting 2015 interest rate rises, QE in Japan and Europe and currency wars elsewhere the future of the dollar looks up which is not good for oil based on this correlation!

What the US\$!



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**The Role of Unconventionals**  
**(Kim Morrison, CEO Lion Energy)**

## Asian Unconventional Status

**China and Australia leading the way, some projects in India, Indonesian unconventional PSC awards**



### **China: 1200 tcf potential (EIA)**

- >90 bboe conventional onshore (IHSE)
- Major unconventional effort, Sinopec CNOOC, Shell etc.
- Sichuan, Tarim basins
- >400 wells, 50bcf 2014, forecast to grow to 500 bcf by 2017
- Issues: Terrain, water, economic

### **Australia: 400 tcf (EIA)**

- ~4.2 bboe conventional (IHSE)
- >\$1.5 billion committed to Australian shale/tight oil exploration since 2010
- Cooper, Canning, Georgina basins
- ~100 wells drilled, no commercial production to date
- Issues: land access, remoteness, water



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In Asia Pacific the key areas of activity are China and Australia which feature prominently in 2013 EIA report on shale gas and oil potential.

China which has some major onshore basin with over 90 BBOE of conventional reserves (IHSE) over US\$3 billion has been spend by Sinopec, CNOOC and majors such as Shell with main focus being on the Sichuan basin with around 400 unconventional wells drilled.

50 BCF of shale gas due to be produced forecast to rise to 0.5 TCF in 2017 which will be around 10-15% of current gas production of 4 TCF/ year.

While Sinpoec have reported some high performance wells, Issues include challenging terrain, high operational costs and access to water.

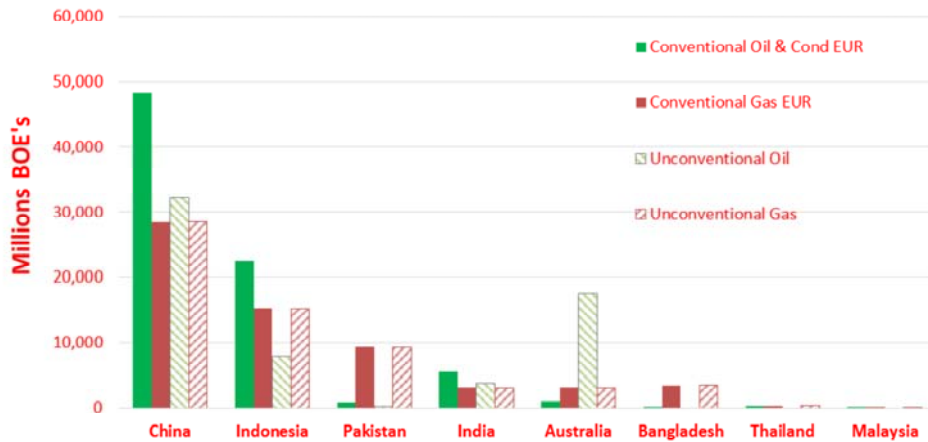
Australia is also subject to considerable activity with over \$1.5 billion committed to unconventional exploration since 2010. According to Ord Minnet 100 wells have been drilled to date with a focus on Cooper basin (Australia's most significate onshore basin as well as Northern Territory basins such as Georgina Basin and the Canning basins.

No commercial unconventional production (excluding CSM) and land access, remoteness lack of infrastructure and water present issues. There are ongoing projects in India mainly focussed in Cambay basin and Indonesia is at an early stage probably 5 years behind Australia .

## Conventional vs Unconventional Potential



### Asian Conventional Onshore Vs Unconventional Potential



Source: EIA, Lion Energy Analysis

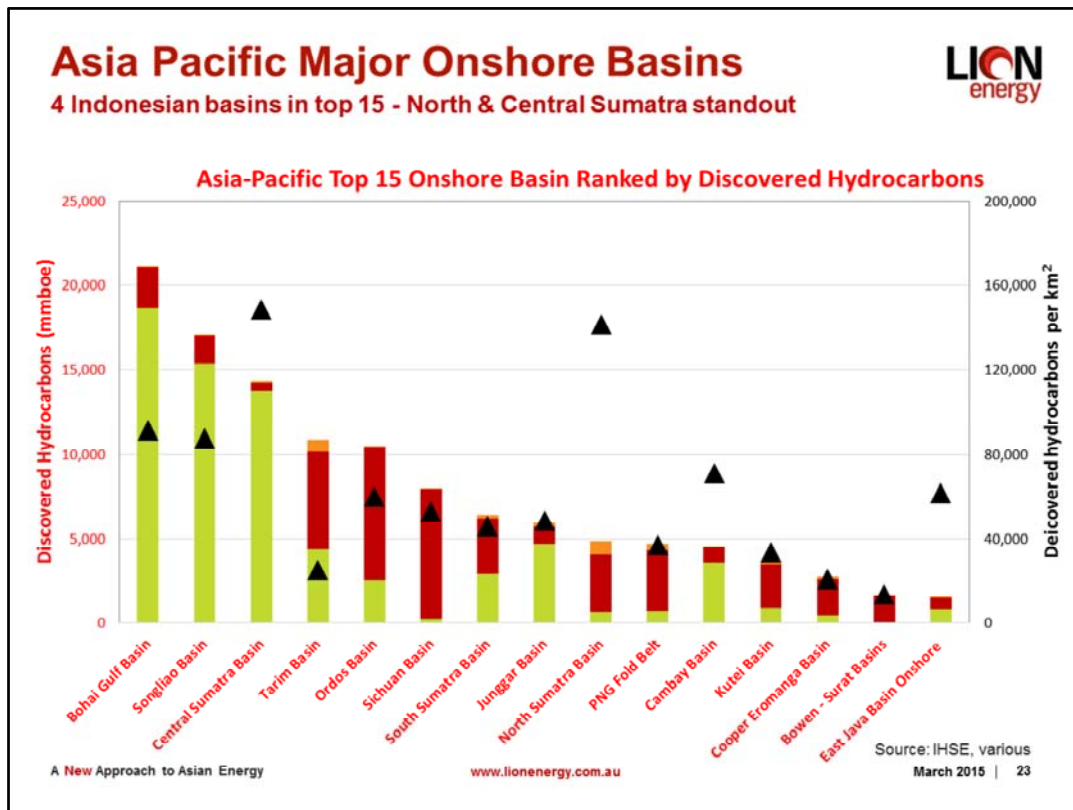
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Globally there is a very strong correlation between conventional reserves and unconventional potential. This should not be surprising, given the source rocks for conventional hydrocarbons are often the unconventional targets.

This chart shows that, according to the EIA, Indonesia has the second highest unconventional potential in Asia.



This is a graph which looks at major Asia Pacific onshore basin by discovered oil and gas volumes,

As you can see Chinese basin dominate although Indonesia is well represented and dominated by the three Sumatra basins.

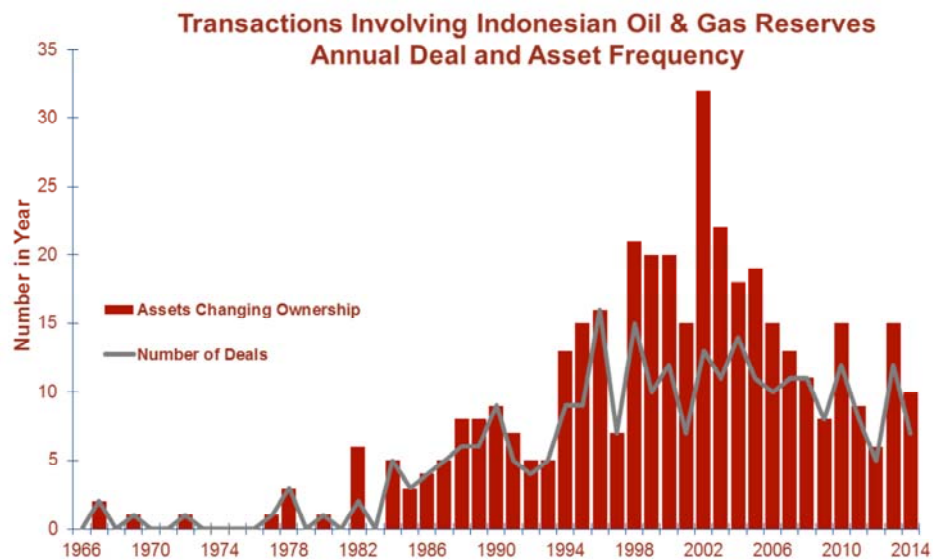
I have also plotted with a black triangle what we refer to as hydrocarbon richness that is discovered hydrocarbons per sqkm. As you can see the North and Central Sumatra are standout basins reflecting the rich source rocks and these we see as having significant unconventional potential and this is where Lion Energy is focussing its efforts.



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**Indonesian Upstream M&A**



## Indonesian M&A activity low continues



Source: Chris Newton Database, Risco Energy Analysis

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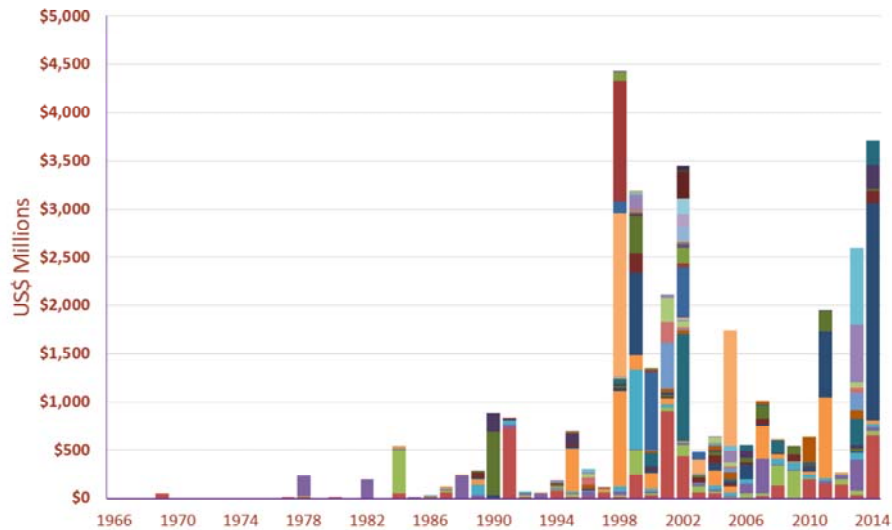
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Indonesian M&A activity has bumbled along at 15 year lows during the last few years, vs record global deal levels reflecting Indonesia industry specific factors such as maturity and regulatory uncertainty plus new transaction taxes.

## Near record deal value however



Annual Aggregate Transaction Values



Source: Chris Newton Database, Risco Energy Analysis

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2014 was however a near record year in terms of the \$ value of Indonesian transactions reflecting the quality and scale of some assets transacted in global portfolio deals and also high oil prices, at least in 1H 2014.

## Regional and local players acquiring



Source: Chris Newton Database, Risco Energy Analysis

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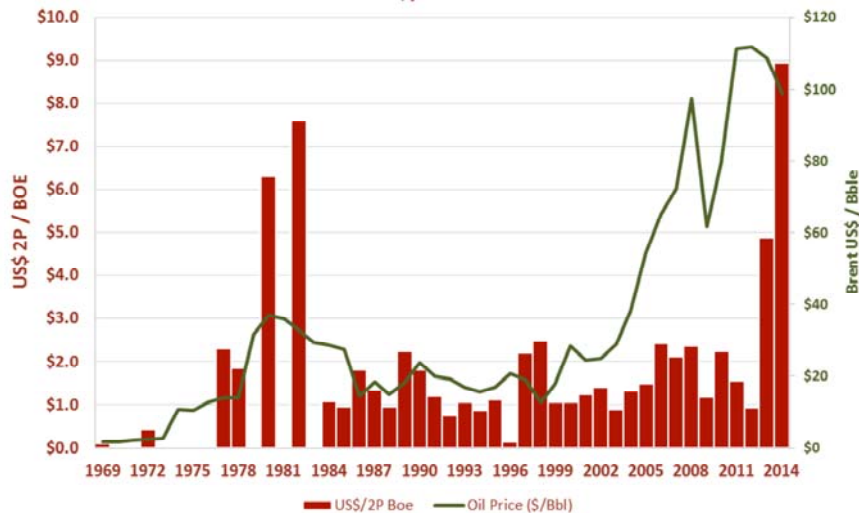
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Asian and increasingly local companies continue to dominate on the buy side as the industry fragments and localises.

## 2P transaction metrics jumped in last few years



Weighted Average Annual Transaction Metrics  
US\$/2P BOE



Source: Chris Newton Database, Risco Energy Analysis

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For a long period of time Indonesian 2P reserves transacted between US\$1.0-2.5/boe on a weighted average annual basis. The exceptions were the high oil price years of the 1970s' and the last few years when some high quality assets transacted.

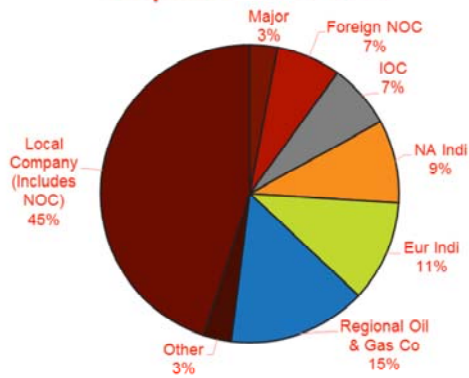
Clearly however there are many apples and oranges in these annual average baskets. Individual BOE's range from under appraised, undeveloped, early life production to mature production and further include, oil, domestic gas, LNG and oil linked gas boe's

These \$/2P unit transaction metrics are outputs of the DCF valuation process, however they are often rolled out by bankers and vendors when the DCF valuation does not provide the answer they want.

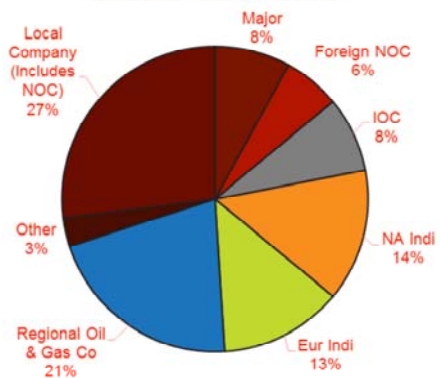
## IOC's, and Independents net sellers



**Acquirers - 2003-2014**



**Sellers - 2003-2014**



Source: Chris Newton Database, Risco Energy Analysis

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This graphic summarises buyers and sellers over the last decade and show the increasing role of local companies on the buy side with net sellers being IOC's, NA and European independents.



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### Thank You to:

- **Chris Newton:** Director @ Risco Energy and Lion Energy
- **Ali Sharifi:** Vice President @ Kerogen Capital
- **Kim Morrison:** Managing Director @ Lion Energy
- **Gabe Regus:** Industry Director @ AME Oil and Gas Division