

# The World Beyond:

## Opportunities and Challenges in Global Energy Investing

IPAA Private Capital Conference

By Robin West

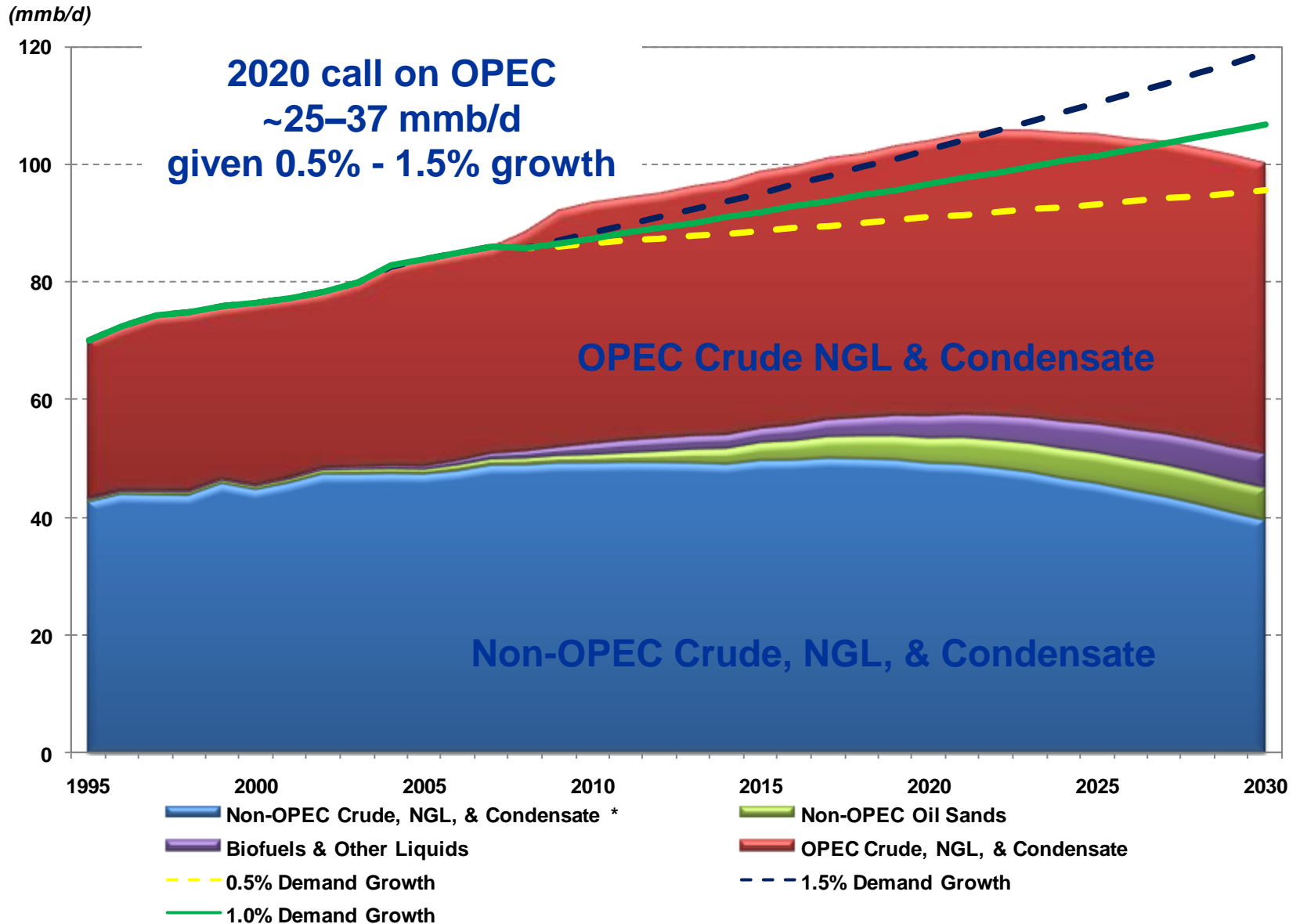
25 February 2010



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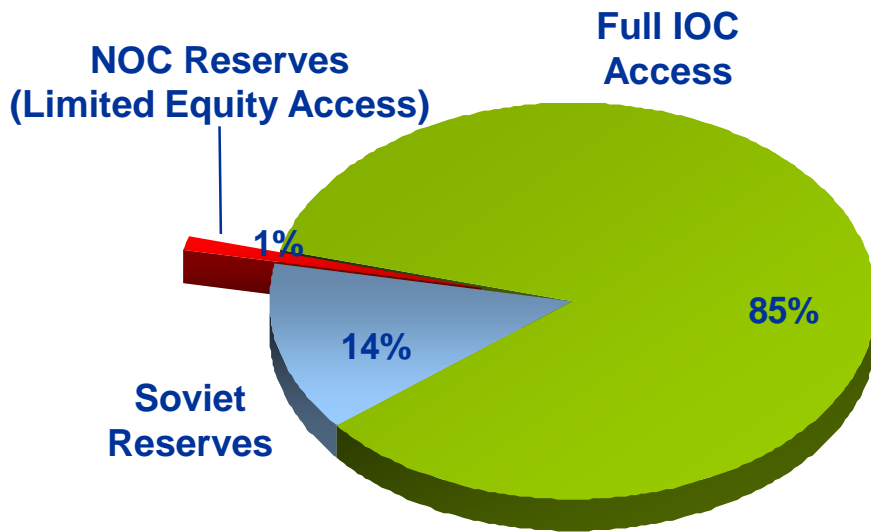
# A Little Perspective

# Danger of Future Supply Crunch Remains

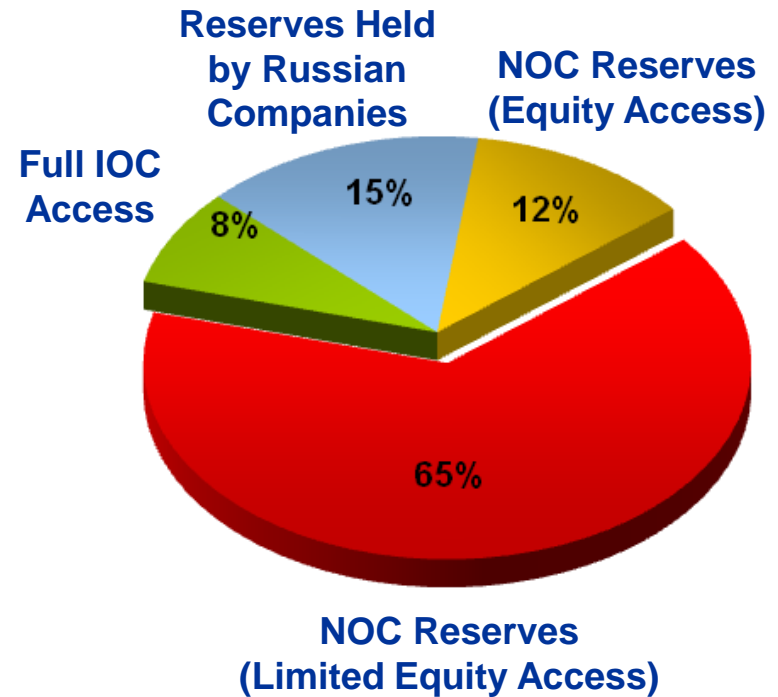


# Its Their Oil: Increasingly Limited Access— Particularly to the Easiest Reserves

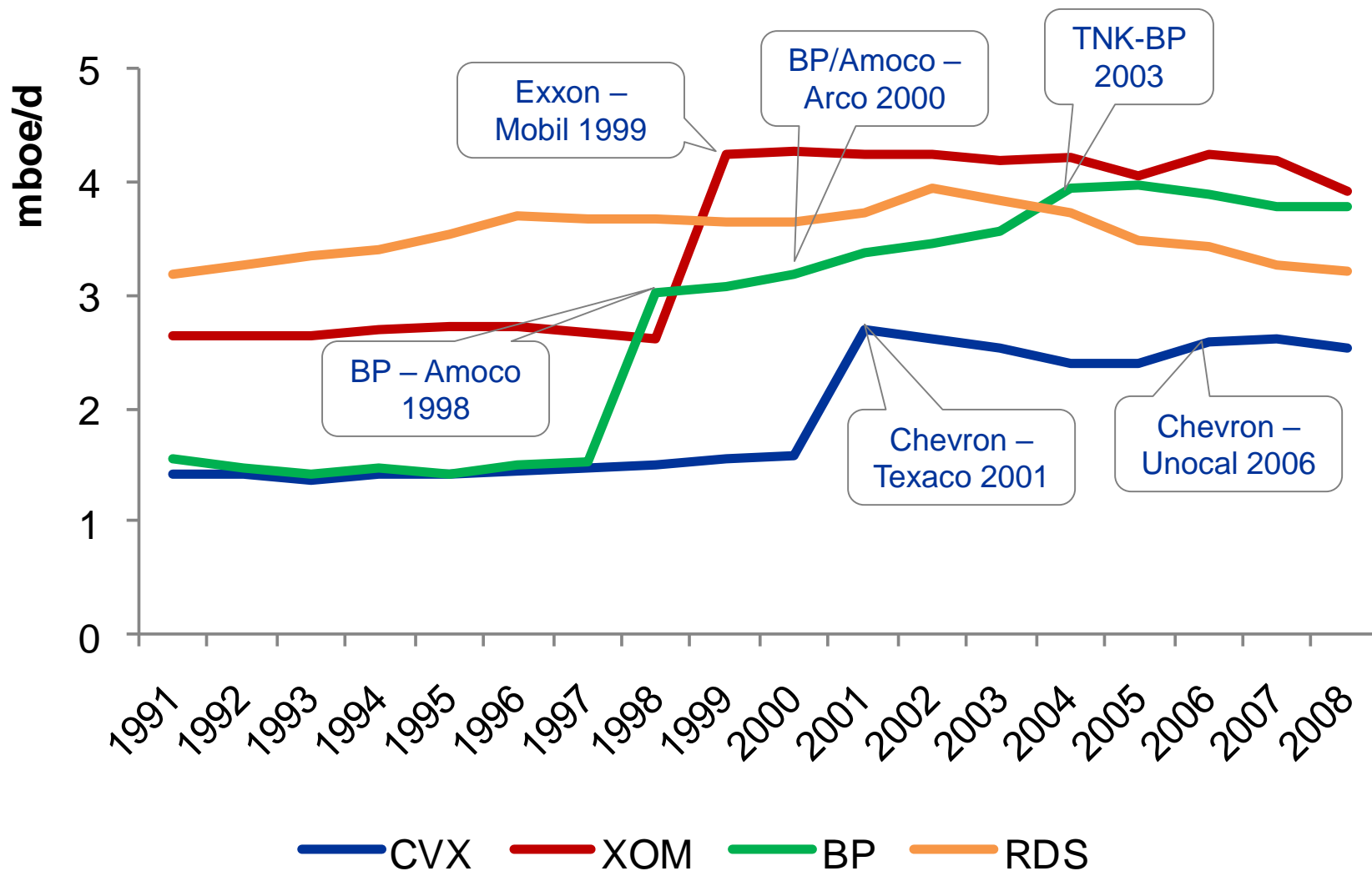
1970



2009



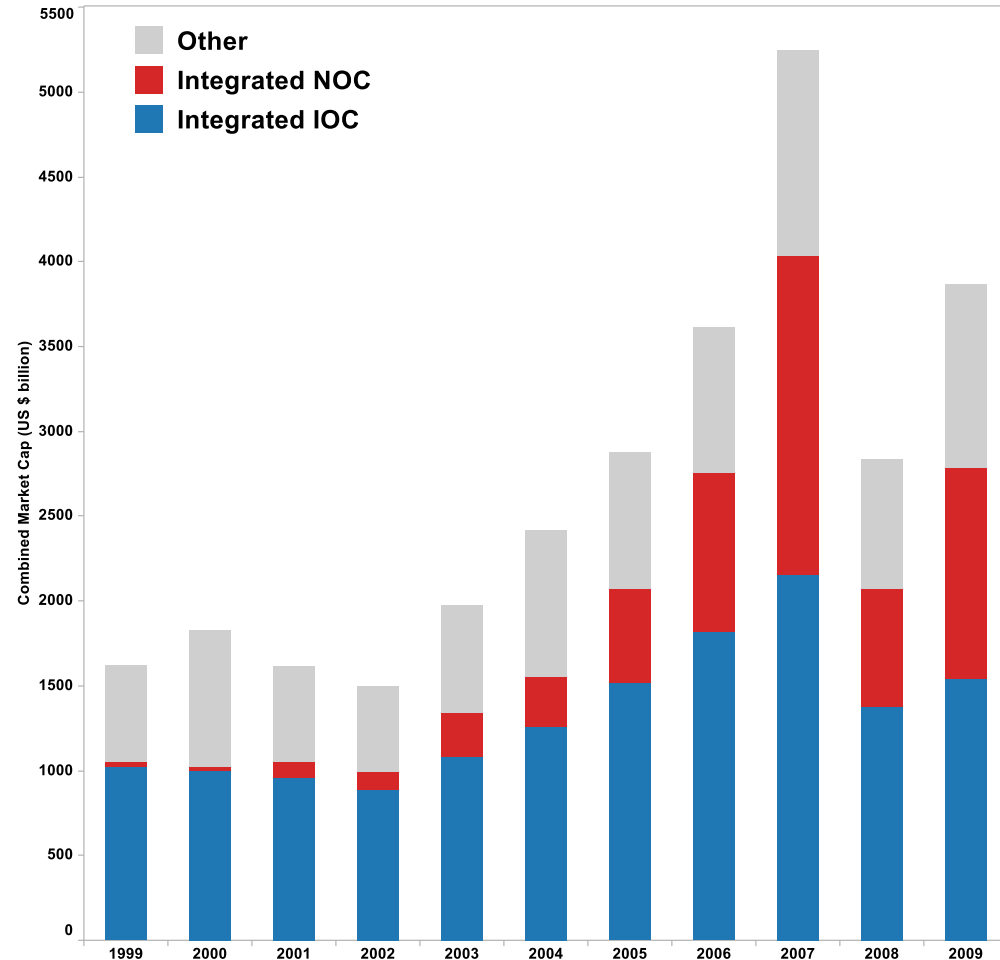
# SuperMajors Seem Unable to Grow



# Value is Migrating to the Traded NOCs

- In 1999, traded NOCS made up 1% of the combined value of the *PFC Energy 50* companies; this share was 32% in 2009
- In a decade, this set expanded from two companies (Petrobras, Gazprom) with a combined value of worth \$22 bn to eleven companies worth \$1.2 trillion
  - Growing demand
  - Access to resources

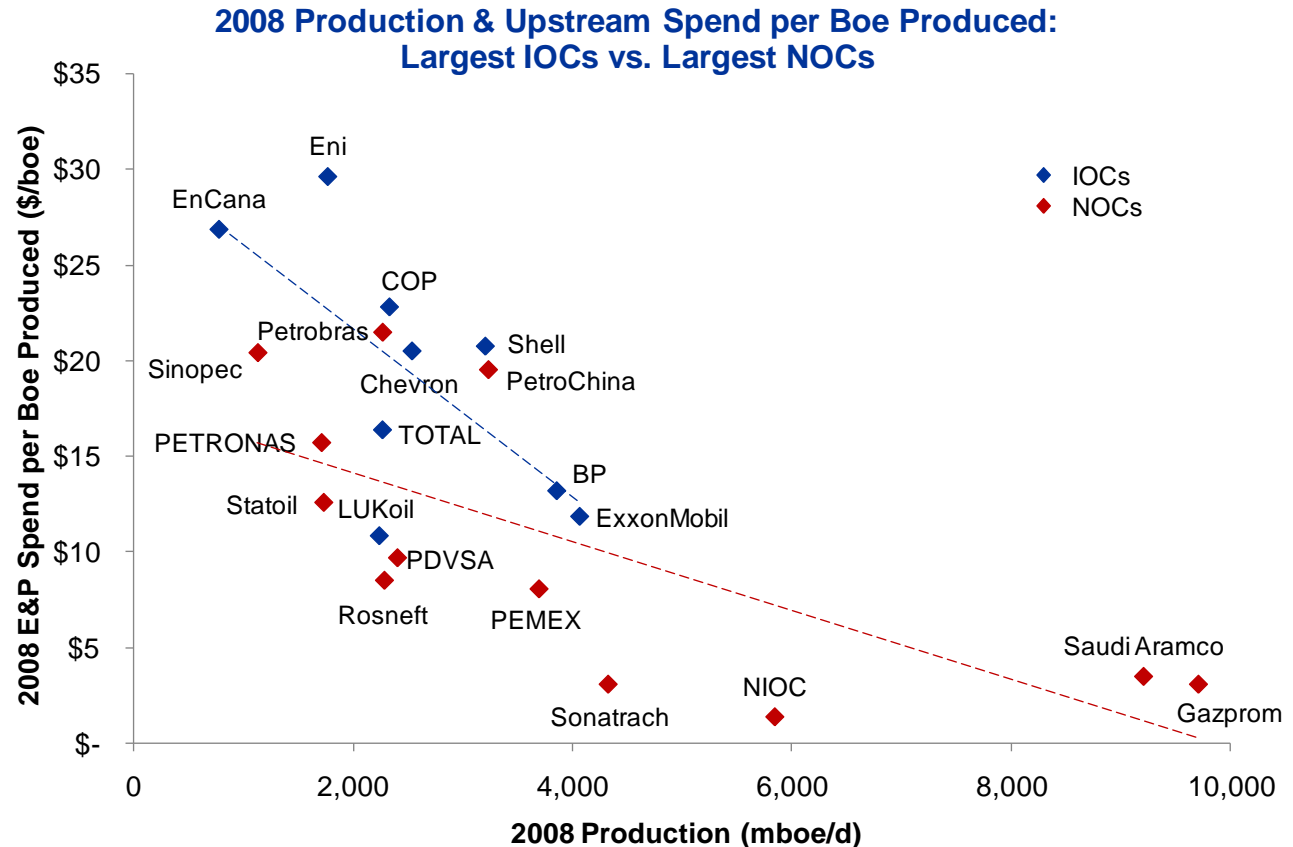
Value of PFC Energy 50 by segment (%)



Source: PFC Energy PFC Energy 50

# There Are Exceptions, But NOC Control Means Less Investment

- NOCs tend to invest less than IOCs in the upstream sector
- NOCs with declining sectors need major investments
- NOCs with growing production (e.g. Petrobras) need access to capital



**Largest NOCs Spend Substantially Less than the Largest IOCs**

# Expect Dramatic Shifts in the Global Competitive Landscape 2010-2020

## 2000-2010

- Independents focused on the “incremental” gas shale play (tight gas) with enormous impacts on aggregate North American supply
- The number of NOCs overseas accelerated
- Large mergers reached a stopping point with ChevronTexaco
- Oil sands investment in Canada took off
- The world’s largest deepwater play was led by a NOC
- Independents made substantial impacts in new conventional plays overseas

## 2010-2020

- Tight gas technology will spread overseas, with success & failure
- Global Players move further into the North American tight gas play, reversing a 20 year pattern
- Deteriorating downstream value makes global players disaggregate – opening way for large mergers
- Independents continue substantial impacts in new conventional plays overseas
- Tight oil play takes off in the US
- Tight oil play spreads faster with greater impact overseas than tight gas



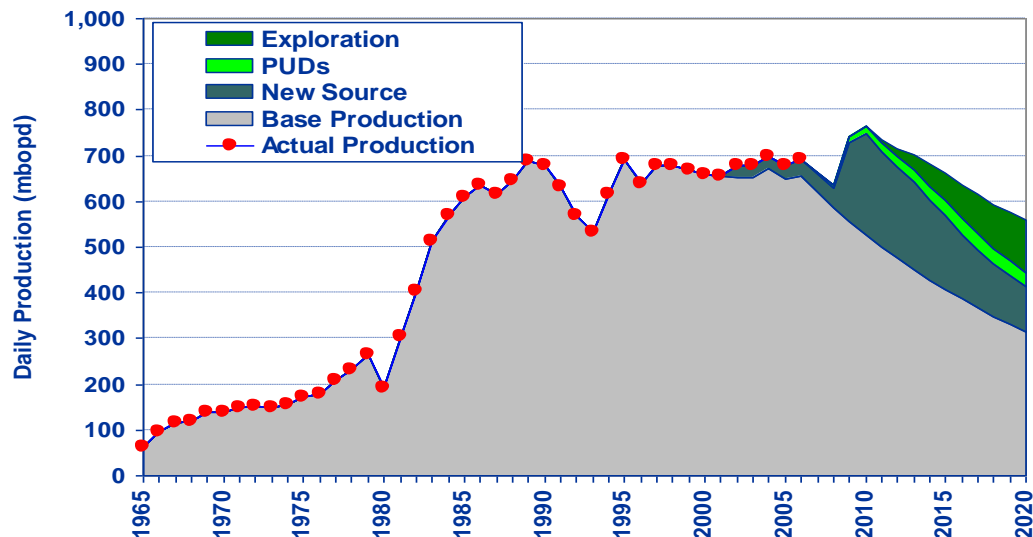
# The New Hot International Destination: US!

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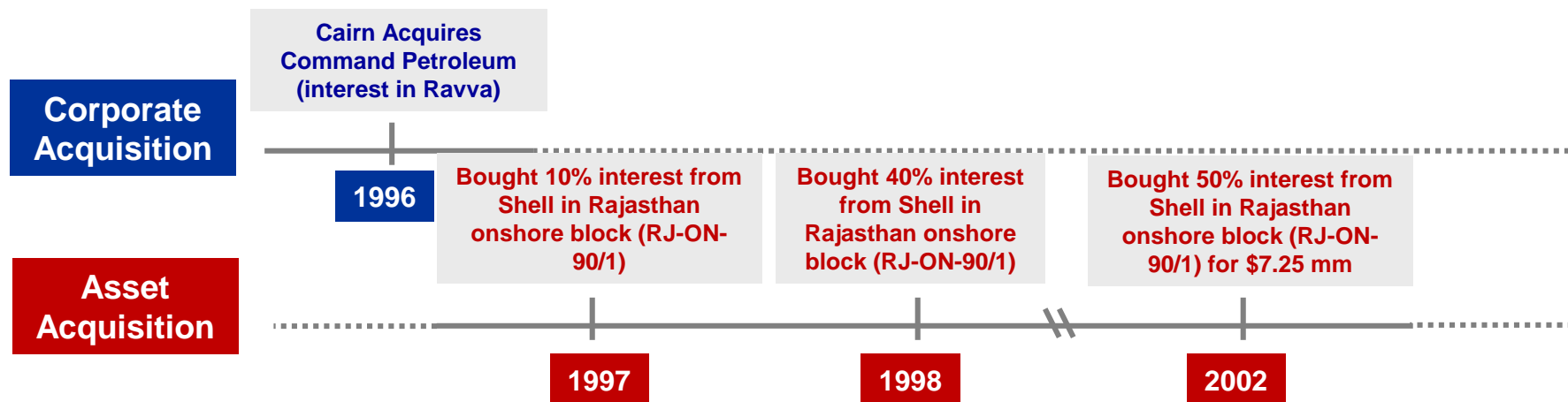
- **Gazprom Marketing & Trading USA Inc. begins buying and selling wholesale gas in the US**
- **Petrobras exercises its preference right to acquire 50% of Devon's participation interest in the Cascade field in the GOM**
- **Maersk Oil pays \$1.4 billion for Devon's 25% working interest in the Jack Lower Tertiary development in the GOM**
- **BP, Statoil and TOTAL invest nearly \$5 billion, plus similar amount in carried costs, in Chesapeake's unconventional gas plays**
- **ExxonMobil makes \$41 billion purchase of XTO**
- **Mitsui invests \$1.4 billion to participate in Anadarko's Marcellus Shale development**

# Going International

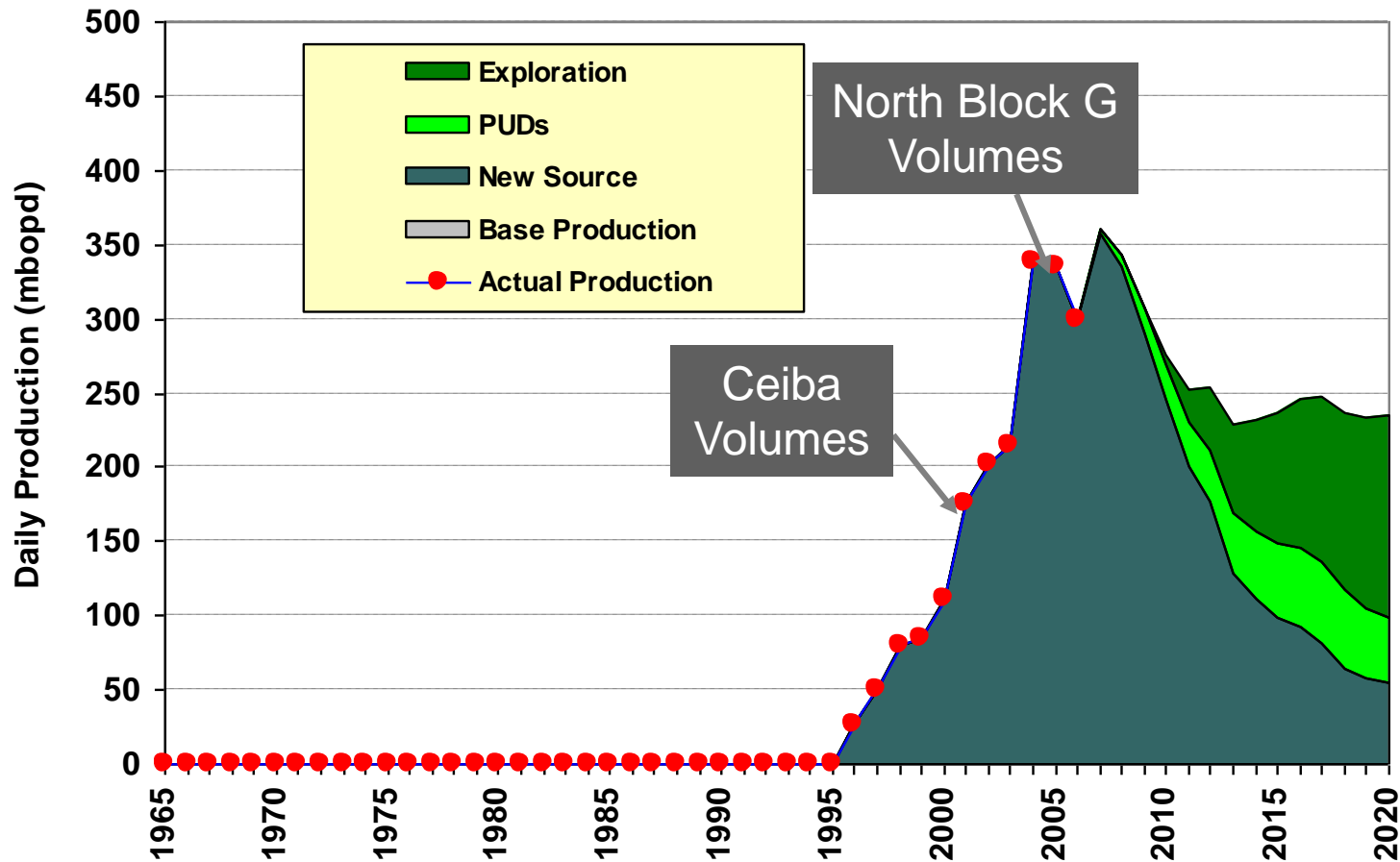
# Cairn in India Led to Discovery of ~1 bnbbbls of Recoverable Reserves – Extends Indian Plateau



- Cairn's Mangala, Bhagyam, Aishwarya complex of oil fields onshore Rajasthan will add enough incremental oil production in 2009/10 to extend the production plateau of the last 20 years into the early part of the next decade



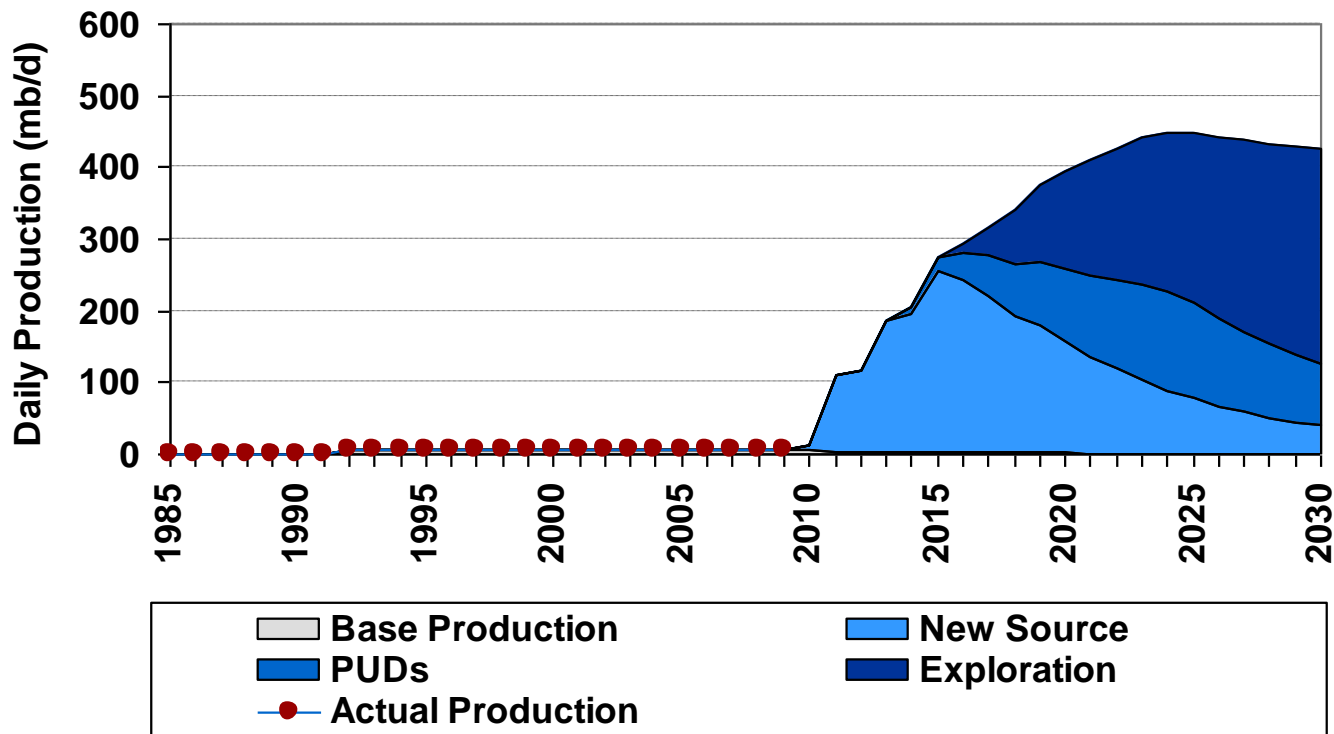
# What Triton (Hess) did for Equatorial Guinea



**Provided new oil volumes as Zafiro was peaking**

# Kosmos, Tullow and Anadarko Changed the West African Margin Play

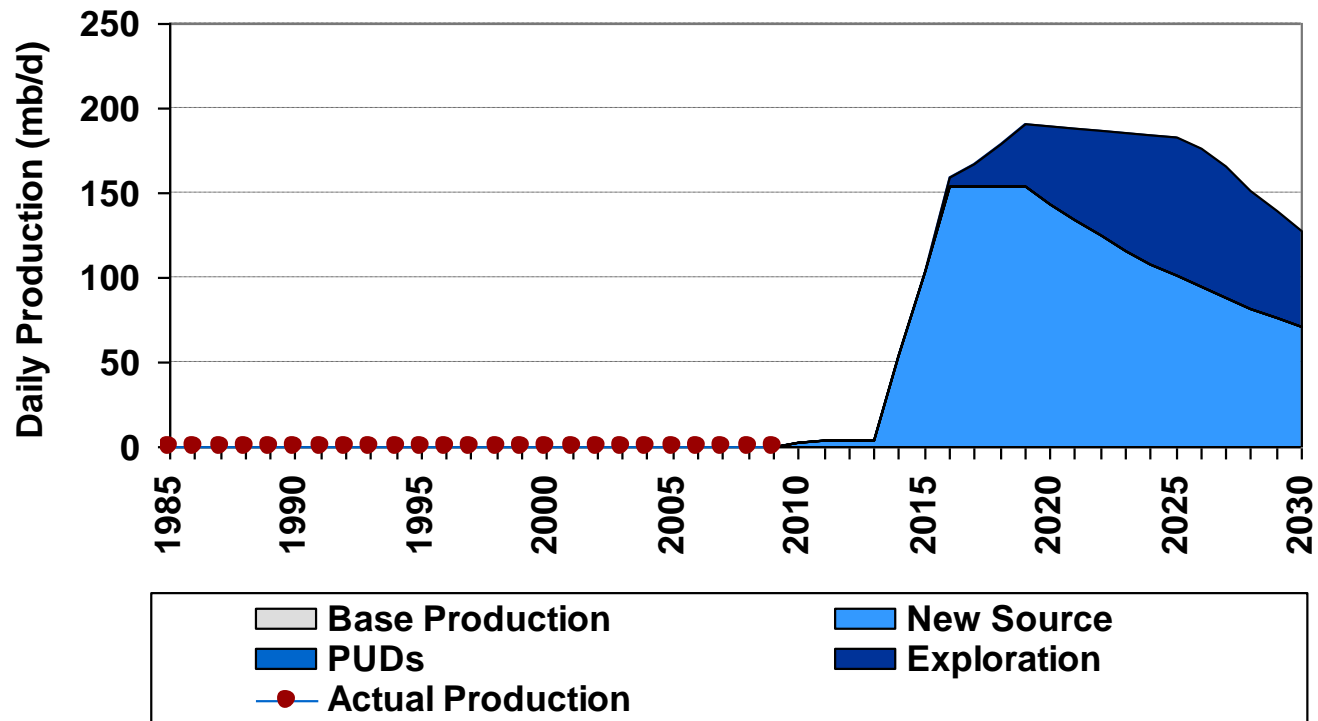
### Ghana: Oil Production Forecast by Reserve Category



**Additional Success Outside Ghana**

# Tullow Continued the East Africa Play

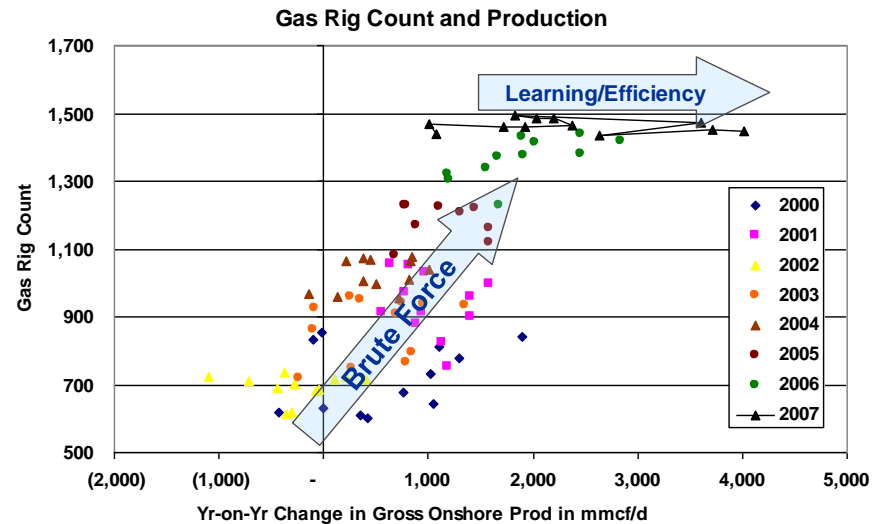
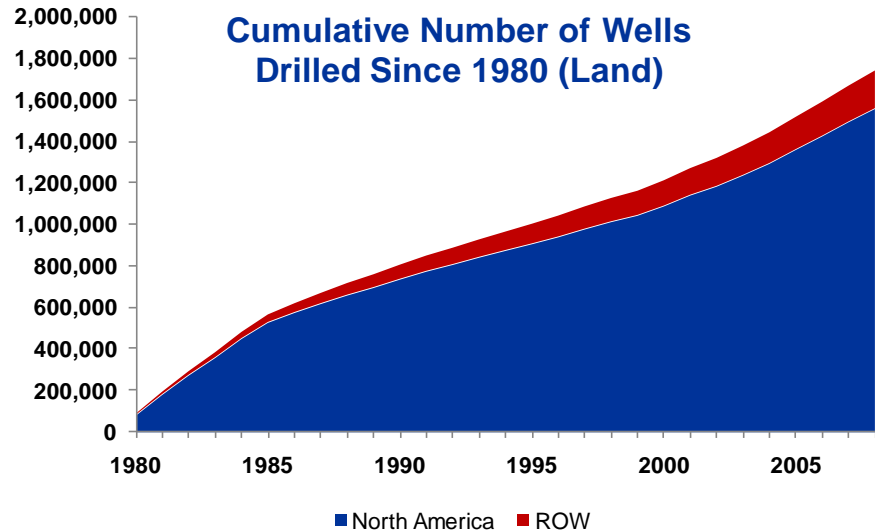
### Uganda: Oil Production Forecast by Reserve Category



**East Africa rift play was hot in the 1980s, but failed outside Sudan; Tullow came back to it**

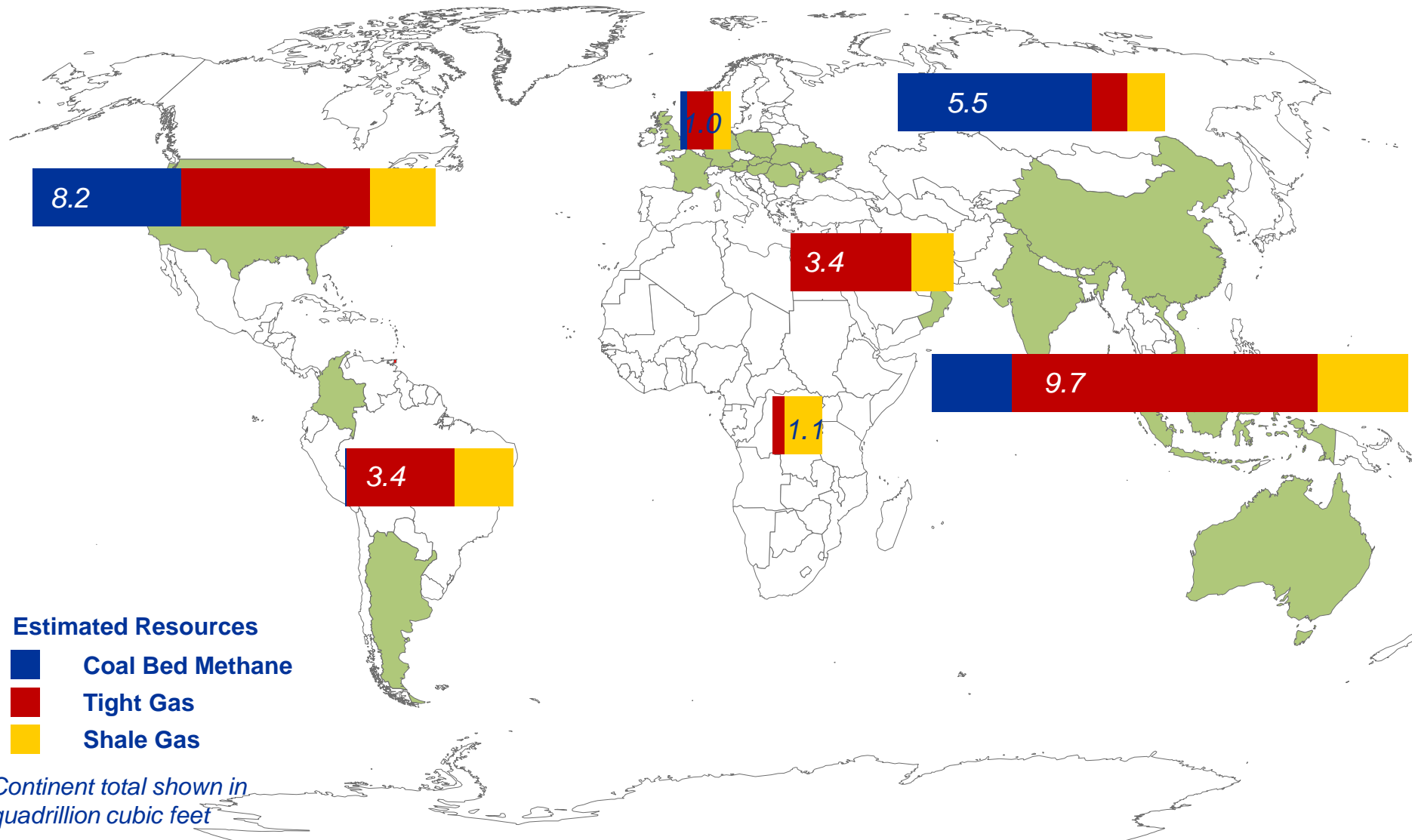
# Excellent Opportunities Exist for Companies That Bring Real Expertise—e.g. Drilling Efficiencies

- North America is far and away the world's expert on land drilling. Of the 1.7 million wells that were drilled between 1980 and 2008, 90% were drilled in North America
- US technology, expertise and competition have delivered extraordinary productivity improvements—resulting in step-function cost reductions—for unconventional gas



Source: EIA, Baker Hughes, PFC

# International Interest in Unconventional Gas, but Potential Looks Smaller...





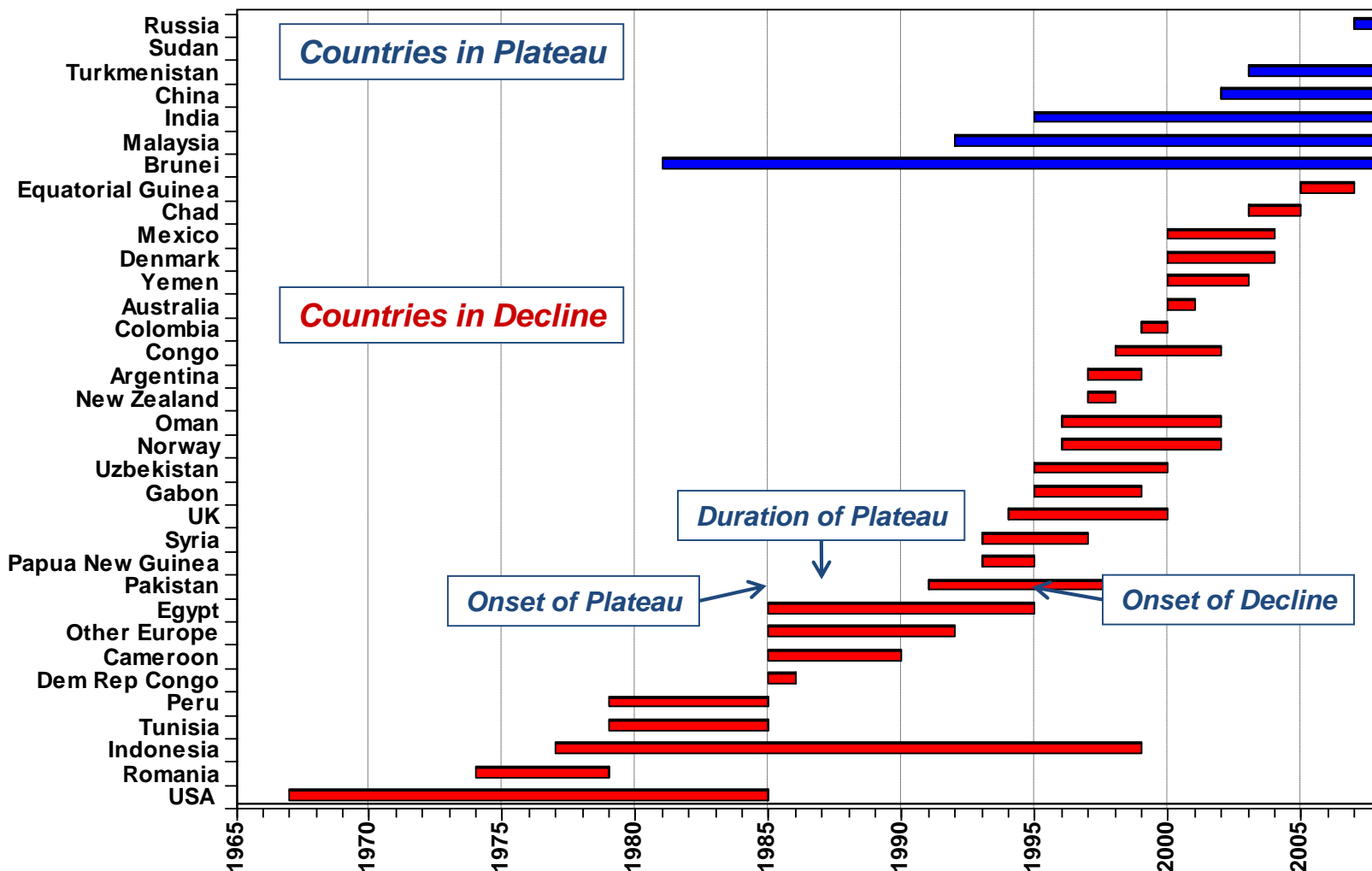
# ...and Few of the Prerequisites for Unconventional Gas Plays are in Place Elsewhere Today

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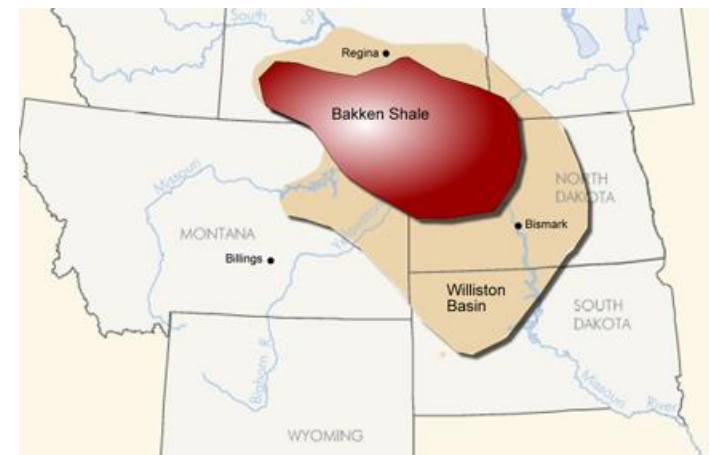
- **Large and capable service sector with pre-positioned equipment**
- **Experienced field and drilling personnel**
- **Multitude of small players drilling aggressively and learning fast**
- **Sophisticated land title system**
- **Gas gathering infrastructure**
- **Good roads, bridges and other physical access**
- **Appropriate legislation/regulation**

# As More Countries' Fields Mature, US EOR Expertise Will be in Demand Internationally



# A Huge New Play

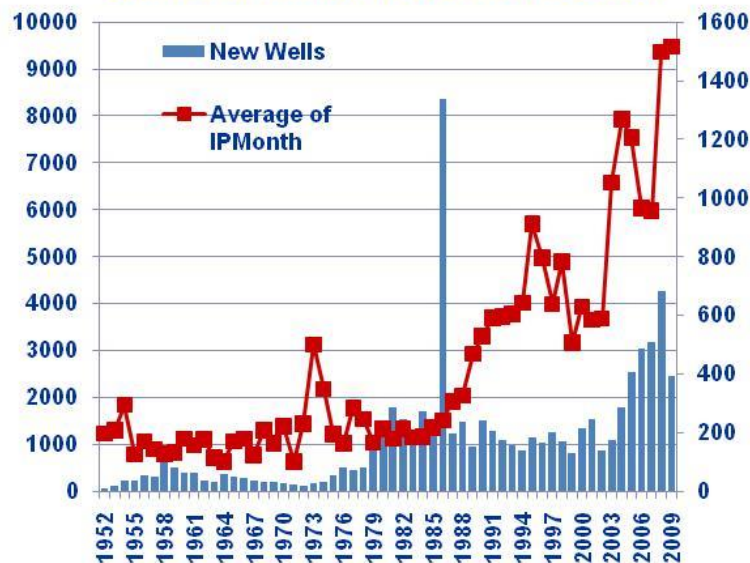
- **Areally extensive shale resource**
  - USGS estimated OOIP of 414 bbo
  - Very low permeability (<5% recovery)
- **Accelerating development**
  - Started in 2000 with Elm Coulee field in Montana, but shifted to N. Dakota
  - Intensive development from 2005- 1H 2008
  - Squeezed into unprofitability by collapse of oil prices
  - Window of profitability has re-opened as costs have plummeted



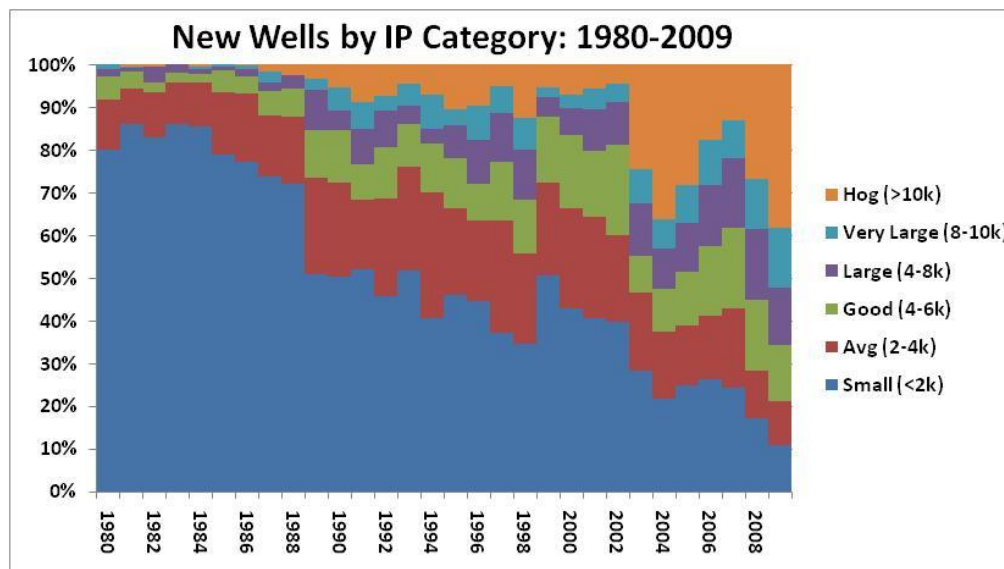
# In the Bakken, Initial Month Production Per Well Has Doubled Since 2000

- Well productivity has grown materially
- Driver of real growth is ability raise both activity and the portion of wells in top productivity categories
  - Learning spreads
  - Experience grows, meaning fewer mistakes

Evolution of Initial Well Production in Bakken

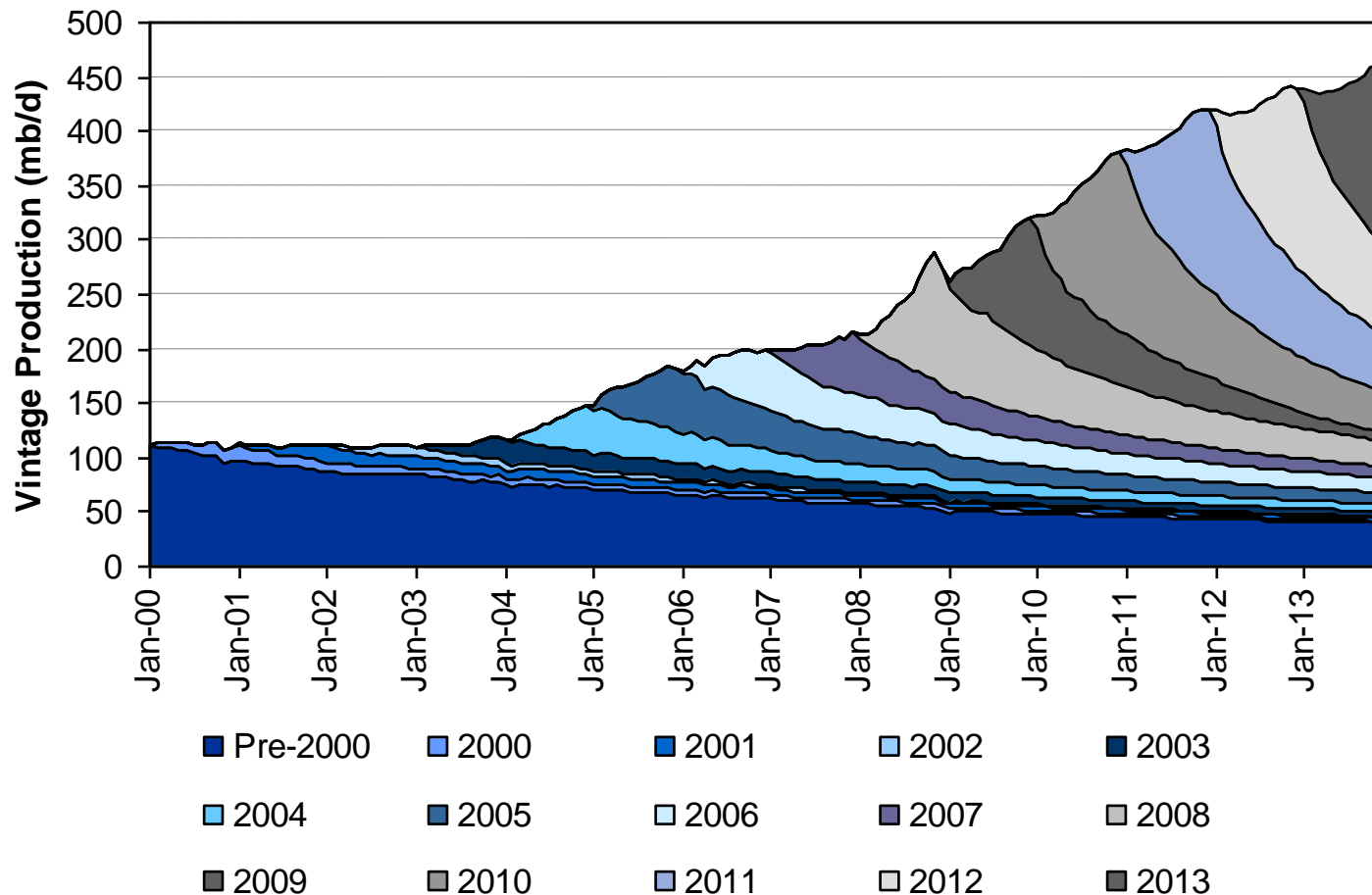


New Wells by IP Category: 1980-2009

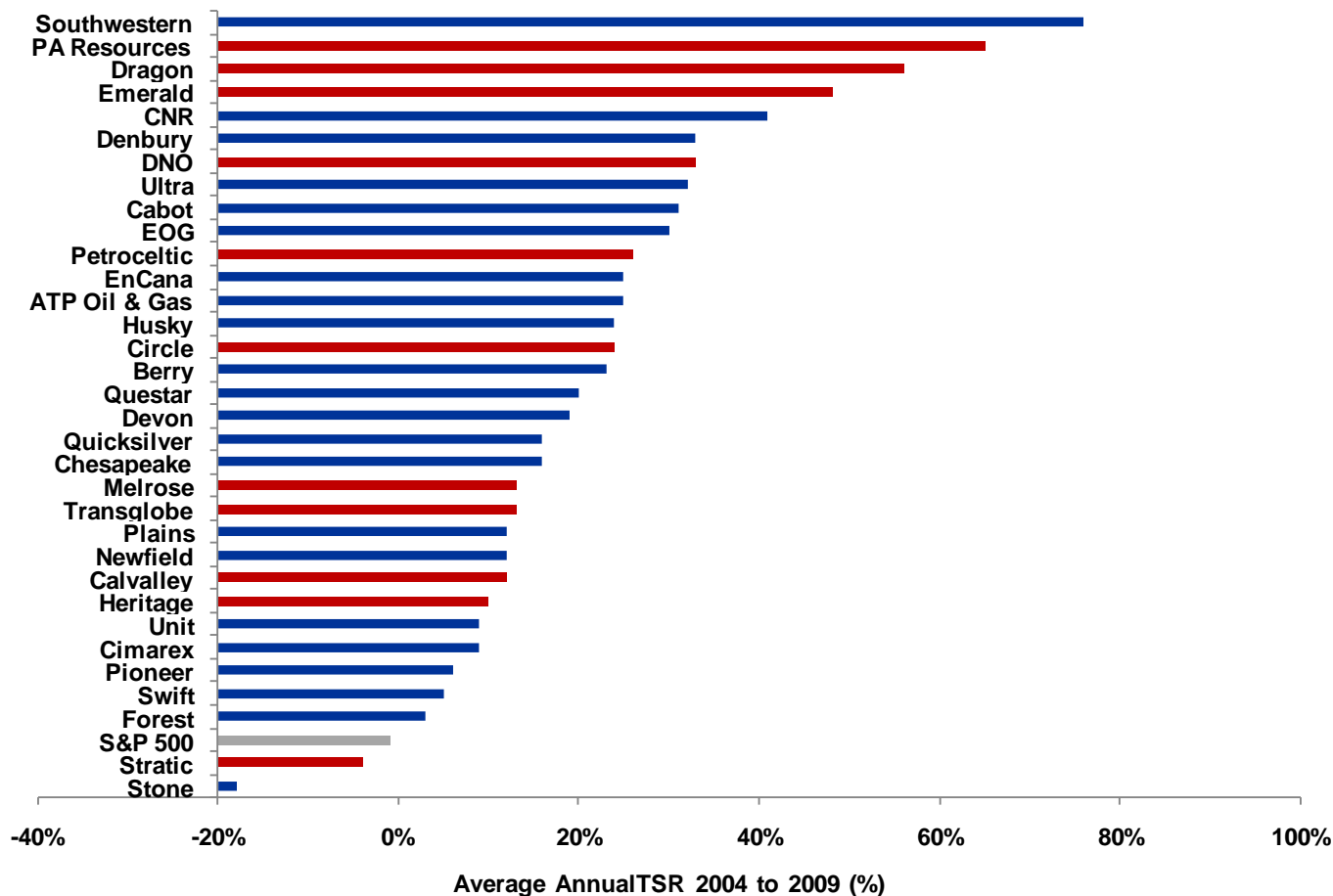


# Tight Shale Promises Incremental Gains – But Gas Shale Seemed Incremental, Until The Numbers Added Up

## Bakken Shale Production Forecast: 1200 Wells/yr

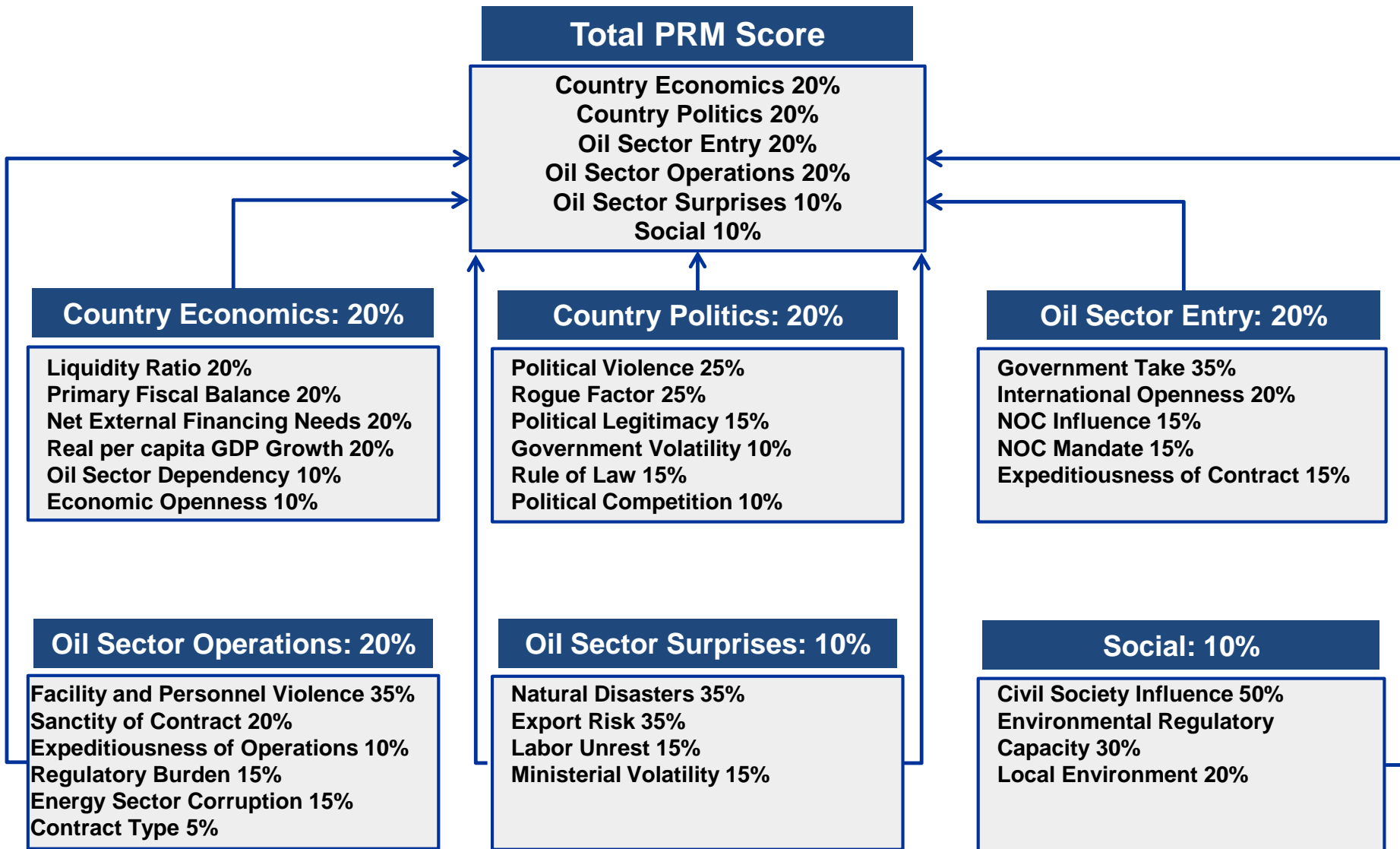


# You Can Make Money: International Independents Delivered More Value



- Average return for companies with operations in North Africa, Middle East and Central Asia: 41%
- Average return for companies focused on North America: 13%

# But Need To Assess Risk, Which Has Many Different Ingredients



# Conclusions

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- **There are always international opportunities for companies that bring real expertise—but if they were easy, someone would already have done them**
- **Independents can thrive in the gap between the ambitions and capabilities of NOCs with technically challenging portfolios**
- **There are international opportunities to export US tight (oil and gas) reservoir technology**
- **International E&P is not easy, but the breadth and depth of international opportunities can be very large—even those that appear “incremental” to the global players, at least initially**
- **Companies that work to understand the real risks and manage these can be very successful**
- **For companies with a comparative advantage funding is increasingly available**





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