A New Approach to Asian Energy

Key success factors of emerging Indonesian unconventional plays

Kim Morrison

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Competent Persons Statement: Qualified Petroleum Reserves and Resources Evaluator

Pursuant to the requirements of the ASX Listing Rules Chapter 5, the technical information, reserve and resource reporting provided in this document are based on and fairly represent information and supporting documentation that has been prepared and/or compiled by Mr Kim Morrison, Chief Executive Officer of Lion Energy Limited. Mr Morrison holds a B.Sc. (Hons) in Geology and Geophysics from the University of Sydney and has over 28 years’ experience in exploration, appraisal and development of oil and gas resources - including evaluating petroleum reserves and resources. Mr Morrison has reviewed the results, procedures and data contained in this report. Mr Morrison consents to the inclusion of this announcement of the matters based on the information and context in which it appears. Mr Morrison is a member of AAPG.

PRESENTATION OVERVIEW

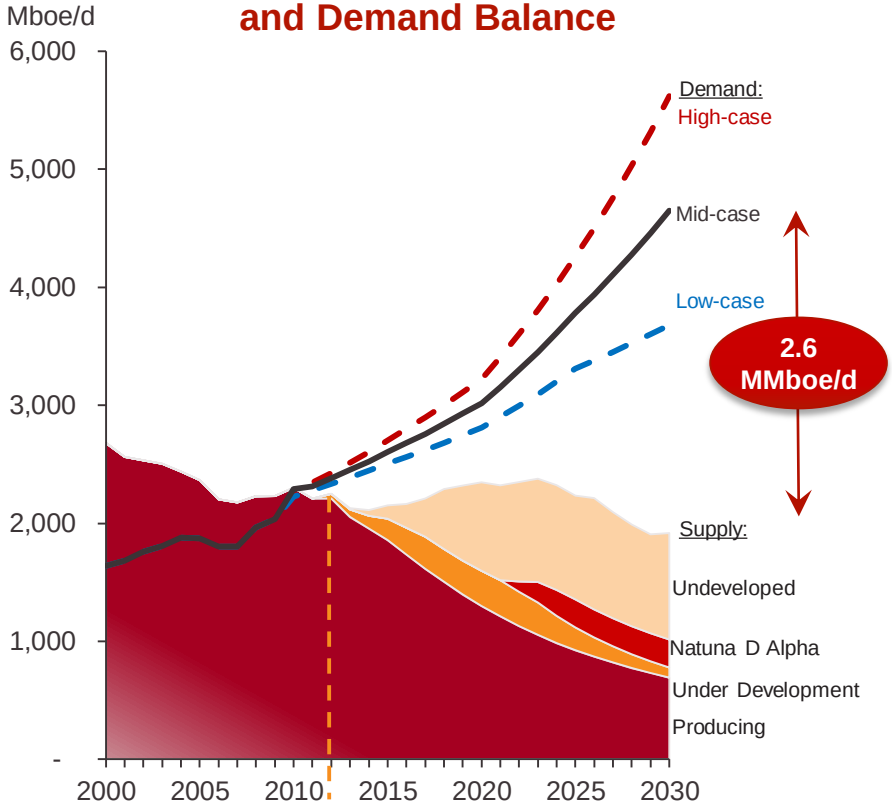
- Why Indonesia?
- US, Australian lessons
- Unconventional plays
- Focus basins
- Way forward
- Lion's position

WHY INDONESIA?

Many elements in-place for successful unconventional industry

- Worlds 4th largest population (~250mm)
- Fast-growing economy (GDP ~ 6%pa) with oil and gas demand growing at > 5%pa
- Declining conventional oil/gas production, rapidly rising demand
- Indonesia approaching becoming net BOE importer
- Rising domestic gas prices, moved from average US$2-3/mmbtu in 2005 to current US$9+/mmbtu (LNG pricing link)
- Regulatory changes promoting unconventional investment
- Prolific onshore basins

Projected Indonesian Oil and Gas Supply and Demand Balance



Source: Rystad U-Cube, MEMR (2011), ASEAN Energy Outlook (2011), DEN (2011), BCG analysis

INDONESIA UNCONVENTIONAL STATUS

Early days, however Government keen to foster business

- Regulation and fiscal terms specific for unconventionals
- *2012 regulation: "Non-conventional oil and natural gas … shall be defined as oil and natural gas that is exploited using fracking technology from the reservoir where oil and natural gas with low permeability is formed. "*
- Contractor take: ~40% oil, ~45% gas
- Currently over 70 Joint Study Applications
- Two unconventional PSC's awarded to date (North and Central Sumatra)

Application Process

Companies select areas with unconventional potential (up to 5,000 km^2)

If no existing claims, MIGAS approves right to conduct Joint Study (~6 month) undertaken with assigned Indonesian University

Area (up to 3000 km^2) selected for PSC. Open gazettal, JS participants have a right to match highest bid

US UNCONVENTIONAL/CONVENTIONAL COMPARISON

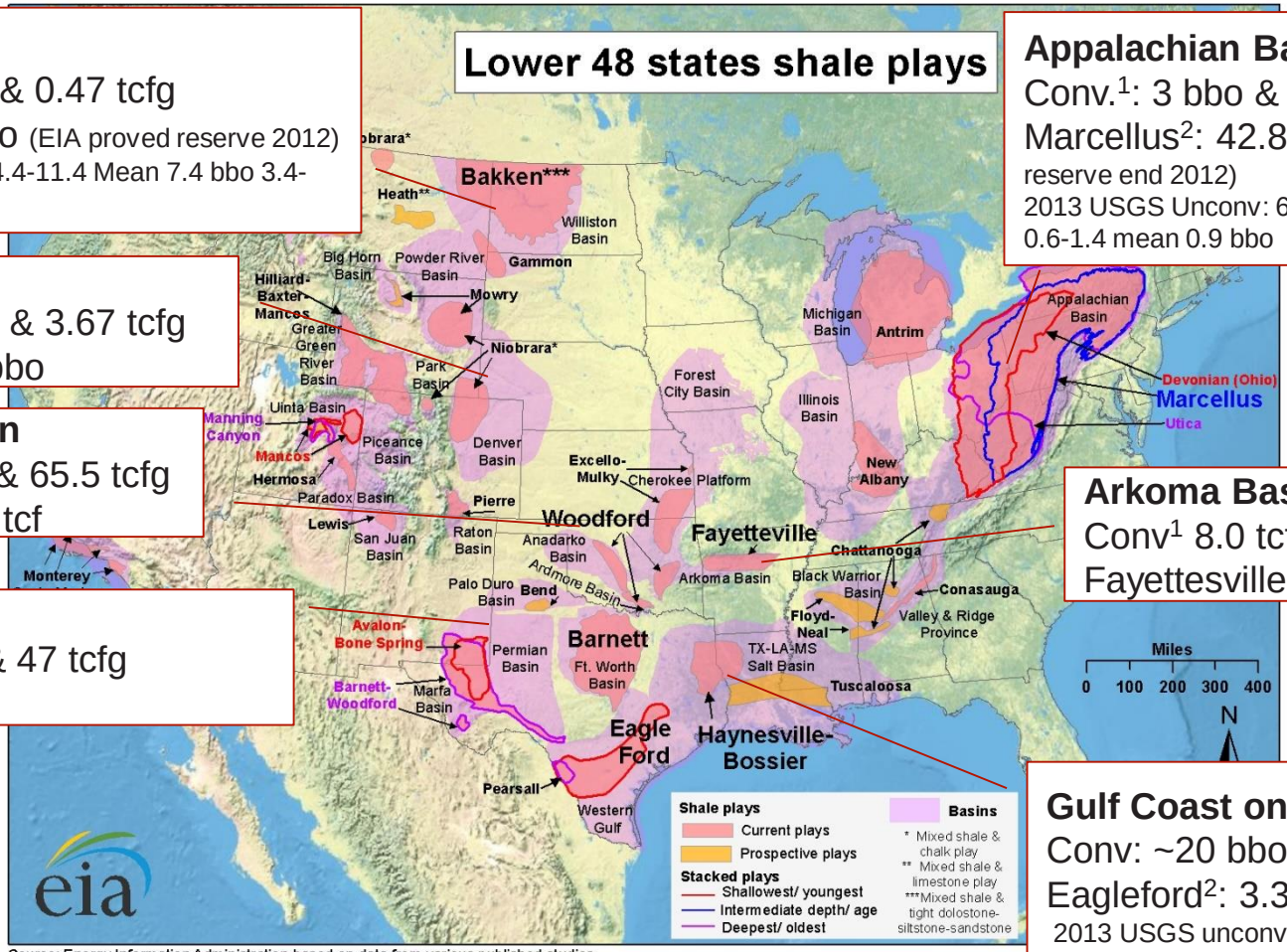
Unconventional reserves/resource assessment of similar order of magnitude to produced conventional in mature basins

Williston Basin
Conv.[1]: 3.8 bbo & 0.47 tcfg
Bakken[2]: 3.2 bbo (EIA proved reserve 2012)
USGS 2013 Unconv. 4.4-11.4 Mean 7.4 bbo 3.4-11.2 Mean 6.7 tcfg

Denver Basin
Conv.[1]:1.05 bbo & 3.67 tcfg
Niobara[3]: 0.98 bbo

Anadarko Basin
Conv[1]: 2.3 bbo & 65.5 tcfg
Woodford[2] 11.1 tcf

Permian Basin
Conv[1]: 41 bbo & 47 tcfg
Barnett[2]: 23 tcf



Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

Appalachian Basin
Conv.[1]: 3 bbo & 42 tcfg
Marcellus[2]: 42.8 tcf (EIA proved reserve end 2012)
2013 USGS Unconv: 66-210 mean 125tcfg, 0.6-1.4 mean 0.9 bbo

Arkoma Basin
Conv[1] 8.0 tcfg
Fayettesville[2]: 9.7 tcfg

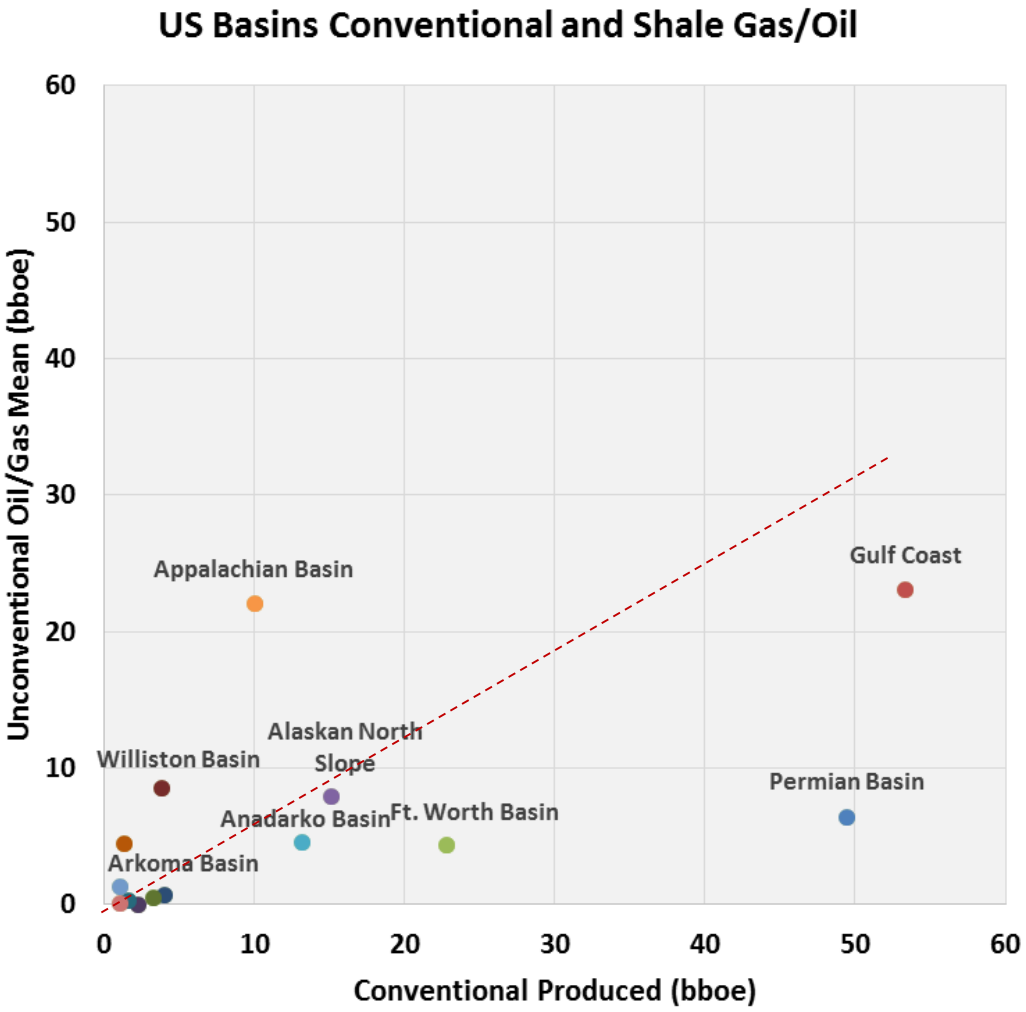
Gulf Coast onshore
Conv: ~20 bbo[4] 100's tcfg (est)
Eagleford[2]: 3.37 bbo/c 6.2 tcfg
2013 USGS unconv 23 – 91 Mean 50 tcf
Haynesville[2]: 17.7tcfg
2013 USGS unconv, 44-81 Mean 61 tcf

[1] USGS various repots: produced HC through 1992/1993
[2] EIA 2014
[3] USGS 2013 Mean estimate)
[4] US Dept Energy 2006

Conv. = conventional oil and gas
Unconv. = unconventional or continuous oil and gas

“GO TO WHERE THE OIL IS”

Areas of significant shale gas and oil potential tend to have existing significant conventional production



- USGS mean estimate plotted for unconventional potential (2013), larger than EIA proven reserves shown on previous slide
- Clearly varying estimates for ultimate potential of any play
- Understanding the rocks and unique properties of each basin critical to success

Source:
Unconventional: USGS National Assessment Of Oil And Gas Resources Update (March, 2013)
Conventional: USGS reports, US Dept of Energy

INDONESIAN, AUSTRALIAN COMPARISON

Indonesia has 9x more onshore discovered reserves than Australia despite only a ¼ of the land mass.

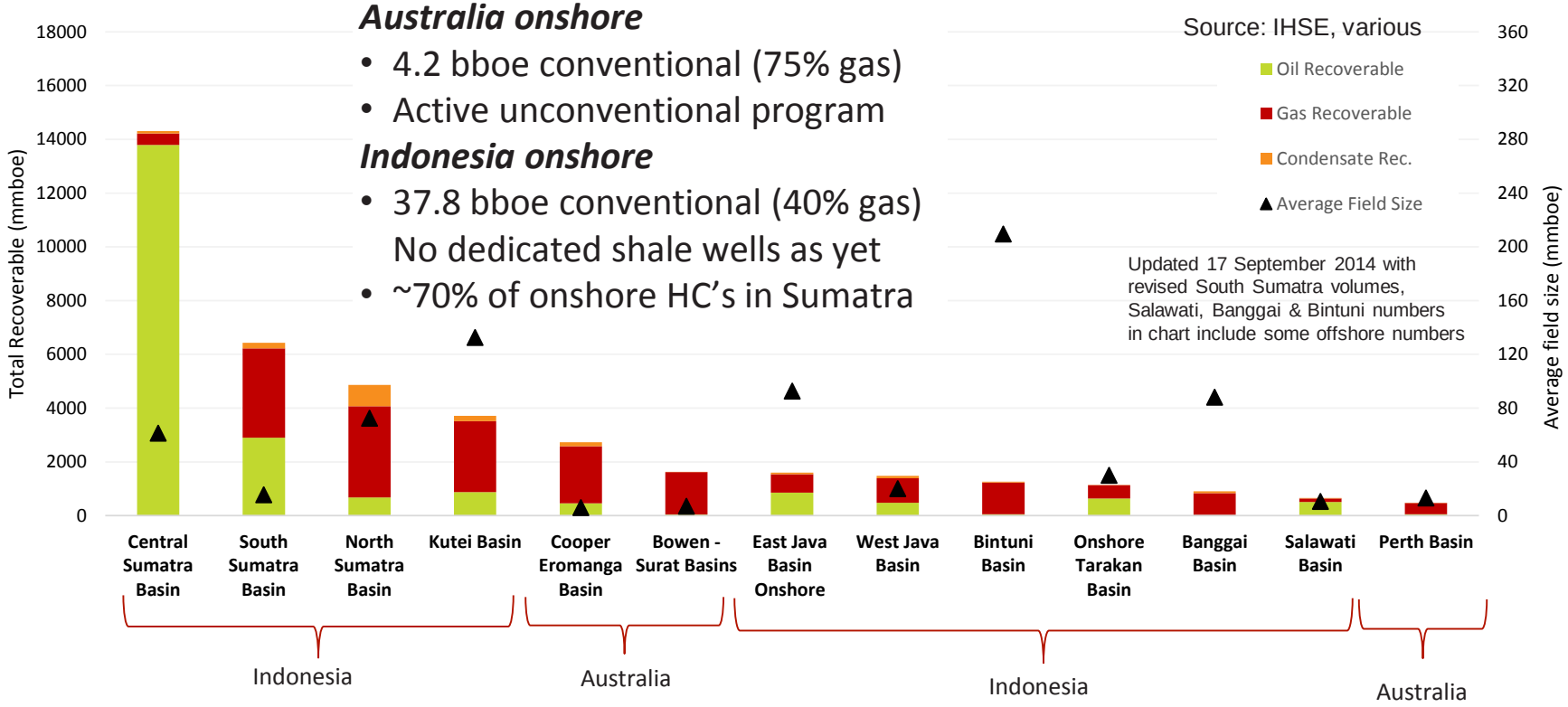
Indonesian and Australian Onshore Productive Basins

Australia onshore

- 4.2 bboe conventional (75% gas)
- Active unconventional program

Indonesia onshore

- 37.8 bboe conventional (40% gas)
  No dedicated shale wells as yet
- ~70% of onshore HC's in Sumatra



>$1.5 billion committed to Australian shale/tight oil & gas exploration since 2010

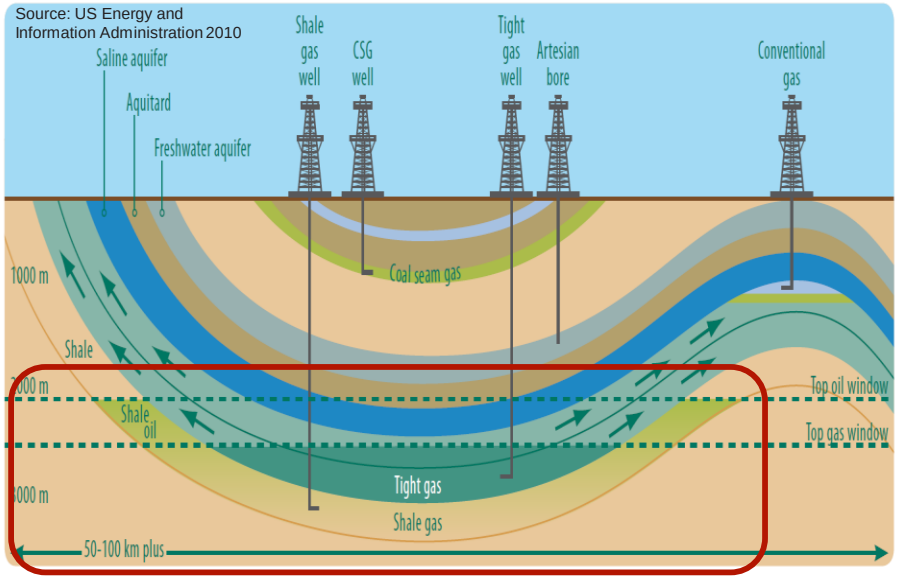
Attention is now focussing on Indonesia

ELEMENTS FOR UNCONVENTIONAL PLAY

Work to be done but Indonesian plays meet some key criteria from US experience

- Proven, active petroleum system
- Mature, good quality source rock
  - TOC 1.5%+
  - Late oil/gas window (VR >1.1)
- Rocks susceptible to fracture stimulation
  - Carbonate or silica enriched
- Some level of overpressure
  - Provides “reservoir” energy
- Isolation from conventional reservoirs
  - Important for effective stimulation
- Appropriate stress regime

Geological setting for unconventional hydrocarbons



Lion is targeting shale gas/oil and tight gas/oil plays at 2,000-4,000m

Shale gas/Shale oil

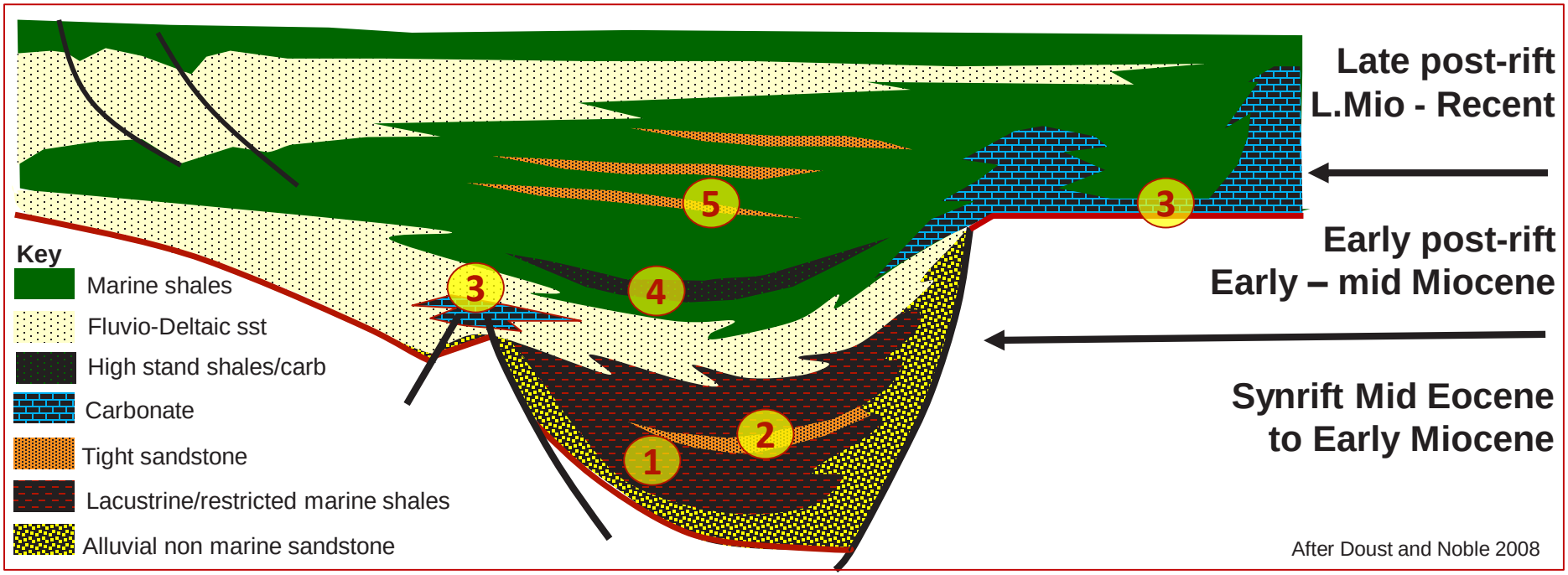
- *Very fine grained low permeability organic rich sediments – both source and reservoir*
- *Requires fracture stimulation to flow at commercial quantities*

Tight gas/Tight oil

- *More like conventional reservoir, sandstone, carbonate but low permeability and also requires fracture stimulation to flow*

Sumatran/Java/Kalimantan Unconventional plays

Basins have a range of plays at a variety of maturity windows



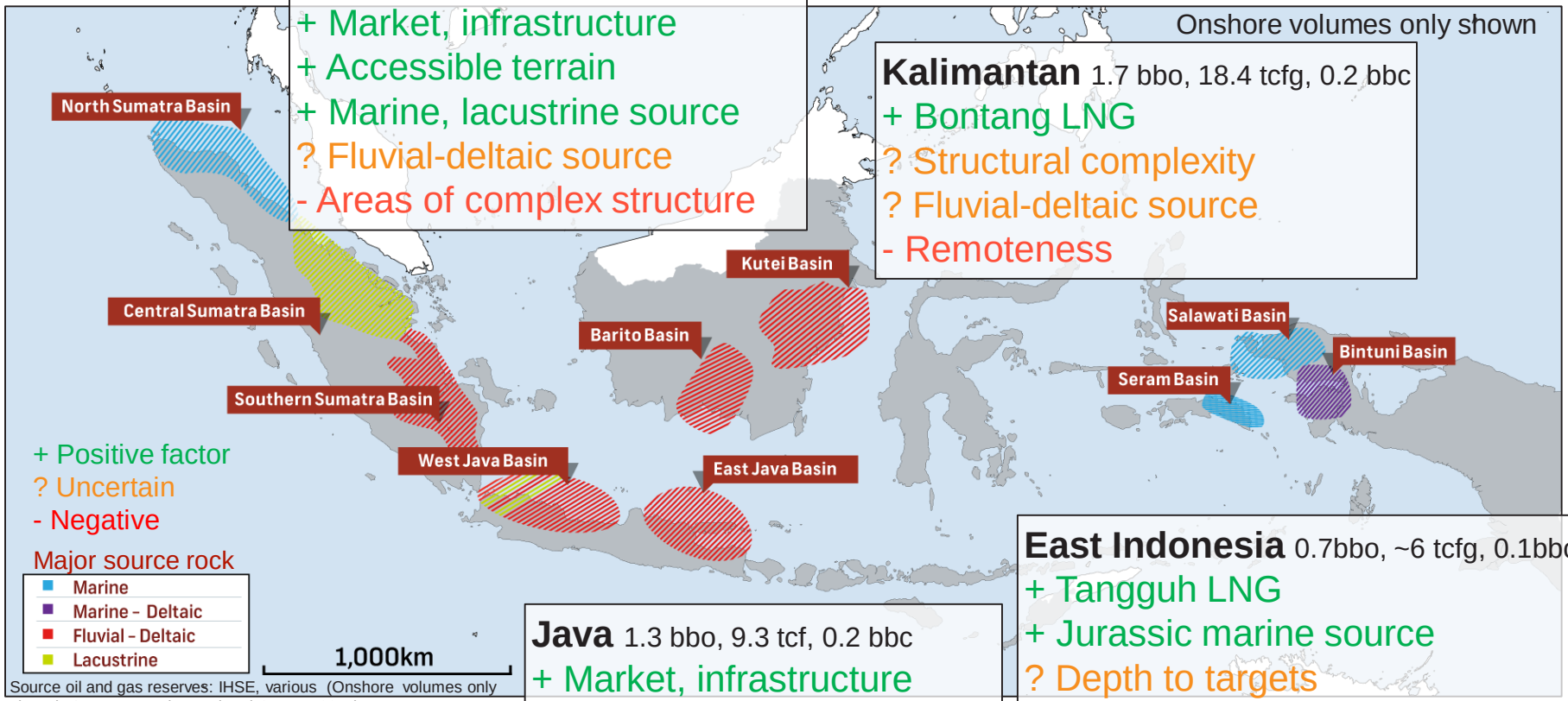
1. **Organic rich lacustrine/ restricted marine shales**
2. **Tight, finely laminated graben fill sandstone**
3. **Tight, platform carbonates**
4. **Condensed organic-rich, high stands marine shales/carbonates**
5. **Tight, finely laminated outer shelf to turbidite sands**

INDONESIAN KEY ONSHORE BASINS

Sumatra basins standout for unconventional focus in terms of discovered HC's, multiple plays, market access & infrastructure

Sumatra 18.8 bbo, 41 tcfg, 1.2 bbc
+ Market, infrastructure
+ Accessible terrain
+ Marine, lacustrine source
? Fluvial-deltaic source
- Areas of complex structure

Kalimantan 1.7 bbo, 18.4 tcfg, 0.2 bbc
+ Bontang LNG
? Structural complexity
? Fluvial-deltaic source
- Remoteness



Source oil and gas reserves: IHSE, various (Onshore volumes only shown), Sumatra number updated Sept 17 2014)

Note marine source rocks in North Sumatra and Eastern Indonesia (most successful shale plays in US involve marine source rocks)

Java 1.3 bbo, 9.3 tcf, 0.2 bbc
+ Market, infrastructure
+ Tight carbonate play
? Fluvial-deltaic source
- Population density

East Indonesia 0.7bbo, ~6 tcfg, 0.1bbc
+ Tangguh LNG
+ Jurassic marine source
? Depth to targets
- Remoteness
- Lack of infrastructure
- Terrain issues

SUMATRAN SHALE TARGETS

Challenge will be defining "sweet spots" of potential plays

Properties	North Sumatra			Central Sumatra		South Sumatra	
	Lower Baong	Belumai Formation	Bampo Shale	Telisa Formation	Brown Shale/Kelesa	Talang Akar Fm	Lehat/Lemat/ Benakat Shale
Rock Description	Marine shale with carbonate lenses	Marine calcareous shale, carbonate and sandstone	Restricted marine black claystone, siltstone and thinly bedded sandstone	Marine shale with sandstone and siltstone	Lacustrine black organic rich algal mudstone with carbonate rich lenses	Lacustrine to marine delta plain shale, quartzose sandstone and siltstone	Lacustrine shales, tuffaceous shale, siltstone, sandstone and coals
Age	Middle Miocene	Early Miocene	Late Oligocene	Middle Miocene	Oligocene	Late Oligocene to middle Miocene	Mid-late Eocene to early Oligocene
Organic Content/TOC							
Recorded TOC	0.5-2.9%	0.5-3.4	0.5-1.0% (limited data)	0.5-3%	2-23% mean of 3.7%	1.5-8 %	1.7-8.5%
Maturity							
Maturity window	Mid Oil to Gas window	Late Oil to Gas window	Gas window	Early Oil (biogenic gas possible)	Peak Oil to Gas window	Peak Oil to Gas window	Peak Oil to Gas window
Mineralogy/ brittleness							
Pressure	Generally moderately to occasional high overpressure	Normal to moderately overpressured	Normal to moderately overpressured	Normal to moderately overpressured	Normal to moderately overpressured	Normal to minor overpressure	Normal to moderately overpressured

Source: Lion in-house, various

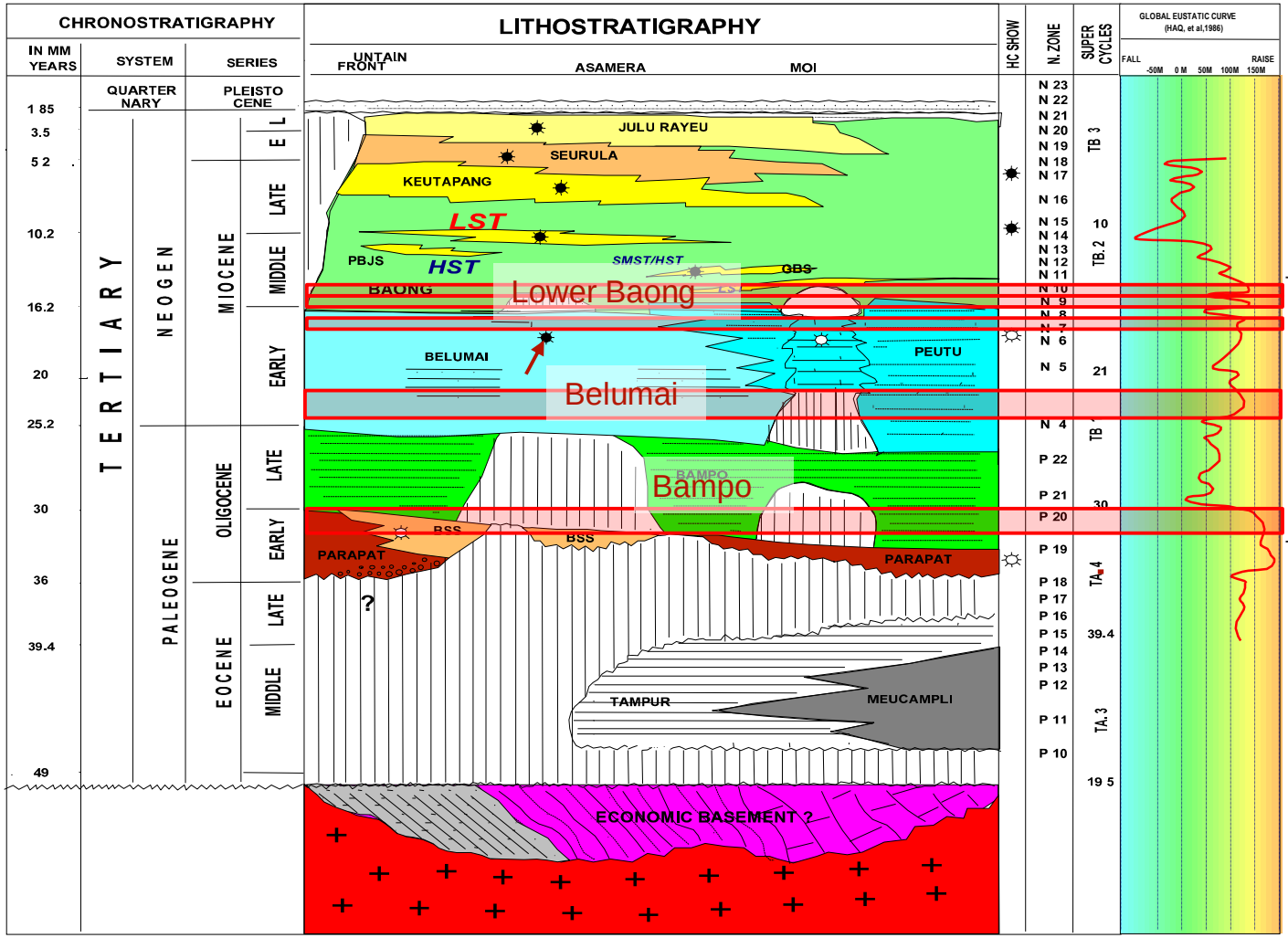
Unconventional Potential Assessment for Key Parameters

Positive | Reasonably Positive | Uncertain | Negative Factors | Negative

SEQUENCE STRATIGRAPHY KEY

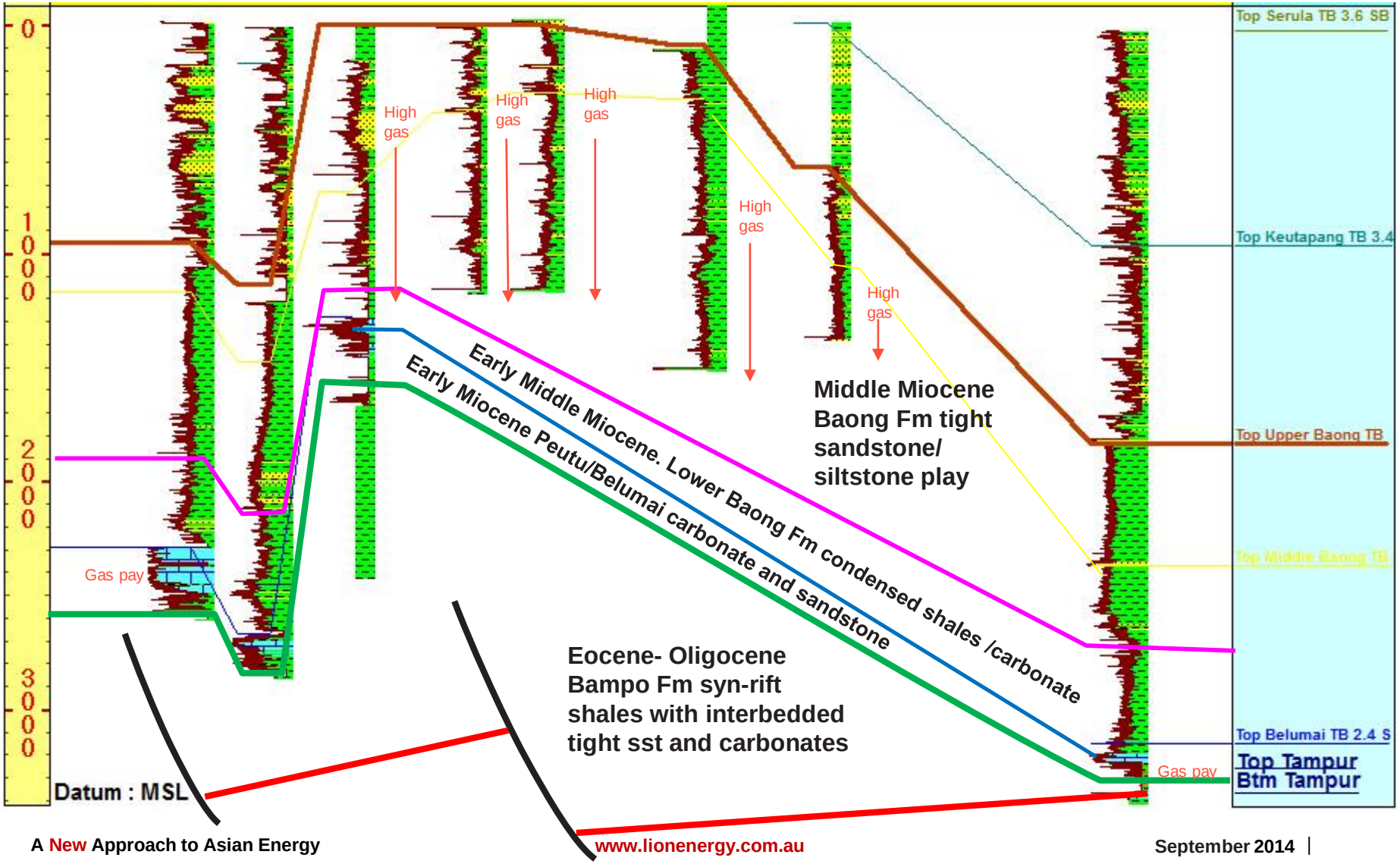
High stand events result in enhanced source rock potential

North Sumatra Basin Stratigraphy



NORTH SUMATRA BASIN WELL CORRELATION

Multiple potential unconventional plays, late uplift brings prospective targets to drillable levels



INDONESIAN WAY FORWARD

"Cracking the code" has a way to go - earliest success expected in hybrid (tight oil and gas) plays

Phase I – Study Phase

- Compile/access data (sporadic, limited deep basinal tests)
- Core, cuttings analysis
- Seismic interpretation
- Basin modelling
- Stress analysis

Joint study phase ~6-12 months

Phase II – Leverage conventional exploration

- Detailed seismic analysis, modelling
- Modify conventional well to build shale, tight plays knowledge (shale coring, specialist logging)
- Sweet spot identification
- Plan dedicated unconventional well

Initial PSC phase 2-3 years

Phase III – Concept Proof

- Hydraulic stimulation in vertical well
- Evaluate results
- Horizontal well, multi-stage stimulation
- Economics
- Plan pilot development
- Environmental analysis
- Infrastructure review

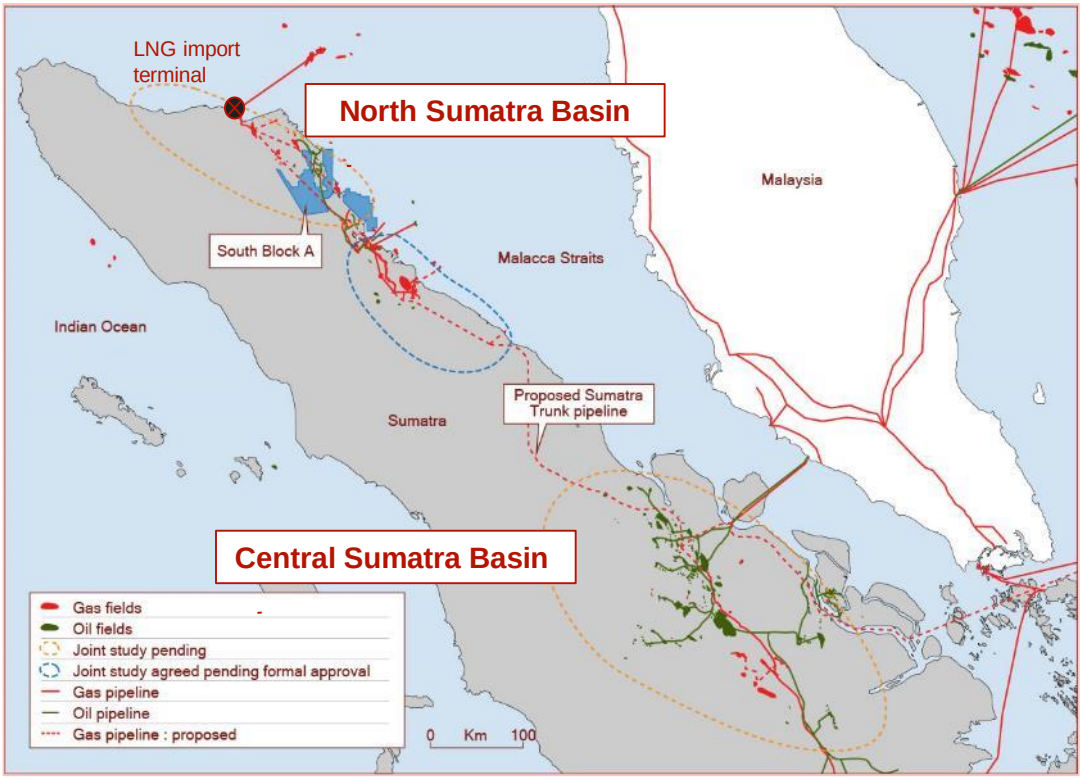
Extended PSC 3+ years

Key challenges: well deliverability, costs, regulator flexibility, land access

LION UNCONVENTIONAL CLAIMS "STAKED"

Four Joint Study Applications (JSAs) submitted

- Lion has over 17,000km^2 under application
- 2 in North Sumatra, 2 in Central Sumatra
- Potential world-class shale and tight gas/oil opportunities
- USGS & KESDM estimate the North & Central Sumatran basins have 10's of TCF and multi-billion barrel oil unconventional resource potential
- Ready access to infrastructure (including pipelines to Singapore, Java)
- Conventional/unconventional exploration synergies, critical component of Lion strategy



Resource Estimate	Conventional EUR (Discovered)[1]		Unconventional In-Place (Undiscovered)	
Basin	Oil/Cond (bil bbl)	Gas (tcf)	Oil/Cond (bil bbl)	Gas (tcf)
North Sumatra Basin	1.6	25.6	Multi-bil[4]	65[2]
Central Sumatra Basin	13.2	3.9	69[3]	42[3]

[1]USGS 2000, [2] Badan Geologi KESDM 2013, [3]EIA 2013, [4]Lion internal

Thank you

For more information please contact:

Kim Morrison
Chief Executive Officer
kmorrison@lionenergy.com.au
Office: +61 8 9211 1500
Mobile: +61 404 490 964