

A **New** Approach to Asian Energy



Emerging Unconventional Oil and Gas Business in Indonesia

Kim Morrison, CEO

Asia Upstream Conference
Singapore

25-26 September 2014



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Reserves & Resources, 1 Jan 2014 (Recoverable, net to Lion) ¹	Gas/Associated Gas (BCF)			Oil/Condensate (MMbbl)			Method
	1P	2P	3P	1P	2P	3P	
Reserves							
Total Reserves (Seram)				0.153	0.234	0.372	Deterministic
Contingent Resources	1C	2C	3C	1C	2C	3C	
Total Contingent Resources (Seram)	0.348	0.645	1.140	0.004	0.007	0.011	Deterministic
Prospective Resources²	Low	Best	High	Low	Best	High	
Prospective Resources-Seram	0.0	0.2	1.2	0.0	0.1	0.9	Probabilistic
Prospective Resources-South Block A ³	69.8	150.3	315.2	6.5	16.4	41.3	Probabilistic
Total Prospective Resources ³	69.8	150.5	316.4	6.5	16.6	42.2	Probabilistic

Reserves & Resources estimates

1. Hydrocarbon reserves and resource estimates are expressions of judgment based on knowledge, experience and industry practice. Estimates that were valid when originally calculated may alter significantly when new information or techniques become available. In addition, by their very nature, reserves and resource estimates are imprecise and depend to some extent on interpretations, which may prove to be inaccurate. As further information becomes available through additional drilling and analysis, the estimates are likely to change. This may result in alterations to development and production plans which may in turn, adversely affect the Company's operations.

2. Prospective resources: the estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

3. Aggregated by arithmetic summation The aggregate Low estimate may be a very conservative estimate and the aggregate High estimate may be a very optimistic estimate due to the portfolio effects of arithmetic summation

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 website. Mr Morrison consents to the release of this report and to the inclusion of the matters based on the information in the form and context in which it appears. Mr Morrison is a member of AAPG.

PRESENTATION OVERVIEW

-  **Lion overview**
-  **US, Asia- Pacific lessons**
-  **Why Indonesia?**
-  **Unconventional plays**
-  **Way forward**
-  **Lion's position**



COMPANY SNAPSHOT

Linked conventional/unconventional Indonesian strategy

Restructuring complete

- Shares on issue: 95m
- Market cap @20c: A\$19 million
- Cash: A\$5.8mil (30/6/2014)
- Revenue: ~A\$2.2 million pa

Major shareholders:

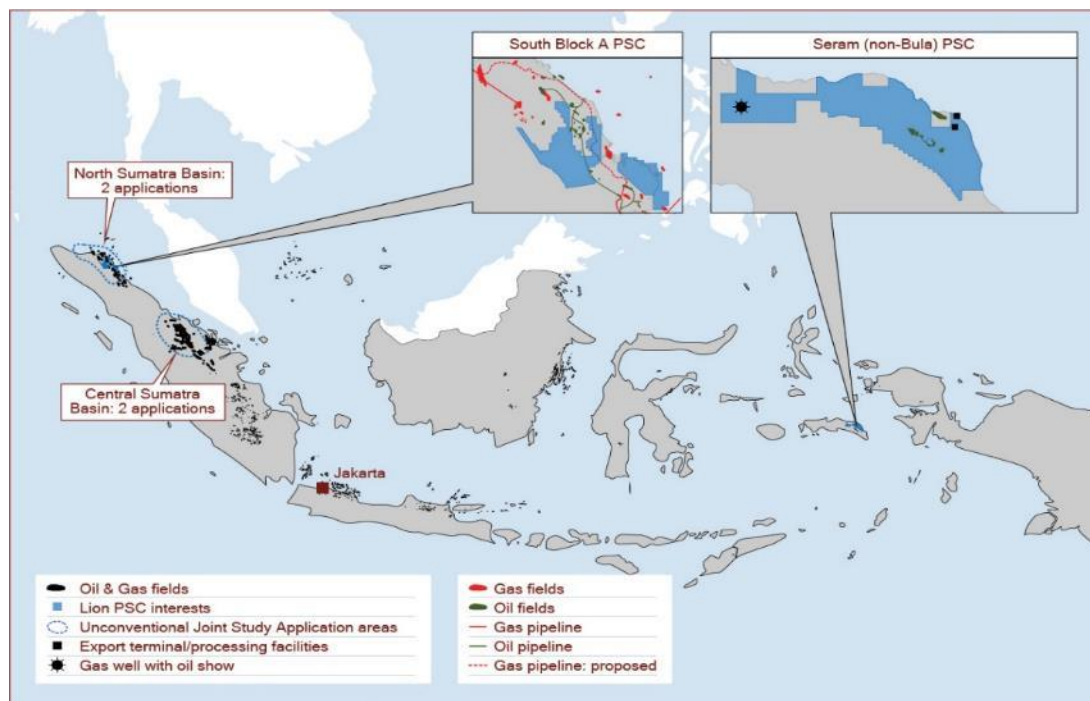
- Risco Energy Investments (55.3%)
- Tower Energy (6.1%)
- Management (13.3%)

Assets

- Seram PSC (2.5%) - production
- South Block A (35%) - exploration
- Four unconventional applications

High-calibre team:

- Proven Indonesian track record
- Multi-skilled advisory panel including North American unconventional experts



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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
 Bakken²: 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
 Niobara³: 0.98 bbo

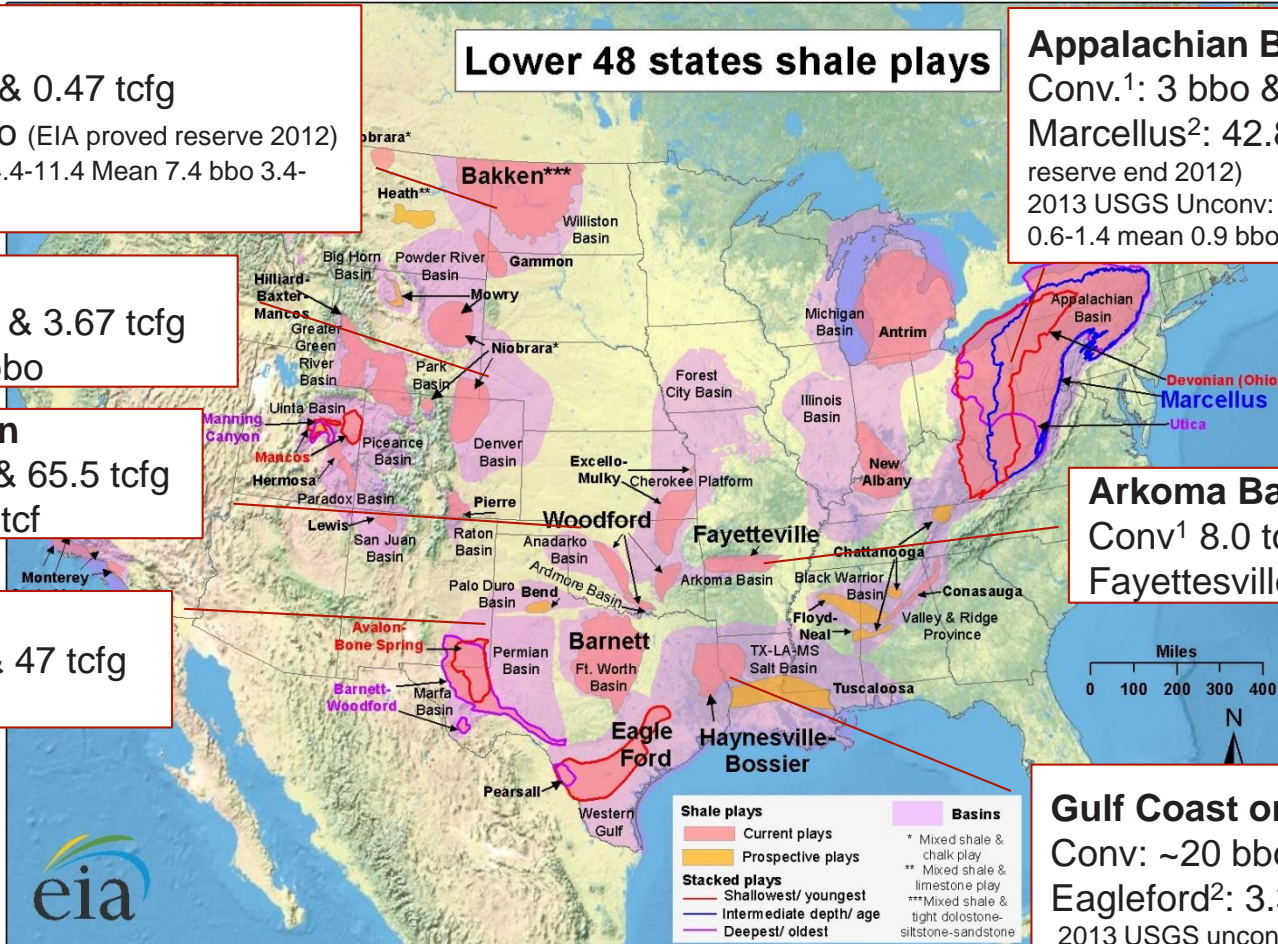
Anadarko Basin

Conv.¹: 2.3 bbo & 65.5 tcfg
 Woodford² 11.1 tcf

Permian Basin

Conv.¹: 41 bbo & 47 tcfg
 Barnett²: 23 tcf

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



Lower 48 states shale plays

Appalachian Basin

Conv.¹: 3 bbo & 42 tcfg
 Marcellus²: 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
 Fayetteville²: 9.7 tcfg

Gulf Coast onshore

Conv: ~20 bbo⁴ 100's tcfg (est)
 Eagleford²: 3.37 bbo/c 6.2 tcfg
 2013 USGS unconv 23 – 91 Mean 50 tcf
 Haynesville²: 17.7tcfg
 2013 USGS unconv, 44-81 Mean 61 tcf

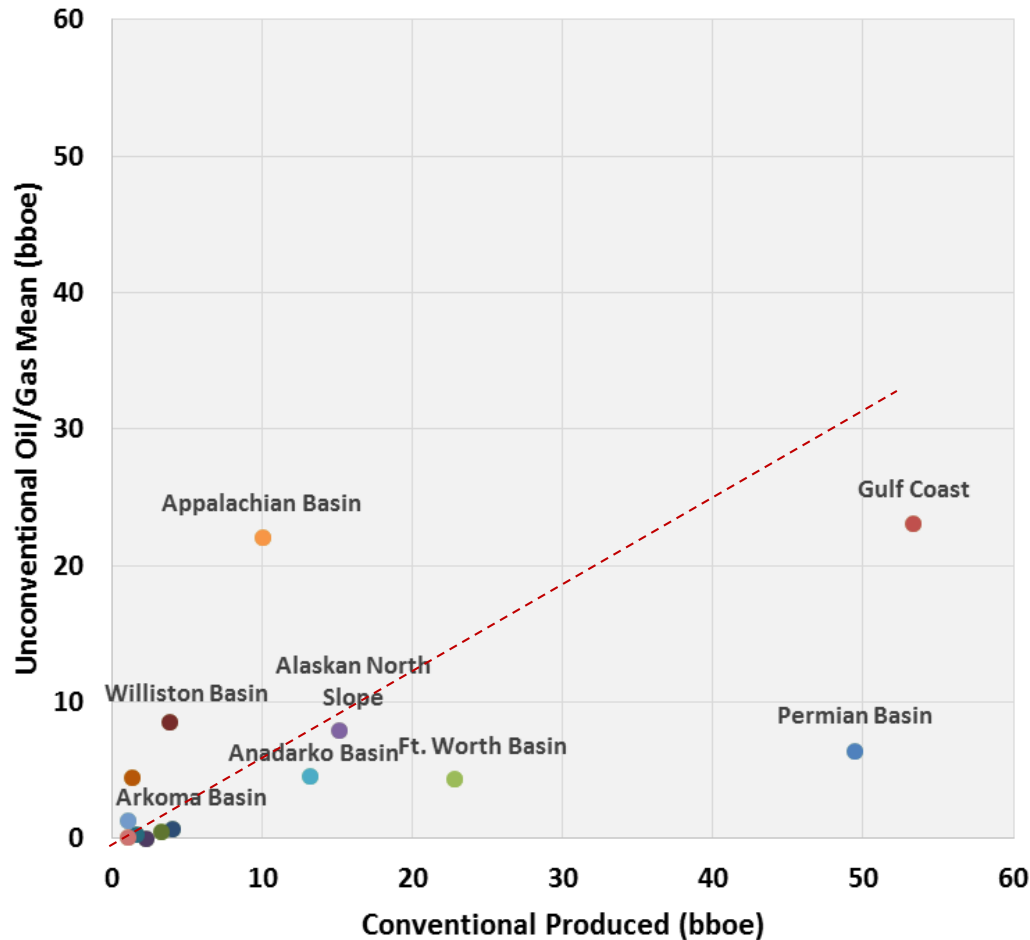
Source: Energy Information Administration based on data from various published studies. Updated: May 9, 2011

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

US Basins Conventional and Shale Gas/Oil



- Data and estimates largely from USGS and EIA publications
- Unconventional potential is uncertain and liable to change
- Understanding the rocks and unique properties of each basin is still key

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

KEY ELEMENTS FOR UNCONVENTIONAL

US successful targets have a wide ranges of geological settings, rock properties and ages

Rocks

- Proven, active petroleum system
- Mature, good quality source rock
- Rocks susceptible to fracture stimulation
- Reasonable porosity
- Some level of overpressure
- Isolation from conventional reservoirs

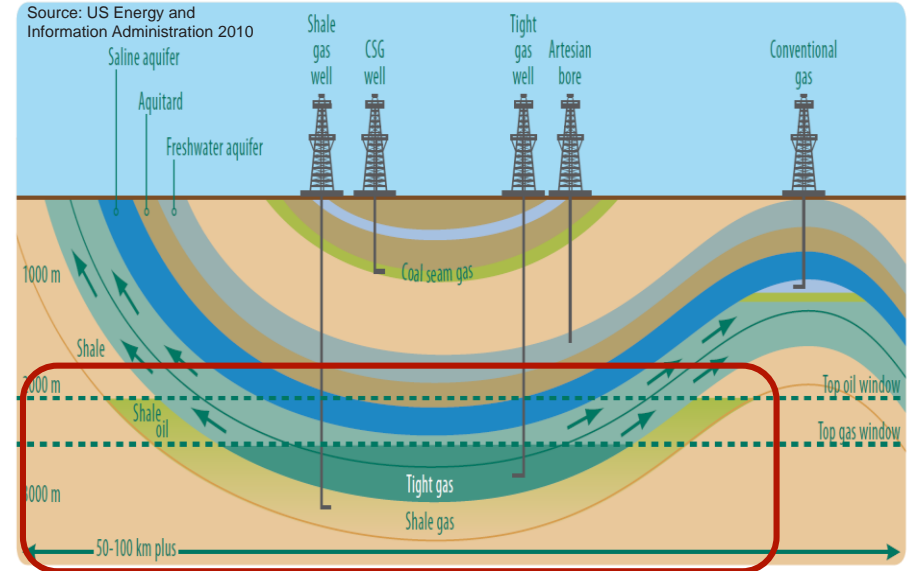
Operational

- Infrastructure
- Service sector capability
- Land access
- Water
- Regulator flexibility

Market

- Gas price
- Limited conventional competition

Geological setting for unconventional hydrocarbons



Unconventional plays: require horizontal drilling and/or hydraulic stimulation:

- Hydrocarbons produced directly from source rocks
- Hydrocarbons produced from tight reservoirs juxtaposed against or interbedded with source rocks

ASIAN UNCONVENTIONAL STATUS

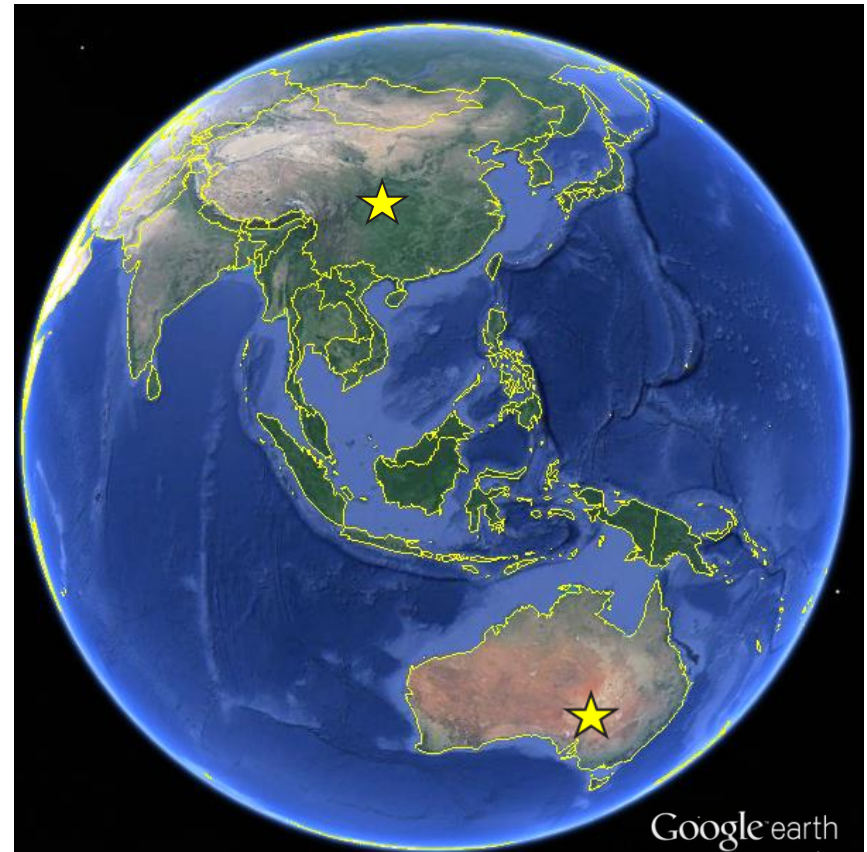
China and Australia leading the way, some projects in India, Indonesian unconventional PSC awards

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

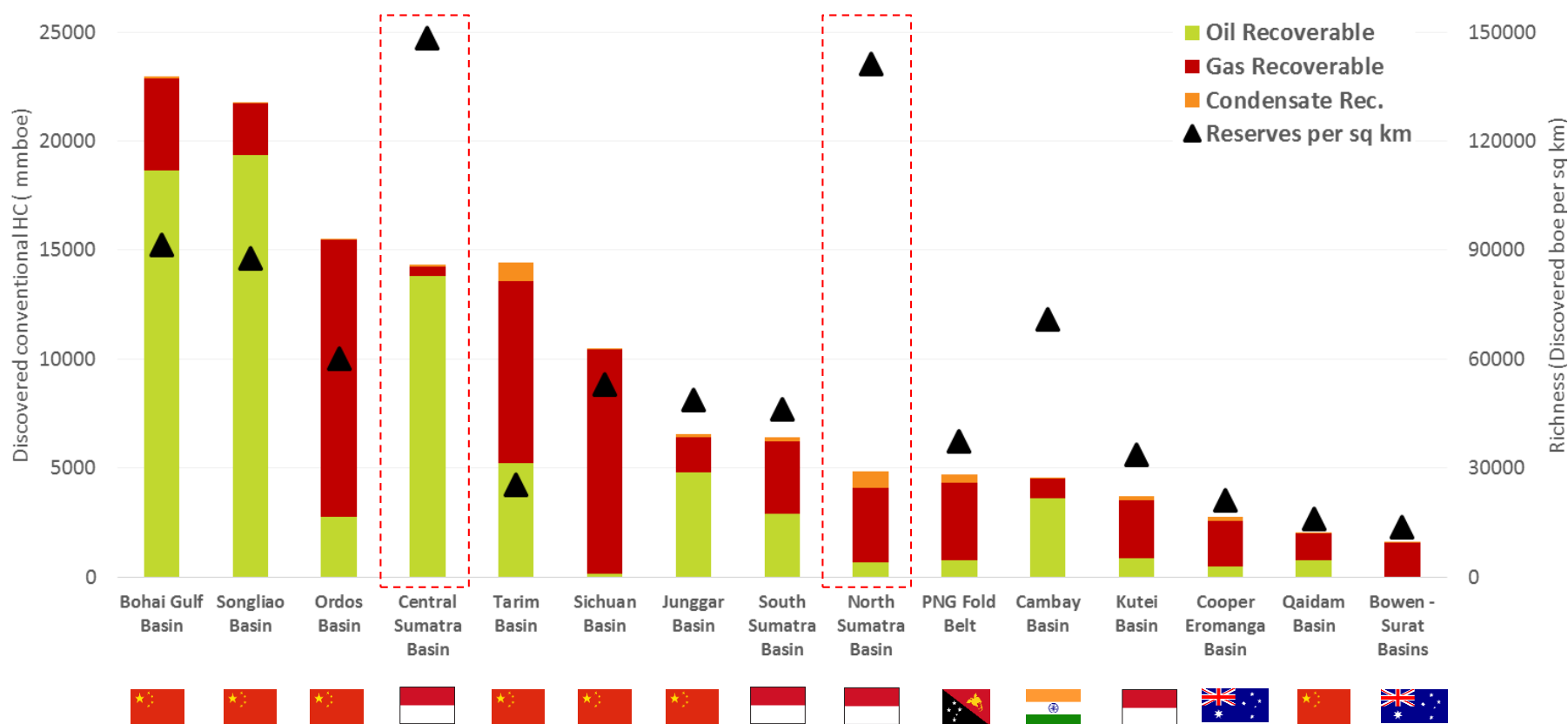


ASIA-PACIFIC MAJOR ONSHORE BASINS

Chinese basins dominate, but 4 Indonesian basins in top 15

North & Central Sumatra stand out by discovered hydrocarbons per km²

Asia-Pacific top 15 onshore basins ranked by discovered hydrocarbons



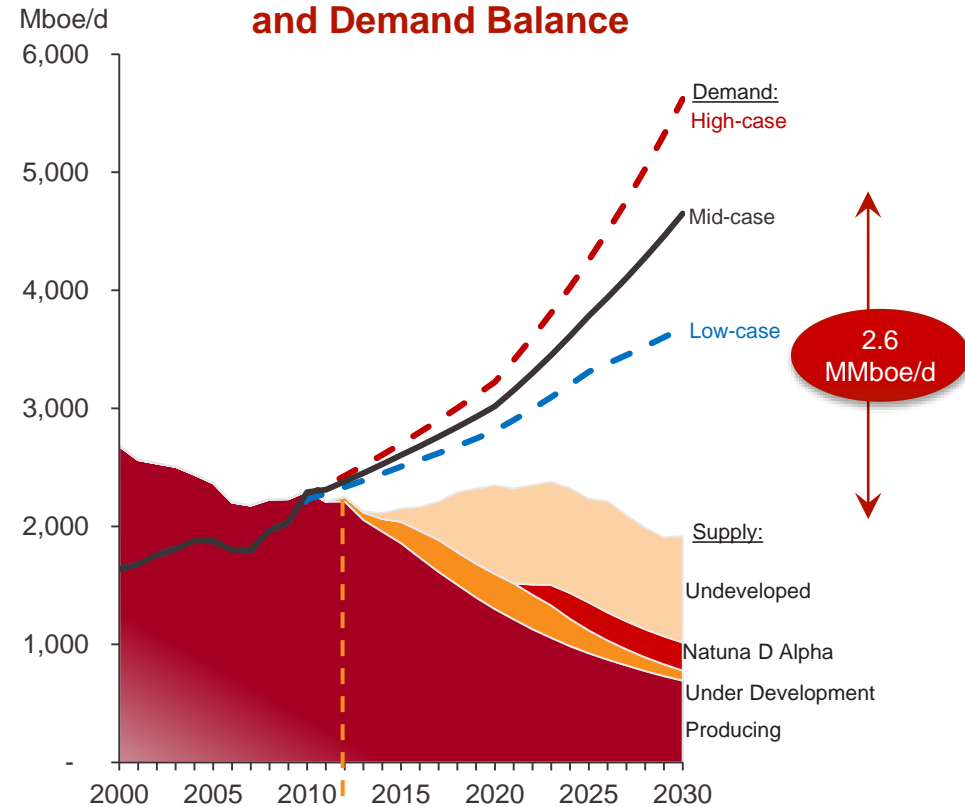
Source: IHSE, various

WHY INDONESIAN UNCONVENTIONAL?

A unique opportunity in SE Asia

- World's fourth-largest population (~250mm)
- Fast-growing economy (GDP ~ 6%pa) with oil and gas demand growing at > 5%pa
- Declining conventional oil/gas supply, Indonesia approaching net BOE imports
- 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 to fill supply demand gap
- Competitive fiscal terms
- Prolific conventional basins

Projected Indonesian Oil and Gas Supply and Demand Balance



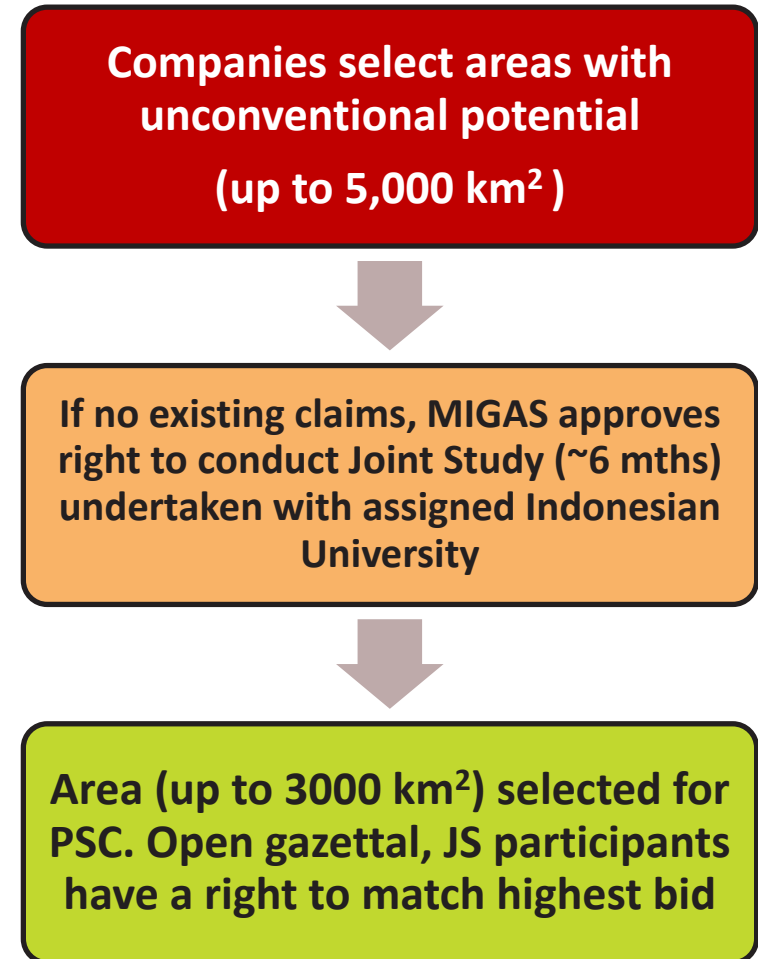
Source: Rystad U-Cube, MEMR (2011), ASEAN Energy Outlook (2011), DEN (2011), BCG analysis

INDONESIA UNCONVENTIONAL STATUS

Early days, however Government keen to foster business

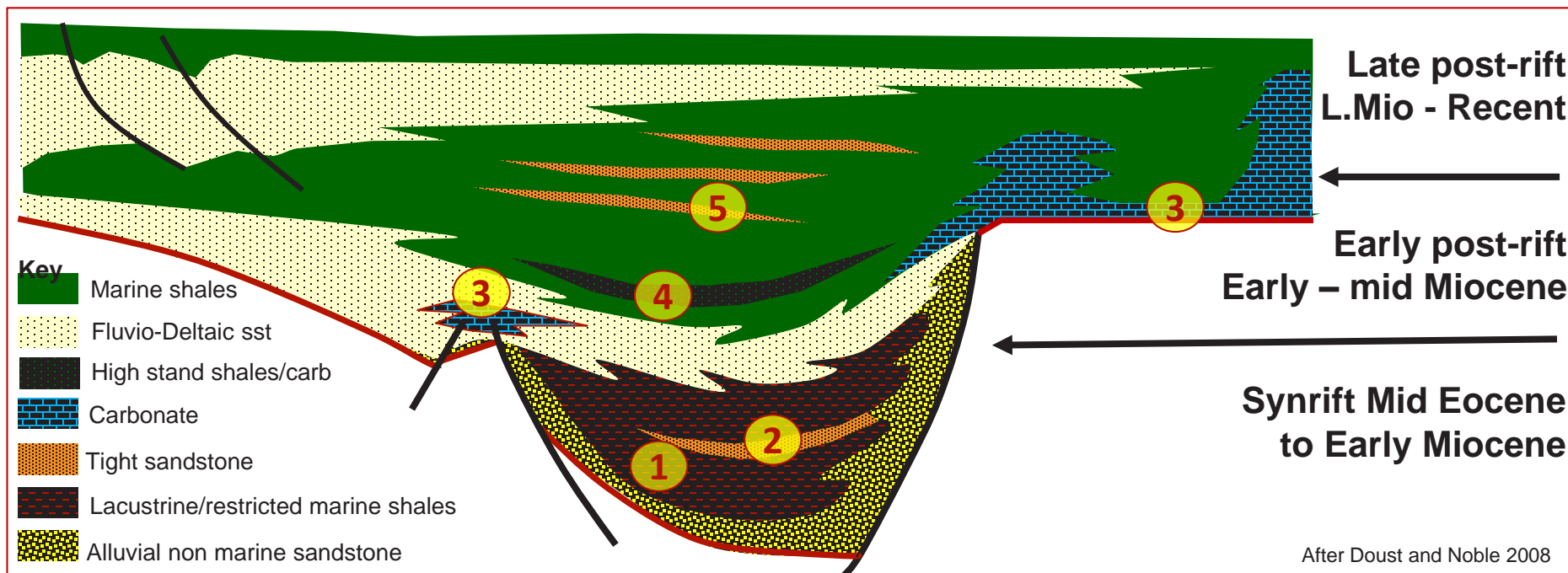
- Regulation and fiscal terms specific for unconventional
- *2012 regulation: "Non-conventional oil and natural gas ... shall be defined as oil and natural gas that is exploited using fracking technology from the reservoir where oil and natural gas with low permeability is formed. "*
- Contractor take: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

Application Process



INDONESIAN 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

SUMATRAN UNCONVENTIONAL 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

INDONESIAN KEY ONSHORE BASINS

Sumatra basins stand out for unconventional focus in terms of disc. HC's, multiple plays, market access & infrastructure

Sumatra 17.4 bbo, 41 tcfg, 1.1 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

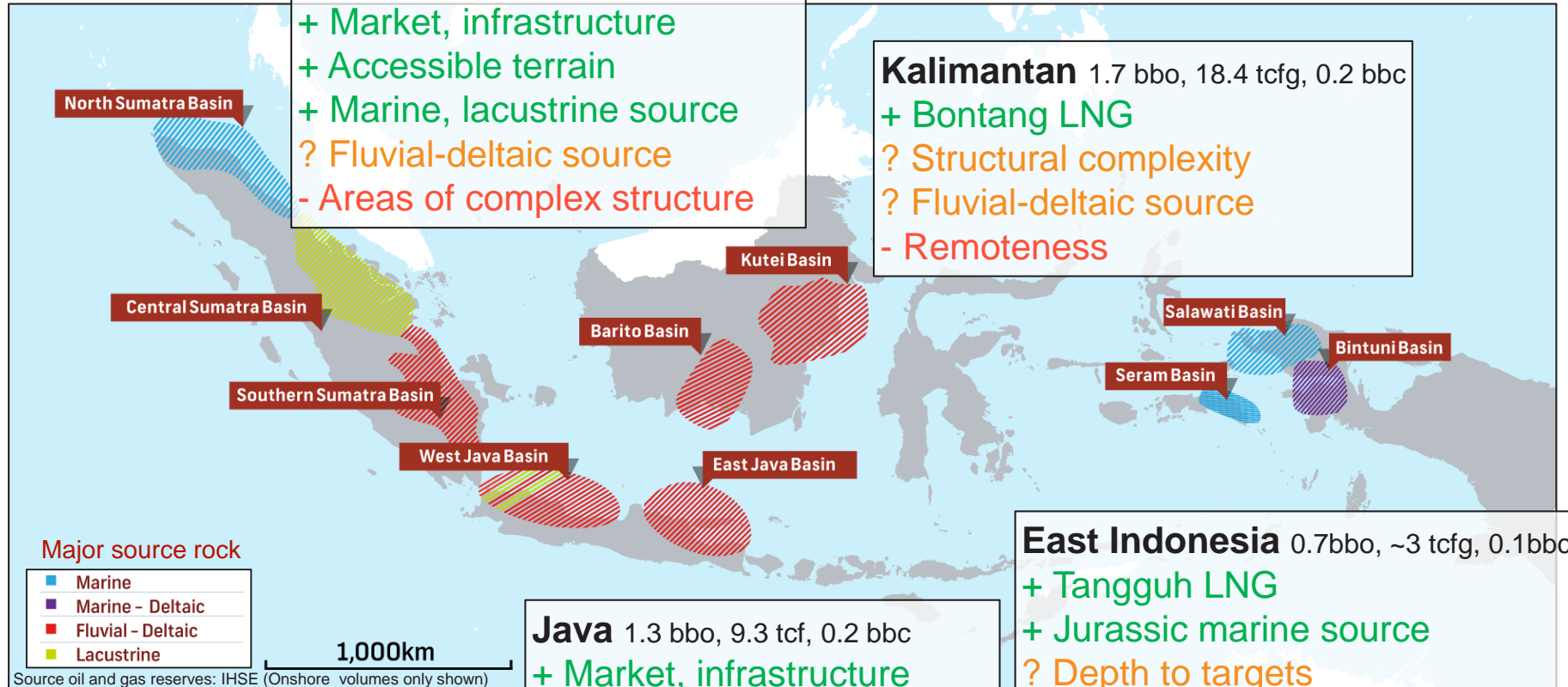
- + Bontang LNG
- ? Structural complexity
- ? Fluvial-deltaic source
- Remoteness

East Indonesia 0.7bbo, ~3 tcfg, 0.1bbc

- + Tangguh LNG
- + Jurassic marine source
- ? Depth to targets
- Remoteness
- Lack of infrastructure
- Terrain issues

Java 1.3 bbo, 9.3 tcf, 0.2 bbc

- + Market, infrastructure
- + Tight carbonate play
- ? Fluvial-deltaic source
- Population density



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

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)
- Cost effective analysis (Rock-eval, mineralogy, new laser analysis techniques)
- 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 well

*Initial PSC phase
2-3 years*

Phase III – Concept Proof

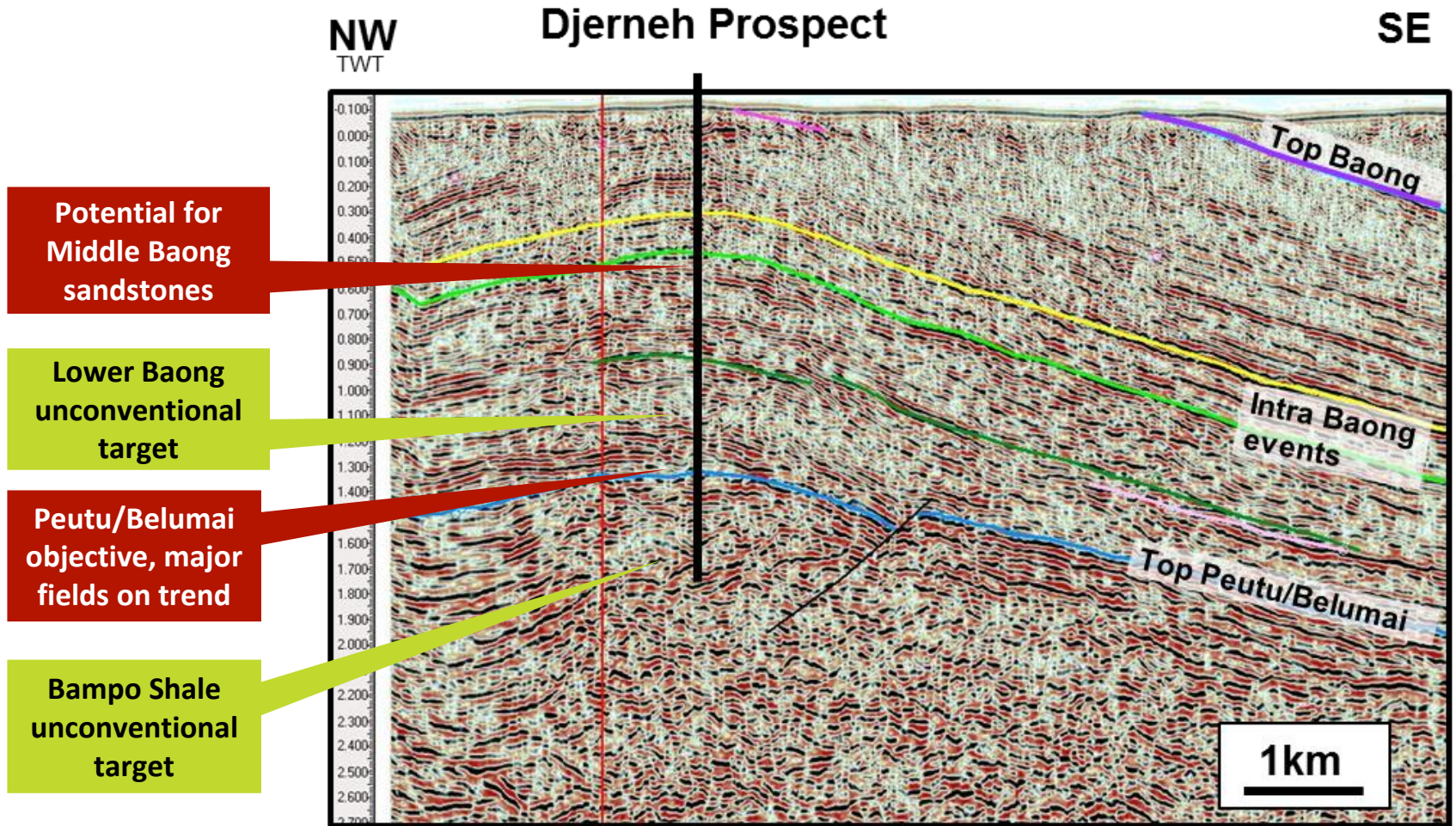
- Hydraulic stimulation in vertical well
- Evaluate results
- Horizontal well stimulation
- Economics
- Plan pilot development
- Environmental analysis
- Infrastructure review

*Extended PSC
3+ years*

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

CONVENTIONAL/UNCONVENTIONAL STRATEGY

Synergies: data, operations, potential early cash flow

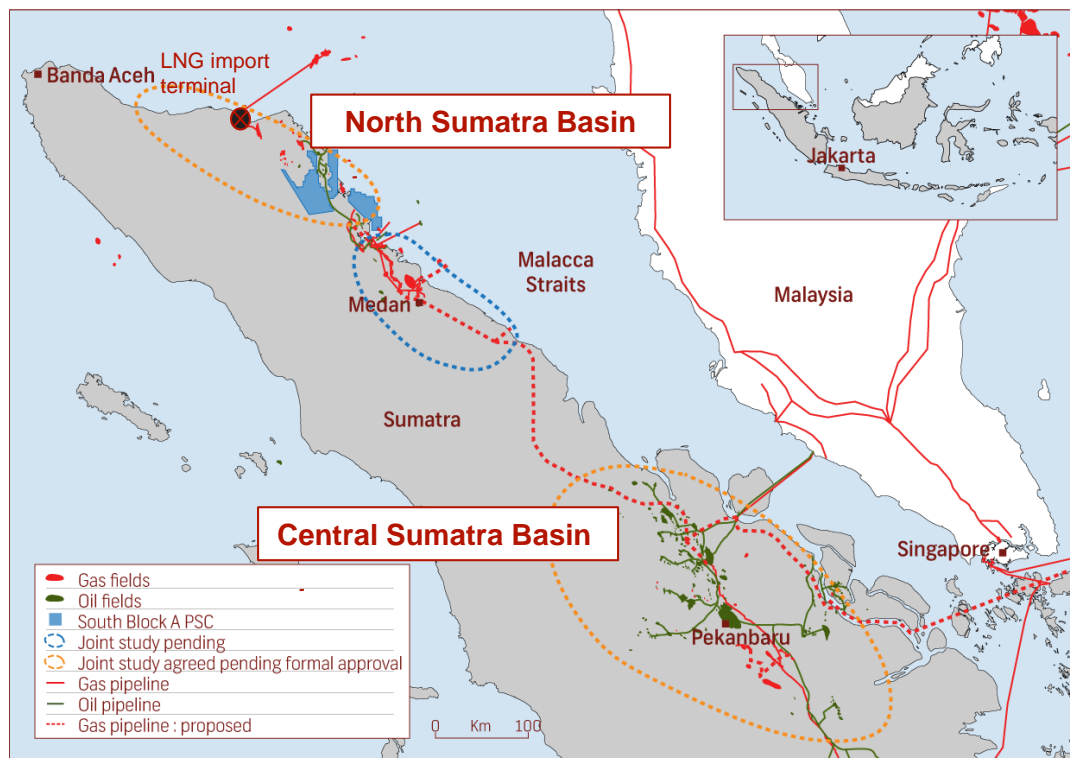


Lion prospect example in North Sumatra South Block A PSC

LION UNCONVENTIONAL CLAIMS “STAKED”

Four Joint Study Applications (JSAs) submitted >17,000 km²

- Early mover, 2012 applications
- North and Central Sumatra focus: 10’s of TCF gas and multi-billion bbl oil unconventional potential (USGS & KESDM estimates)
- Ready access to infrastructure (including pipelines to Singapore, Java)
- Conventional/unconventional exploration synergies



Resource Estimate	Conventional EUR (Discovered) ¹		Unconventional In-Place (Undiscovered)	
	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

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

Thank you

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