

The Conventional E&P Space in Europe: Opportunities and Challenges

Daniel Reis, Founding Partner

SuperReturn Energy Boston – 7 June 2016



Section One

Introduction

Key topics

1. **Conventional vs. unconventional**
2. **What is the European oil and gas opportunity?**
3. **What are the key benefits and challenges of investing in offshore and onshore Europe?**

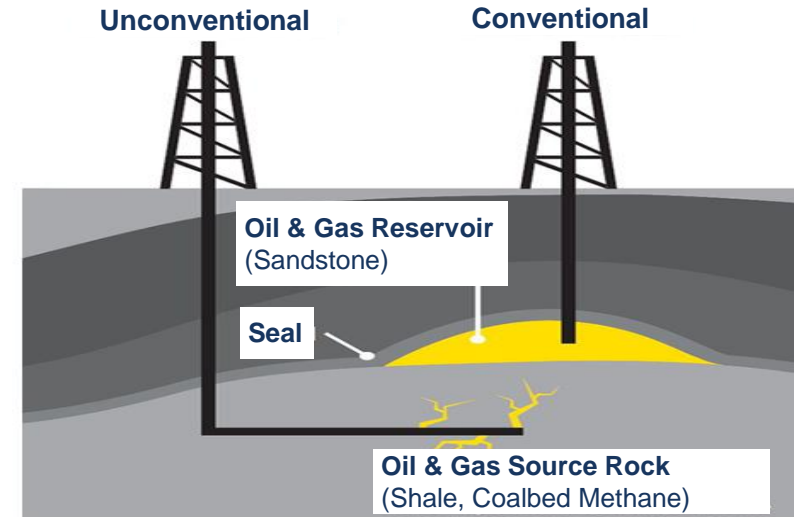
Section Two

Conventional vs. unconventional in Europe onshore and offshore oil & gas

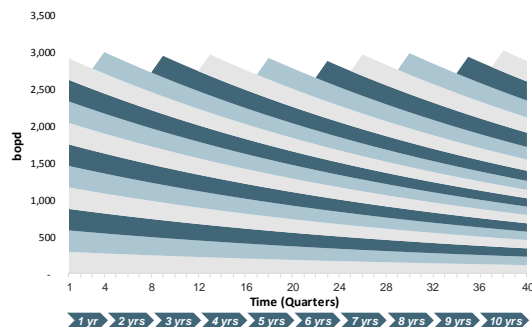
What differentiates conventional and unconventional?

Conventional vs Unconventional

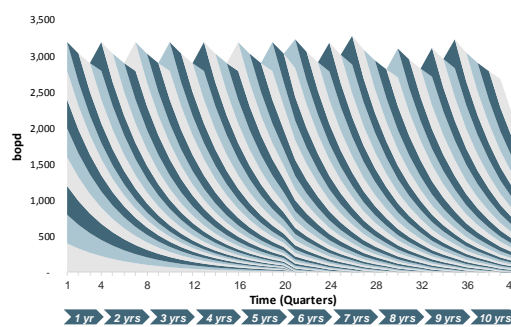
- Conventional oil or gas comes from geological formations that are relatively straightforward to develop and don't need specialized technologies to be unlocked
- First target of the industry as easier and less expensive to produce
- Unconventional resources are trapped in reservoirs with low permeability, meaning little to no ability for the oil or natural gas to flow through the rock and into a wellbore
- Stimulation techniques like hydraulic fracturing are used to create cracks in the underground rock allowing the oil or natural gas to flow
- More time-consuming and costly than producing from a conventional reservoir that requires no stimulation beyond a pumpjack or wellhead compressor



Typical Conventional Onshore EU Well Profile¹



Typical Unconventional US Well Profile²



Reservoir Compartments

Conventional resources
Small volumes that are easy to develop

Unconventional resources
Large volumes that are difficult to develop

Tight gas sands

Coal bed methane

Shale gas

Gas hydrates

Sources: San Leon Energy, Oil and Gas Info Canada

1. Typical onshore Germany field production profile replicated to achieve a 3,000 bopd plateau over 10 years

2. EIA, Tudor Pickering Holt; replicated to achieve a 3,000 bopd plateau over 10 years

Overview of European Oil and Gas Market

Large oil and gas basin with resources in excess of 37 bn boe

- Large majority of the opportunities do not require unconventional technology

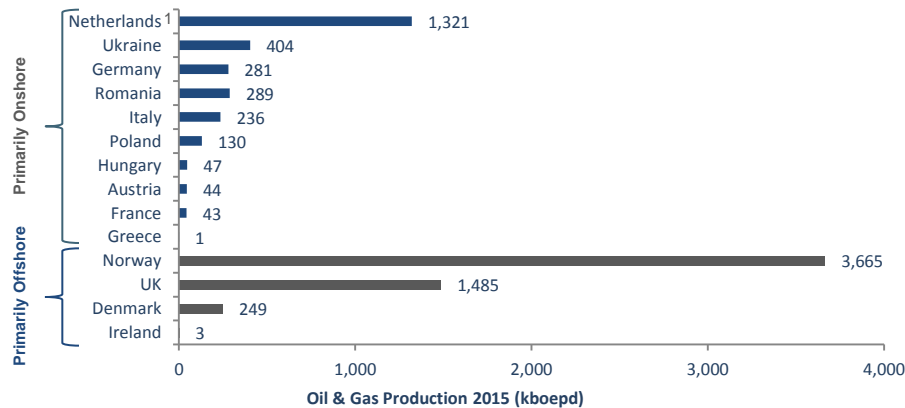
Offshore: 5,300 kboepd production 25 bn boe resources

- Fragmented market with many Independents
- Significant distress in the market leading to attractive opportunities

Onshore: 2,700 kboepd production 12 bn boe resources

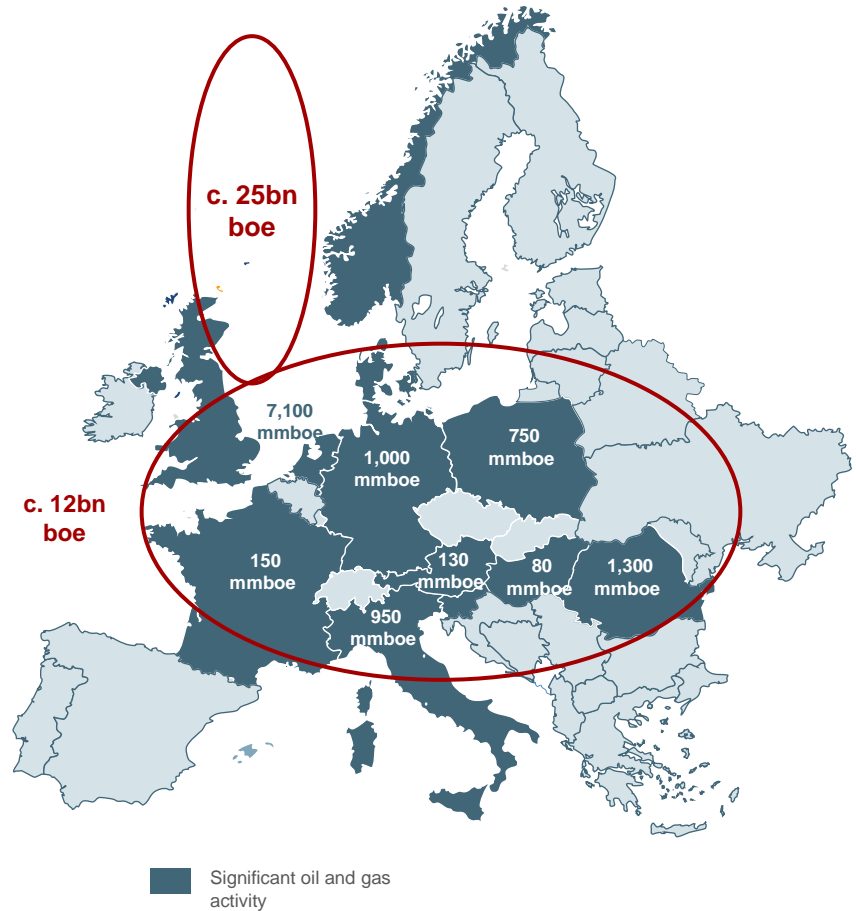
- IOCs/NOCs own majority of the acreage and stopped investing a few decades ago and now divesting
- Low cost, low risk conventional assets which remain underexploited, matching the onshore US opportunity 30 years ago

Production

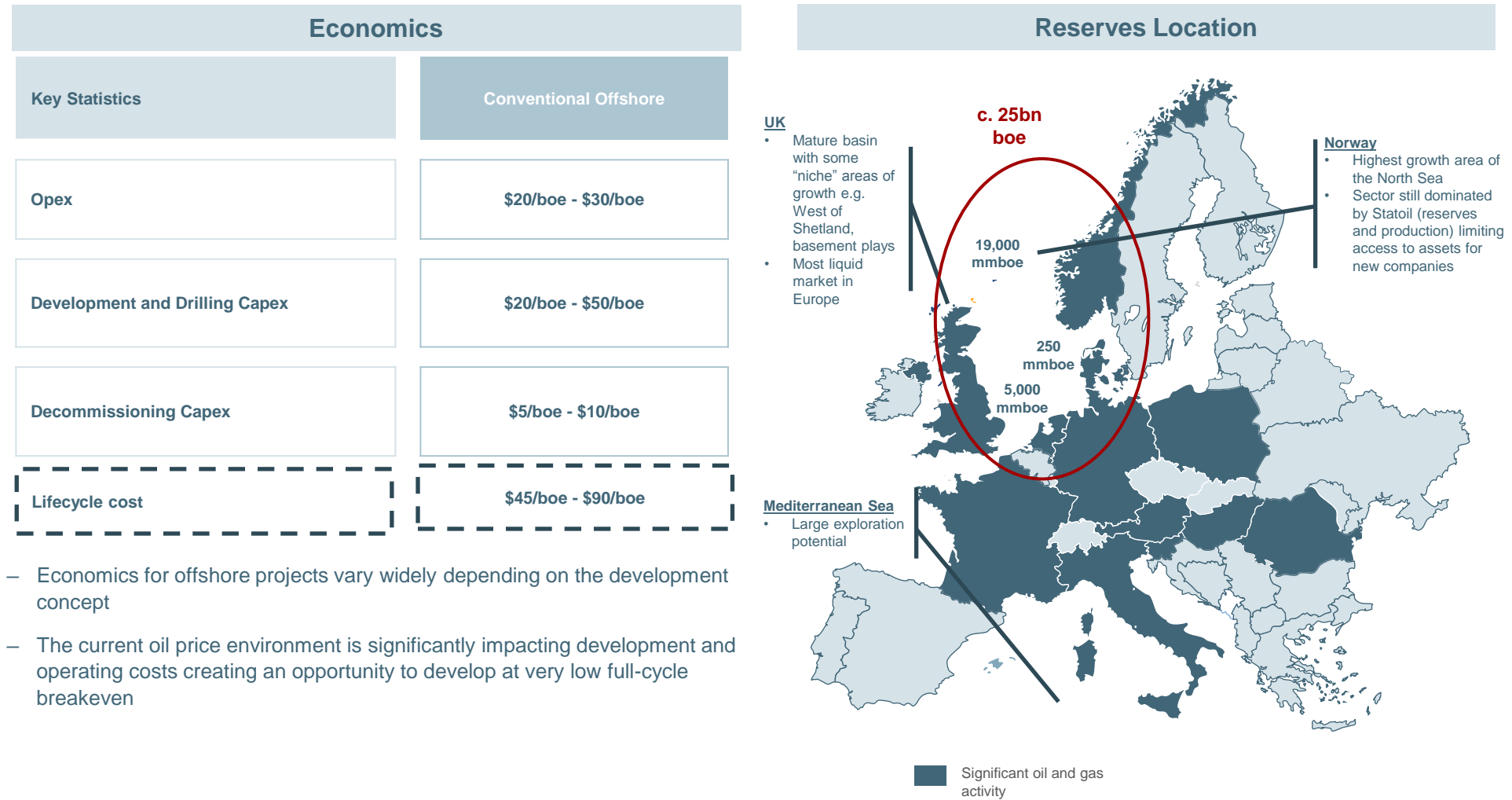


1. Approximately 70% in the Groningen field; Source: CIA World Fact Book 2015

Reserves Location



Offshore Europe Overview



Source: CIA World Fact Book 2015

Offshore Europe – Opportunities & Challenges

Key Opportunities

- **Highly distressed market**
 - Large number of independent players currently in distress leading to attractive investment opportunities
- **Reset of capex cost**
 - Lower oil price impacting development and operating costs with rig and contractor rates declining as service companies struggle for business
- **Attractive untapped areas with exploration potential**
 - Highly unexplored areas with significant exploration potential (e.g. Barents Sea, Mediterranean Sea)

Key Challenges

- **High cost and breakeven**
 - High costs offshore operations due to high specifications required
 - Typical full-cycle breakeven costs above \$60/bbl
- **Old infrastructure**
 - European offshore assets relying on old infrastructure with low reliability
- **Decommissioning**
 - Offshore assets being decommissioned early due to low oil price
 - Little clarity on decommissioning costs as few assets have been decommissioned so far

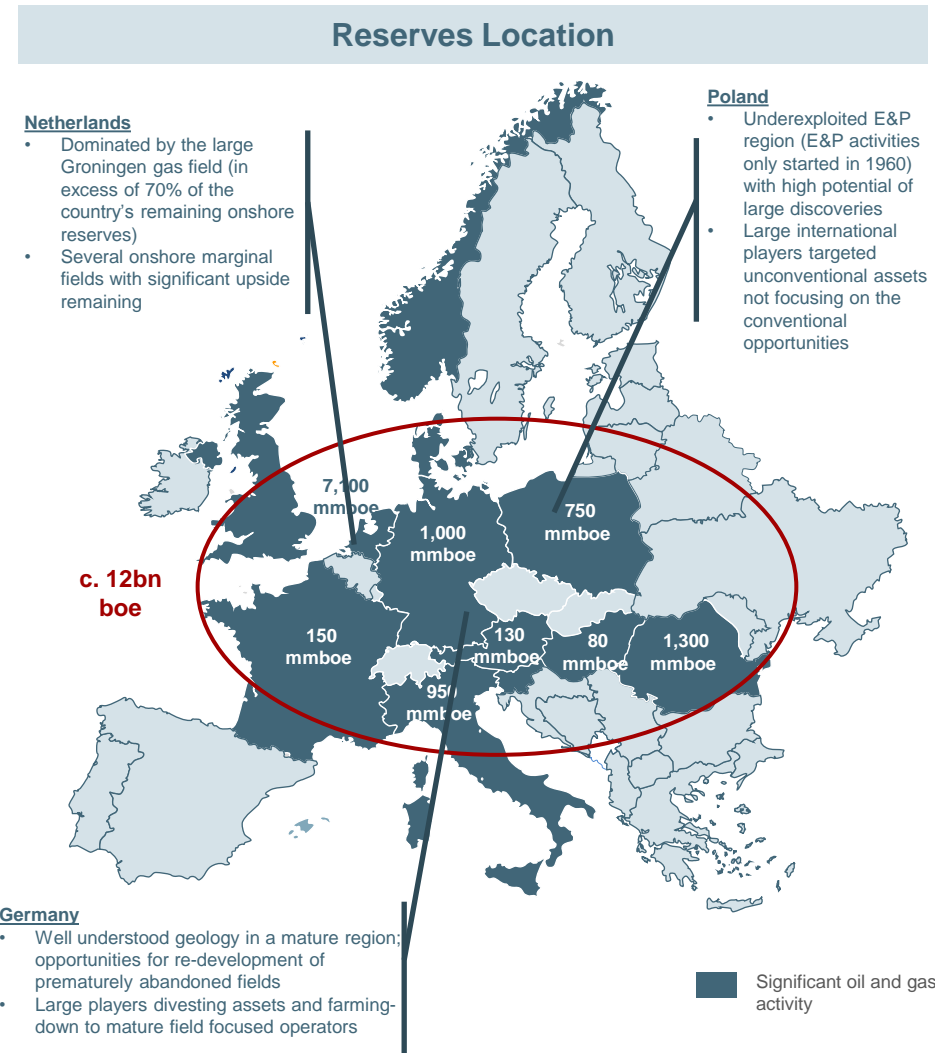
The current oil price environment is significantly impacting development and operating costs creating an opportunity to develop at very low full-cycle breakeven

Onshore Europe Overview

Economics Comparison			
Key Statistics	Conventional Onshore EU ¹	Unconventional US	Competitive Advantage
Completed well cost	\$3mm	\$6mm ²	50% lower completed well cost
Recovery per well	1.0mmboe	0.2mmboe ³	5x higher recovery
Completed well cost per barrel	\$3.0/boe	\$30.0/boe	c. 10x lower cost per barrel
Facilities cost per barrel	\$4.0/boe - \$5.0 /boe	\$4.0/boe - \$5.0 /boe	Similar facilities costs
Lifting costs	\$6.0/boe - \$9.0 /boe	\$8.0/boe - \$12.0 /boe ³	c. 1.5x lower lifting cost
Transportation costs	\$3.0/boe - \$5.0 /boe	\$5.0/boe - \$7.0 /boe ³	c. 2x lower transportation cost
Lifecycle cost	\$16/boe - \$22/boe	c.\$40 /boe - \$60/boe	c. 2x - 3x lower lifecycle cost

Source: CIA World Fact Book 2015

1. Typical oil project in Germany
2. DTC Energy Group, includes 30 stage frac
3. EIA, Tudor Pickering Holt



Onshore Europe – Opportunities & Challenges

Key Opportunities

- **Unexploited market with upside potential**
 - Underinvested assets as IOC/NOC turned their focus on larger basins
- **Low full-cycle breakeven**
 - Low cost operations with full-cycle breakeven oil price in the area of \$30/bbl
 - Low development costs due to conventional nature of the assets and capillary infrastructure
- **High risk adjusted returns**
 - Conventional low risk fields and underexploited redevelopments

Key Challenges

- **High environmental standards**
 - Requirement for higher-spec operations
- **Very “closed” market (need to be insider)**
 - Majority of assets held by large E&P companies with limited M&A activity given focus on larger projects
- **Less developed service industry**
 - Access to services requires strategic partnerships with local partner
- **Government owned land rights**
 - Limits liquidity and require longer “gestation” periods to get permits

Low cost, low risk conventional assets which remain underexploited, matching the onshore US opportunity 30 years ago

Key Contacts

Daniel Reis – Petroleum Equity

Founding Partner

Email: daniel.reis@petroleumequity.com

Phone: +44 (0) 207 193 3887

Arun Subbiah – Petroleum Equity

Founding Partner

Email: arun.subbiah@petroleumequity.com

Phone: +44 (0) 207 887 1378

Scott Church – Rede Partners

Founding Partner and Head of US Distribution

Email: scott.church@rede-partners.com

Phone: +44 (0) 207 952 2466

Claudia Levan – Rede Partners

Associate Principal, US Distribution

Email: claudia.levan@rede-partners.com

Phone: +44 (0) 207 952 2465

Petroleum Equity has appointed Rede Partners as placement agent and fundraising advisor

Appendix

Conventional E&P investing in practice

Petroleum Equity Investment Strategy	Geographic Focus	Description	Market Opportunity	Challenges & Mitigants
Alpha	North Sea (c. 25 bn boe)	Distressed acquisition of a portfolio of producing and development assets through a complex cross-border insolvency	<ul style="list-style-type: none"> – Majors divesting assets – Smaller distressed companies unable to fund development projects – Opportunity for well-funded buyers to capitalise on the changing dynamics 	<ul style="list-style-type: none"> – High cost and breakeven <ul style="list-style-type: none"> ✓ Alpha's key asset is at development stage and is taking advantage of the current drop in costs ✓ Full-cycle breakeven oil price of \$40/bbl – Old infrastructure <ul style="list-style-type: none"> ✓ Alpha's key asset will be developed with a FPSO and will not rely on any infrastructure – Decommissioning <ul style="list-style-type: none"> ✓ Very limited decommissioning exposure
Rho	Onshore Europe (c. 12bn boe)	Investment platform structured as a partnership between Petroleum Equity and RAG (Austrian E&P company) focused on the onshore European market	<ul style="list-style-type: none"> – Majors exiting the region – Mature fields that have not been focused on – Opportunity for steady growth from maximisation of late life fields with upside from appraisal 	<ul style="list-style-type: none"> – High environmental standards <ul style="list-style-type: none"> ✓ Proprietary technology and market leading operating efficiency ✓ Significant track record and recognition in Germany – Very "closed" market (need to be insider) <ul style="list-style-type: none"> ✓ First investment and pre-identified targets are conventional assets with material upside ✓ Strong market credibility brought by RAG and proprietary Petroleum Equity network to source deals – Less developed service industry <ul style="list-style-type: none"> ✓ In-house wide range of services (from seismic interpretation to decommission including two drilling rigs) – Government owned land rights <ul style="list-style-type: none"> ✓ Very good relationship with the mining authorities due to proprietary networks

About Petroleum Equity

Background

- Alternative investment firm focused on the upstream oil and gas industry outside North America
- Deployed capital in two investment platforms focused on European conventional oil and gas

Focused investment approach

- Most attractive risk/reward - taking existing discoveries from appraisal to production
- Exclusive focus on upstream oil and gas in Europe

Deep industry and technical pedigree

- c.100 years of combined experience founding, managing and sourcing E&P companies
- Unparalleled asset knowledge through review of virtually all fields in the target market
- Lack of management team requires unique skill-set to capitalise on the European opportunity

Investments to date

- **Offshore Europe:** distressed acquisition of a portfolio of producing and development assets through a complex cross-border insolvency
- **Onshore Europe:** investment platform structured as a partnership between Petroleum Equity and RAG (Austrian E&P company) focused on the onshore European market



Bernhard Schmidt
31 years oil & gas experience

- Senior oil & gas executive with over 31 years of experience
- Former Member of the Executive Board of Wintershall, Germany's largest oil & gas company, and head of Exploration & Production
- Began career at Shell International, with operational roles in the Netherlands, UK and Oman.
- Held senior roles at Honeywell International in both China and Europe businesses



Sven Tiefenthal
29 years oil & gas experience

- Senior oil & gas executive with over 29 years of experience. Internationally recognised expert on oil & gas reserves and valuations
- Previously a senior Partner and the driving force behind TRACS International, a leading oil & gas technical consultancy business
 - Began career at Shell International in the Netherlands and Oman



Daniel Reis
15 years oil & gas experience

- Investment Banker and Transaction Advisor with over 15 years of experience focused on oil & gas advisory and principal investments
- Most recently was member of Barclays Capital Natural Resources Principal Investment team with particular focus on oil & gas
- Held various advisory positions with Deloitte in the natural resource sector in Zurich and New York



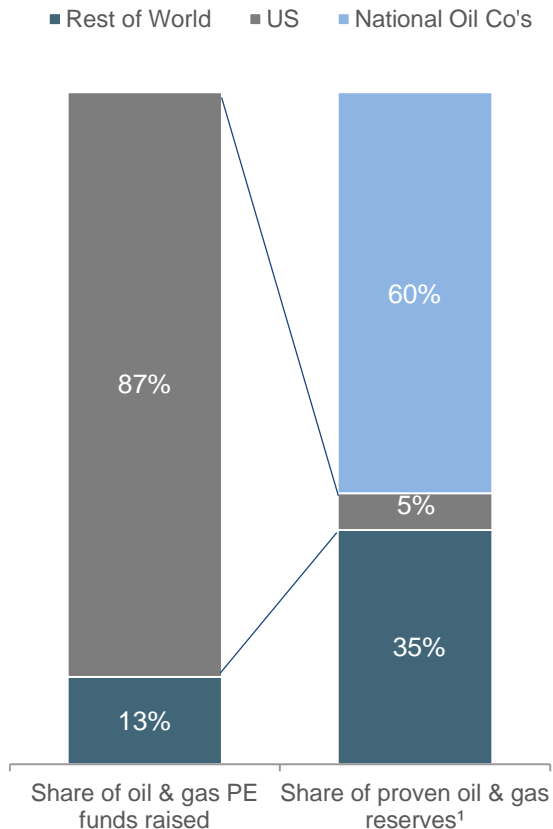
Arun Subbiah
33 years oil & gas experience

- Senior oil & gas executive with over 33 years of experience
- Serial E&P entrepreneur, who has successfully built up and divested ventures in Russia (Petro Russo Holdings) and Nigeria (Gulf of Guinea Energy), and is founding partner of founder of Coromandel Wind Energy (CWE), a utility scale wind energy IPP in India
- Began career at Shell International in Nigeria, UK and the Netherlands

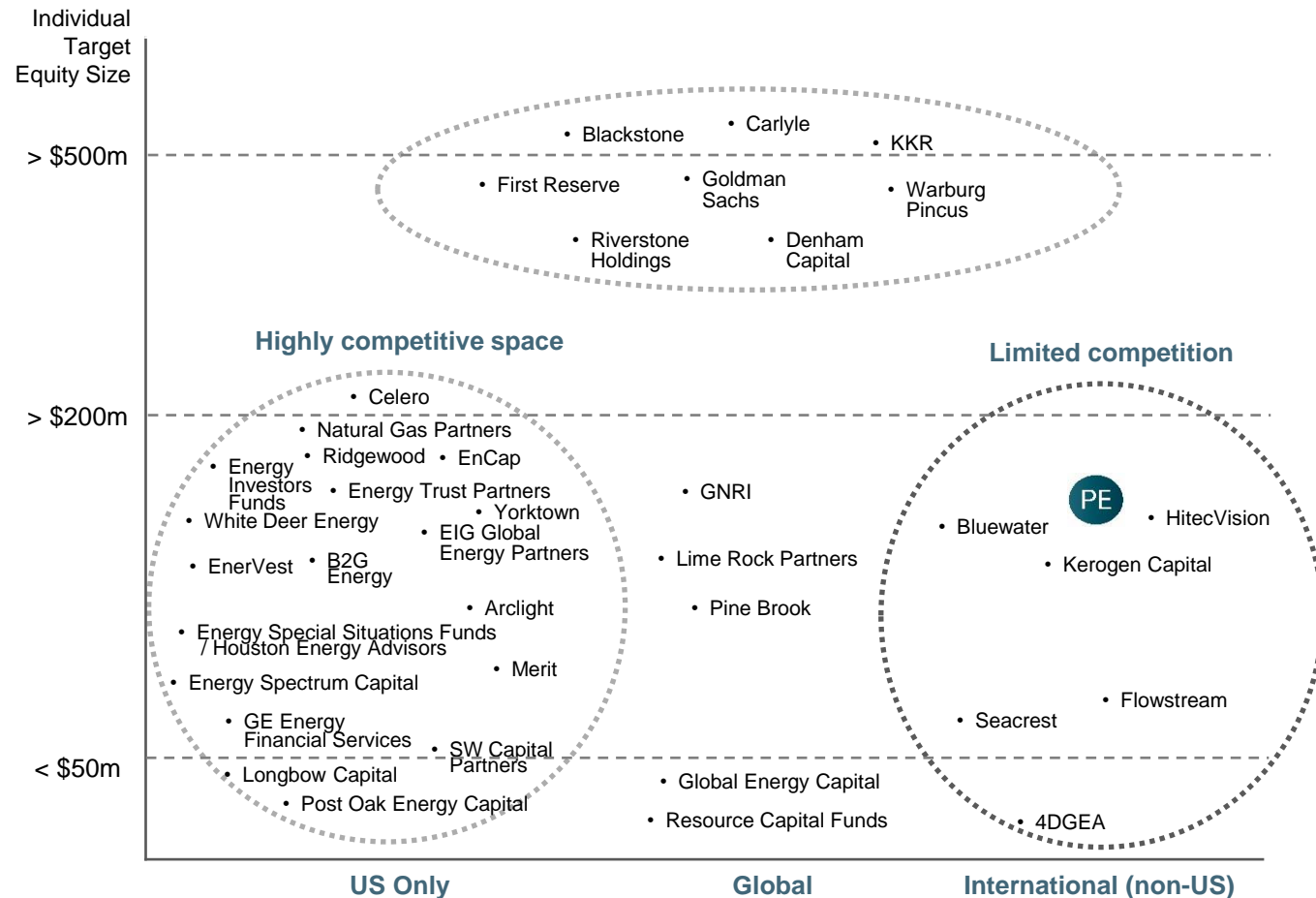
PE

EU landscape: attractive fundamentals and limited competition

Capital mismatch



Natural resources fund landscape



1. Source: Preqin, BP World Energy Statistics 2013, excludes tar sands