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International Mid-Cap Exploration Performance 2008 – 2009

Finding Petroleum Conference, London January 2010

Independent, expert research and advice on smaller oil and gas companies for the investment community

Purpose

- To examine the recent exploration performance of mid-cap E&P companies based on a database of 300+ *exploration wells* drilled in the period 2008-9 by the REP30 E&P companies
  - To identify the recent exploration hotspots for the mid-caps
  - To identify the key discoveries and who made them
  - To evaluate successful exploration strategies

Agenda

- Introduction – The REP30 companies and their significance
- Exploration Drilling Activity 2008/9
- Discovered Volumes
- Exploration Strategy
- Conclusions

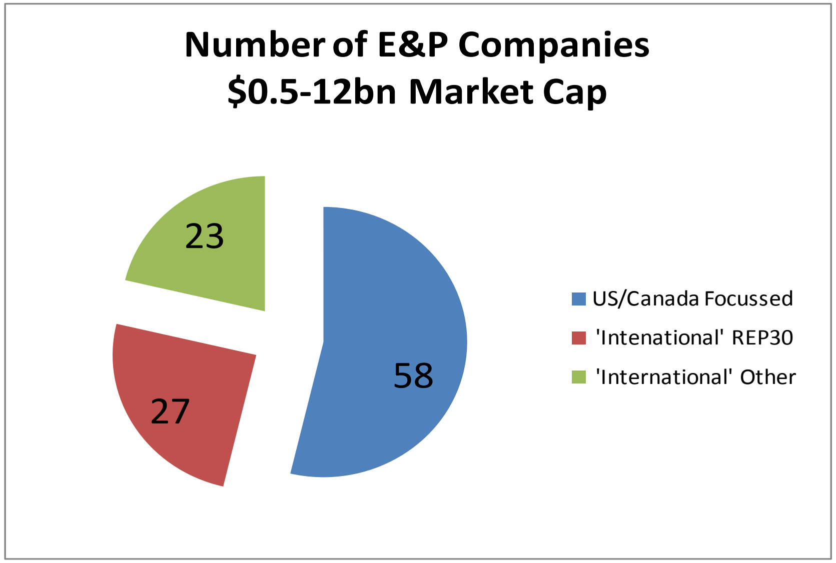
The REP30 Companies

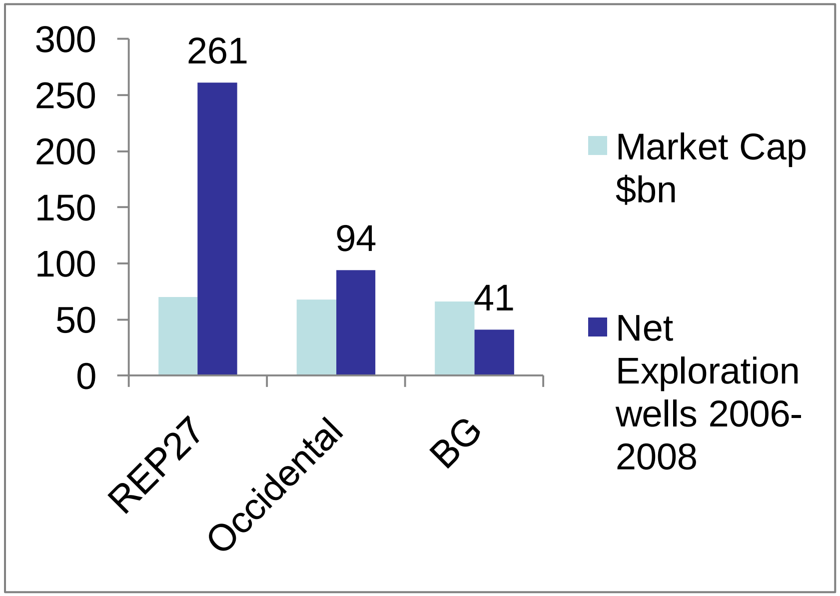
The REP30 are international mid-cap E&P companies that Richmond Energy picks each year to be representative of the sector with assets mainly outside N America

Addax	Emerald	Oil Search
Afren	Gran Tierra	PA Res.
Arrow*	Heritage	Pacific Rubiales
AWE	JKX	Premier
Beach	Lundin	Roc
Cairn	Maurel & Prom	Salamander
Dana	Melrose	Santos
Det Norske	Niko	Soco
DNO	Noreco	Tullow
Dragon	OGX	Venture

*Arrow Energy are in the REP30 but excluded from the study as they do not explore for conventional hydrocarbons

The significance of the REP30 companies





- 108 listed E&P companies in the $0.5-12bn market cap range globally
- 27 are in the REP30 and have a combined market cap of $70bn
- Tullow ($17bn) and OGX ($27bn) are included in the REP30 as examples of large cap explorers
- The REP27 combined are the same size as Oxy and BG but drill many more exploration wells

Exploration Activity 2008/9
Activity down – discovered volumes up

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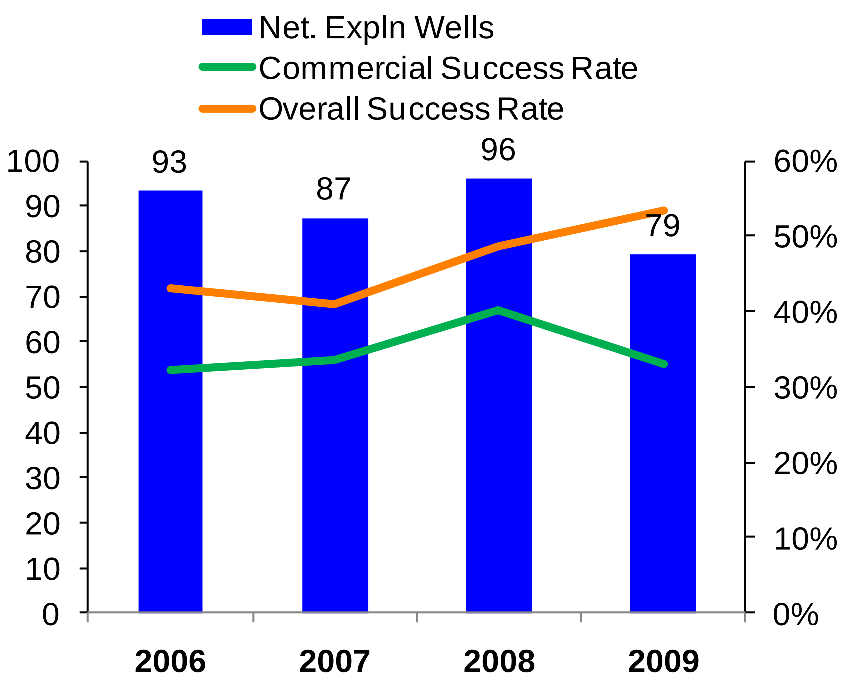
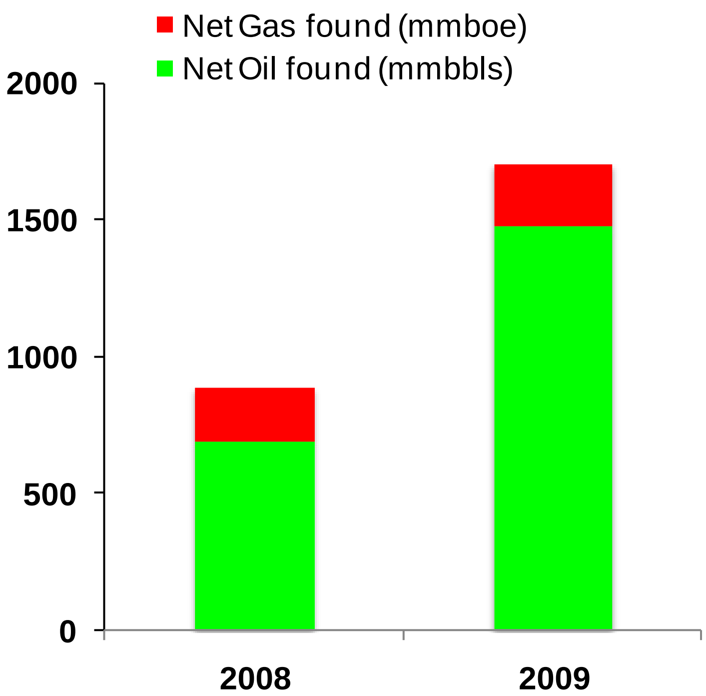
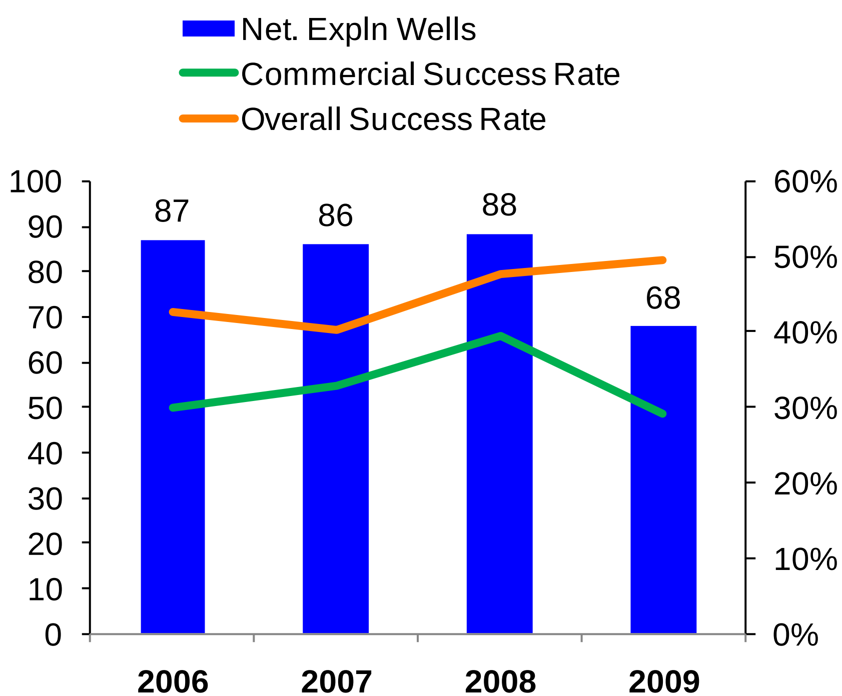
- Net exploration wells down ~27% in 2009
- Commercial Success Rate – steady at ~1 in 3
- Discovered volumes up because of higher average discovery size

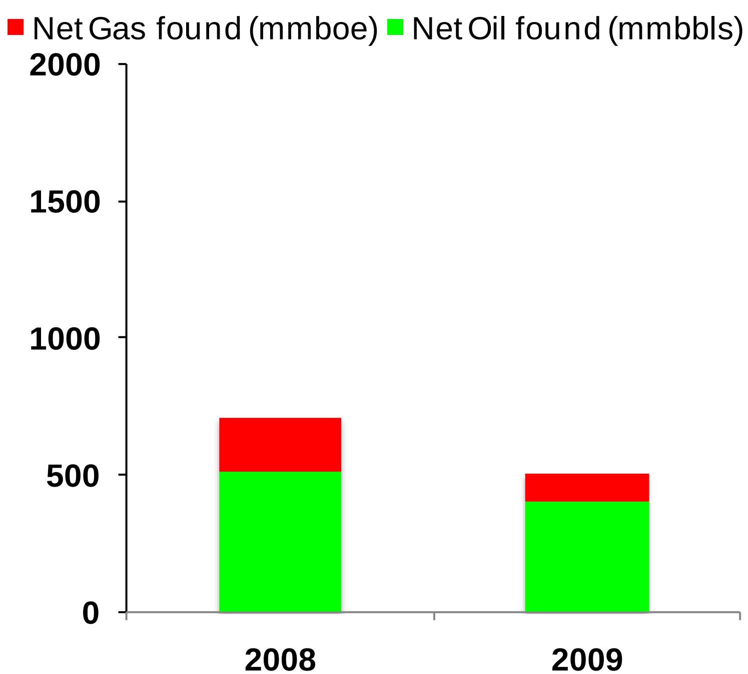




Excluding Tullow and OGX - Activity and discoveries down

- Discoveries down in proportion to activity
- Lower proportion of discoveries commercial in 2009 - how significant is this?





Exploration Hot Spots -
Net REP30 Exploration Wells

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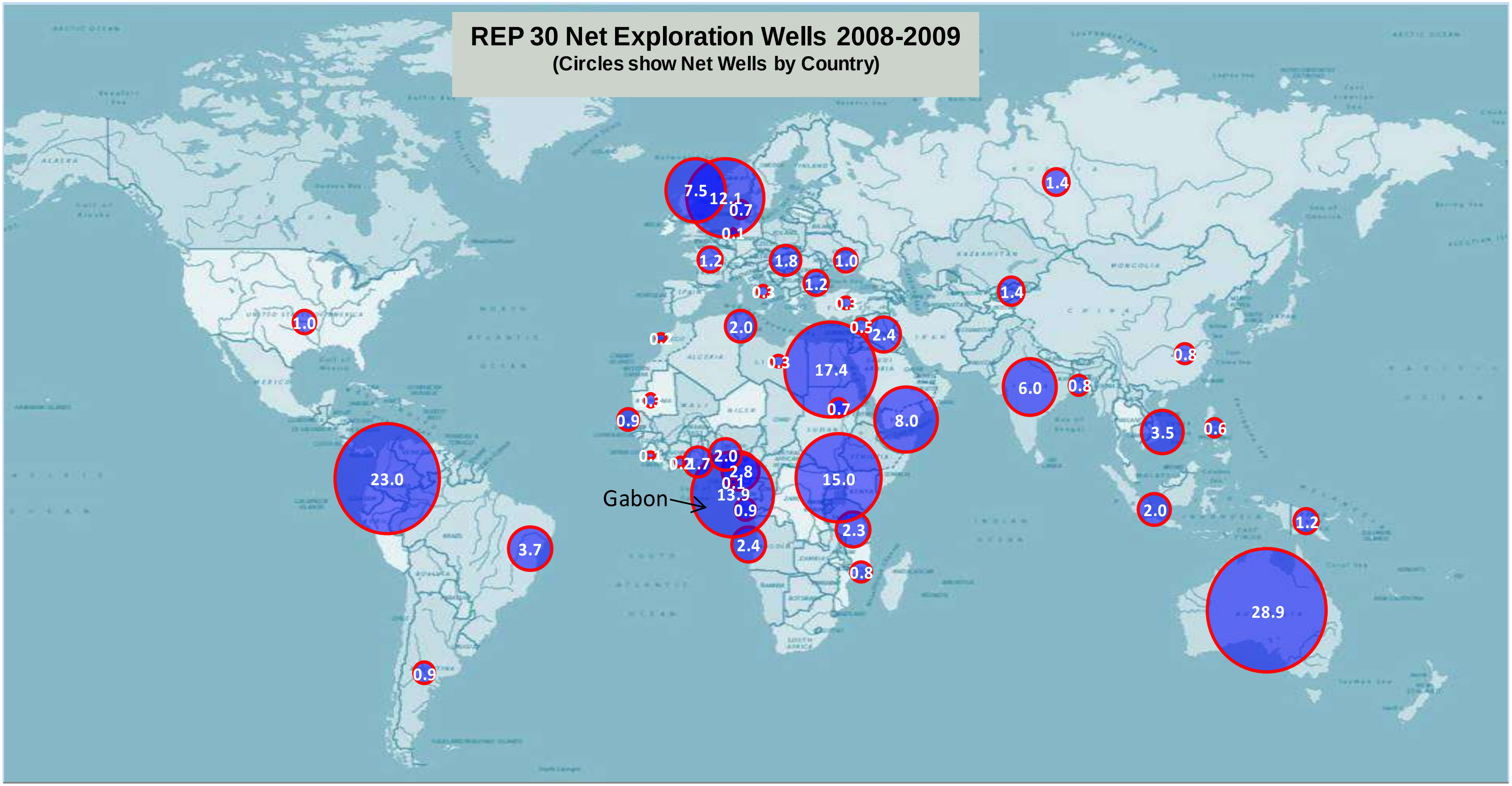

Exploration Hot Spots - Net REP30 Discovered Volumes

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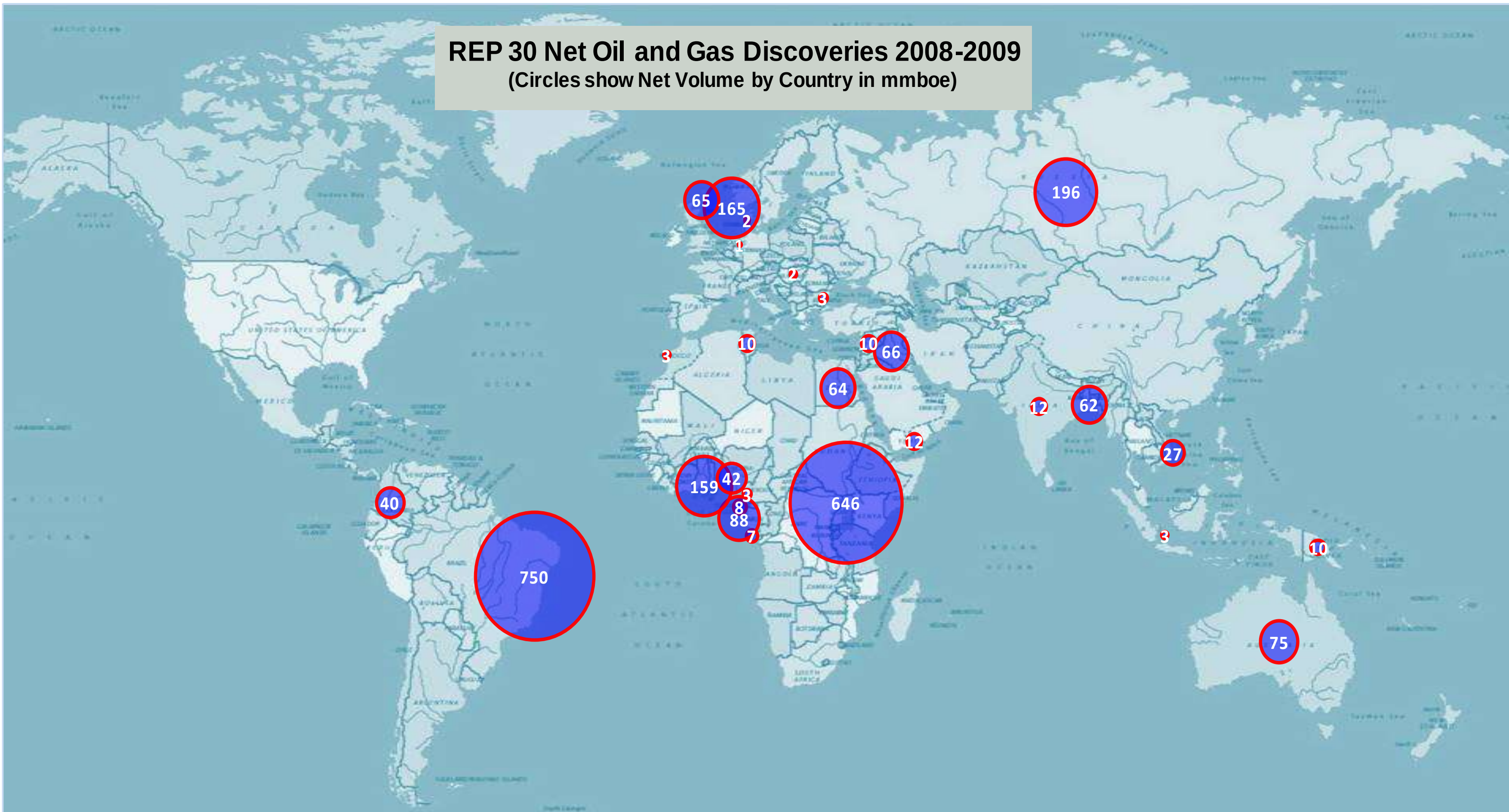
Note: poor correlation of exploration wells drilled to discovered volumes where Brazil and Uganda dominate



Only 5 out of 109 discoveries recorded are larger than 250mmboe

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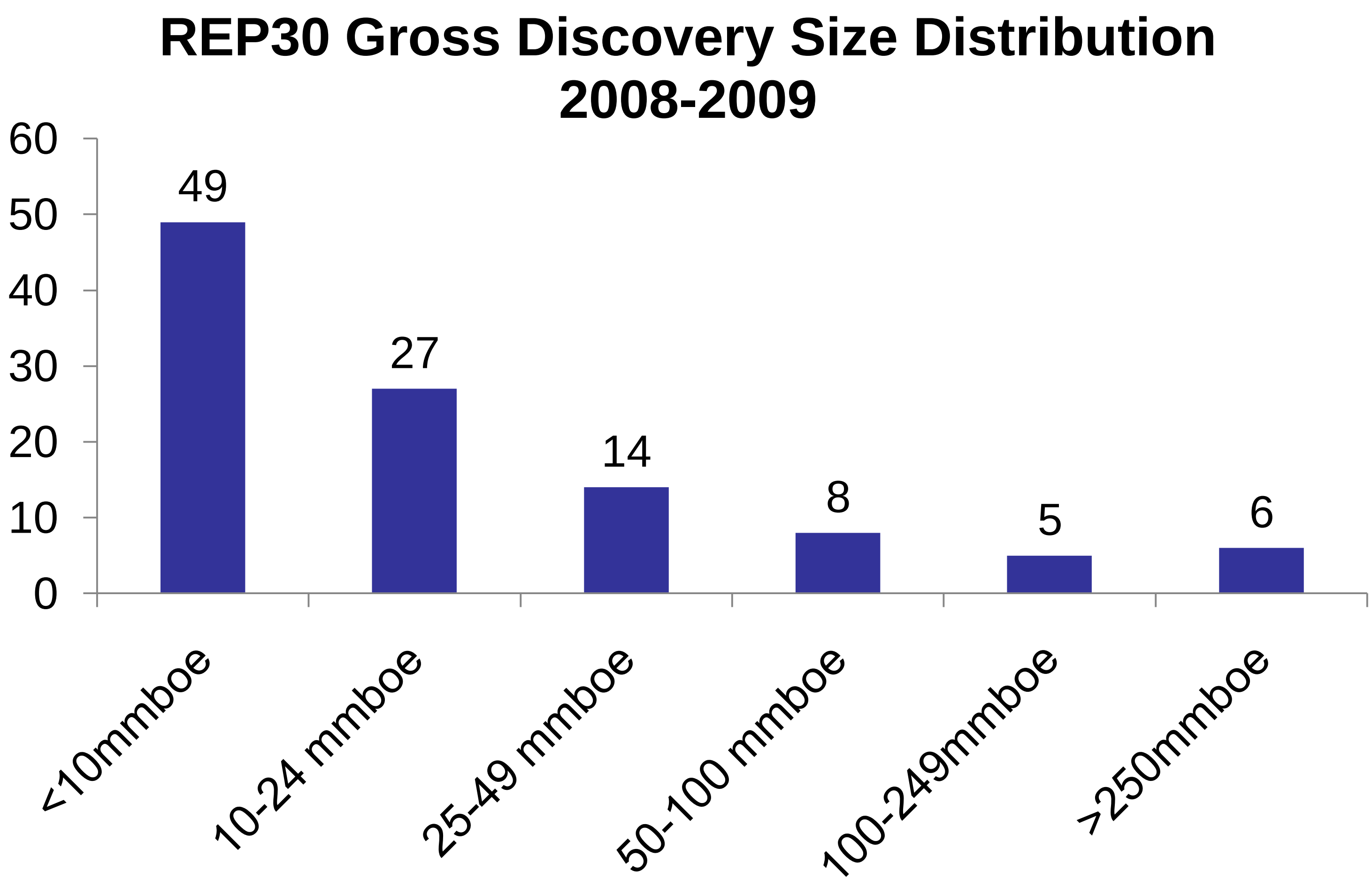

REP30 2008-09
11 discoveries >100mmboe

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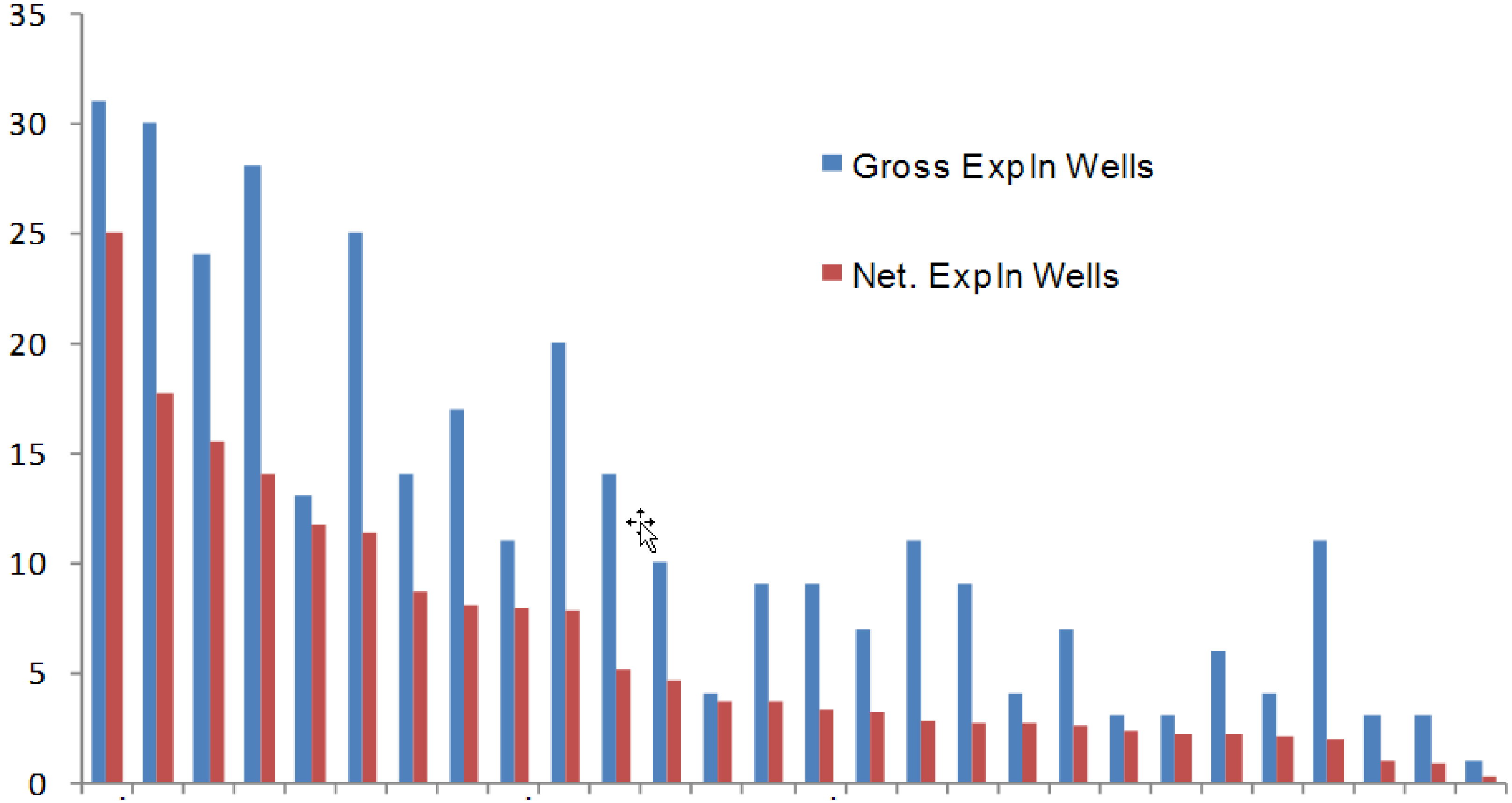
Company	Country	Basin	Well Name	Gross 2C Resource estimate mmboe	Phase
Tullow / Heritage	Uganda	Albertine	Buffalo-Giraffe	400	OIl
Lundin	Russia	N Caspian	Morskaya-1	280	Oil
OGX	Brazil	Campos	1-OGX-3-RJS	250*	Oil
OGX	Brazil	Campos	1-OGX-2A-RJS	250*	Oil
OGX	Brazil	Campos	1-OGX-1-RJS	250*	Oil
Tullow	Ghana	Tano	Tweneboa-1	250	Gas Condensate
Tullow	Uganda	Albertine	Ngassa-2	200	Oil
Santos	Bangladesh	Bengal	Hatia-1	166+	Gas
Tullow	Ghana	Tano	Odum	150	Oil
PA Resources	E Guinea	Rio Muni	Diego-1	130	Gas Condensate
Premier/Noreco	Norway	North Sea	Grosbeak	112	OIl

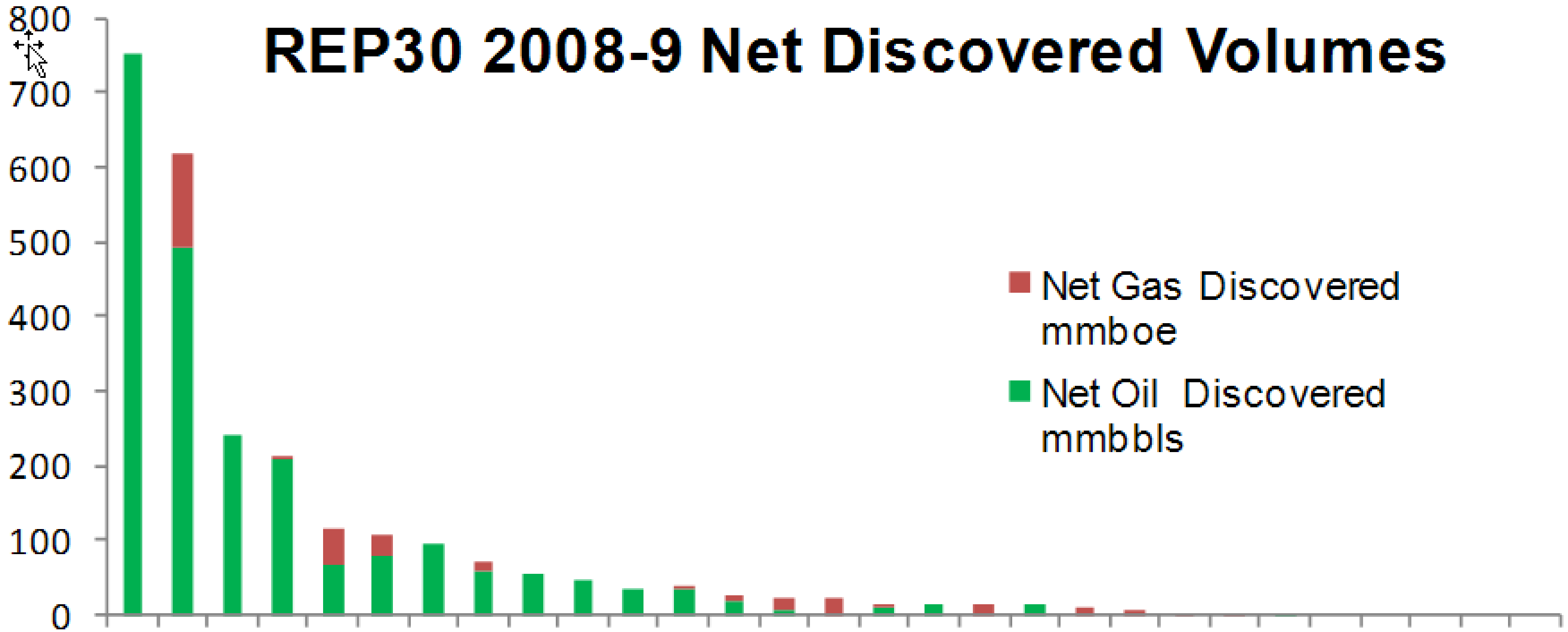
*OGX discovery volumes are placeholders ahead of further details being released by company
+pre-drill estimate

Who were the active explorers in 2008/9?



The average REP30 company drilled 11 gross exploration wells and 6 net wells in the 2 year period.

REP30 2008-09: Discovered Commercial Volumes



80% of volume discovered by 20% of the companies

The most active explorers don't necessarily find the most oil

Size (Market Cap $bn)	Average Net Exploration Wells 2008-9	Most Active	Most Volume Discovered
Small <1	4.4	Beach Melrose DNO	Det Norske
Medium 1-2.5	4.3	Maurel & Prom Dana Lundin	Heritage
Large >2.5	8.6	Santos Tullow Addax	OGX

Discovery size and success rate drives exploration efficiency

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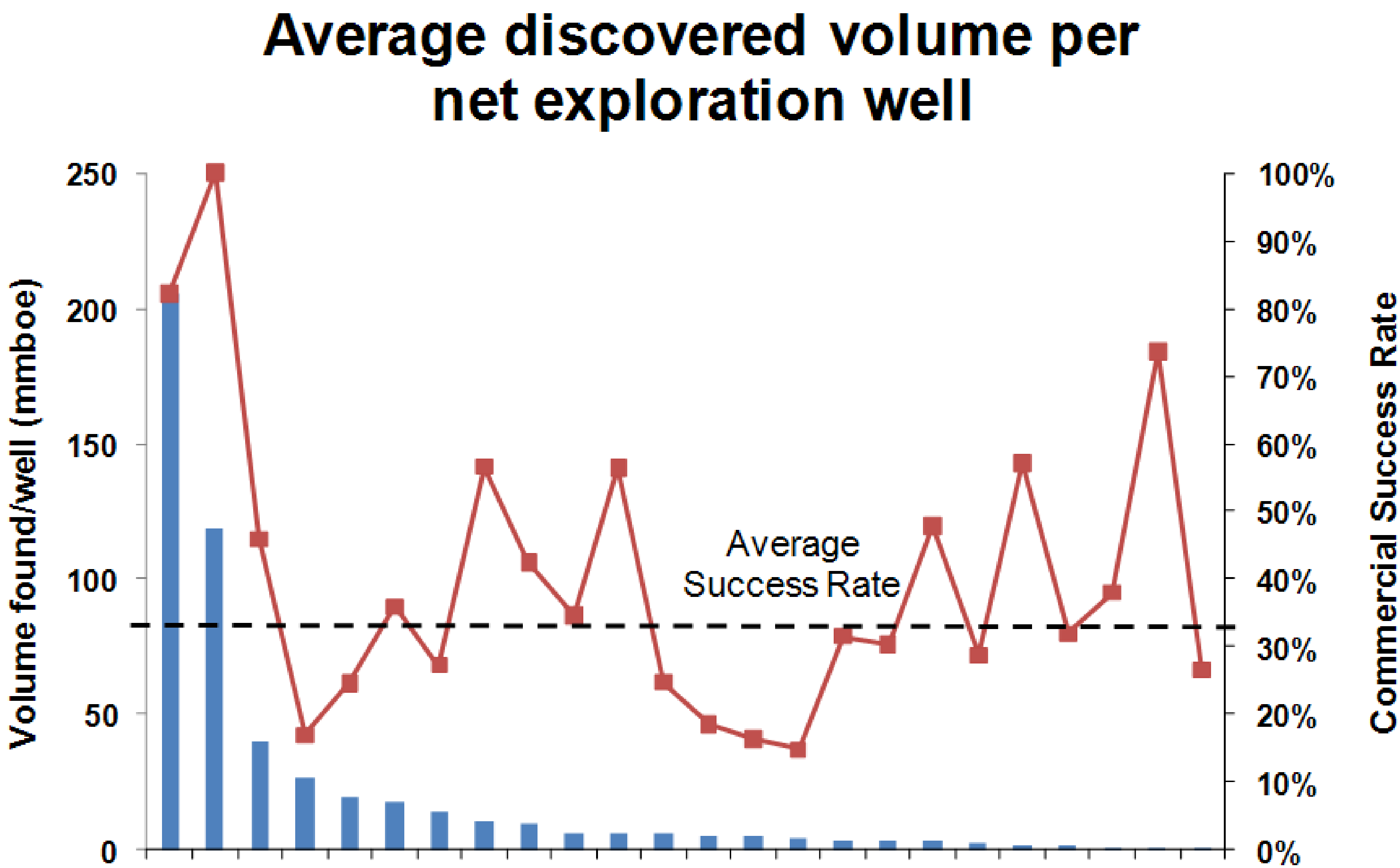

OGX and Heritage stand out on exploration efficiency driven by large discovery sizes and high success rates

6 companies made average >50mmboe sized discoveries but at very different success rates

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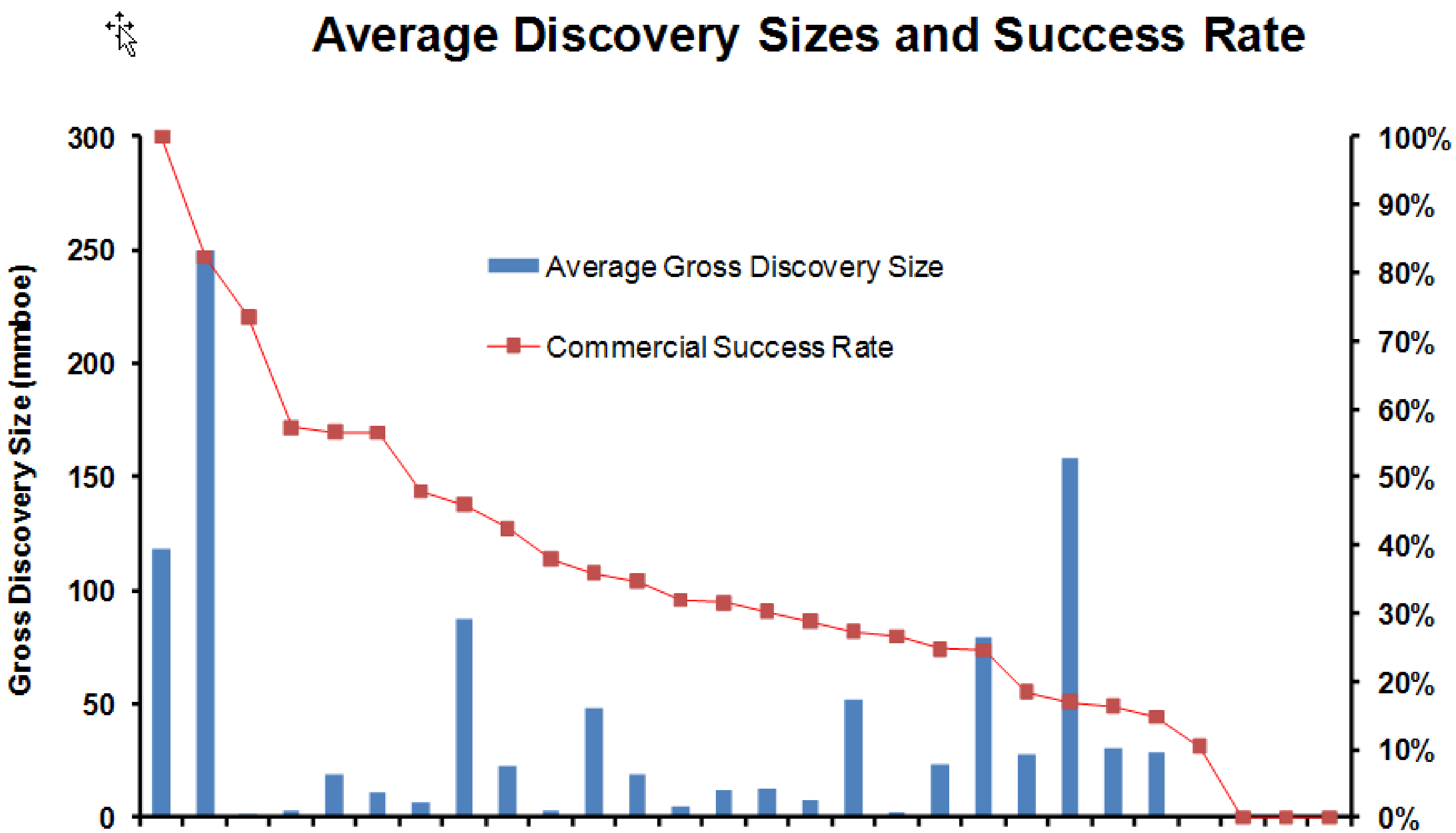
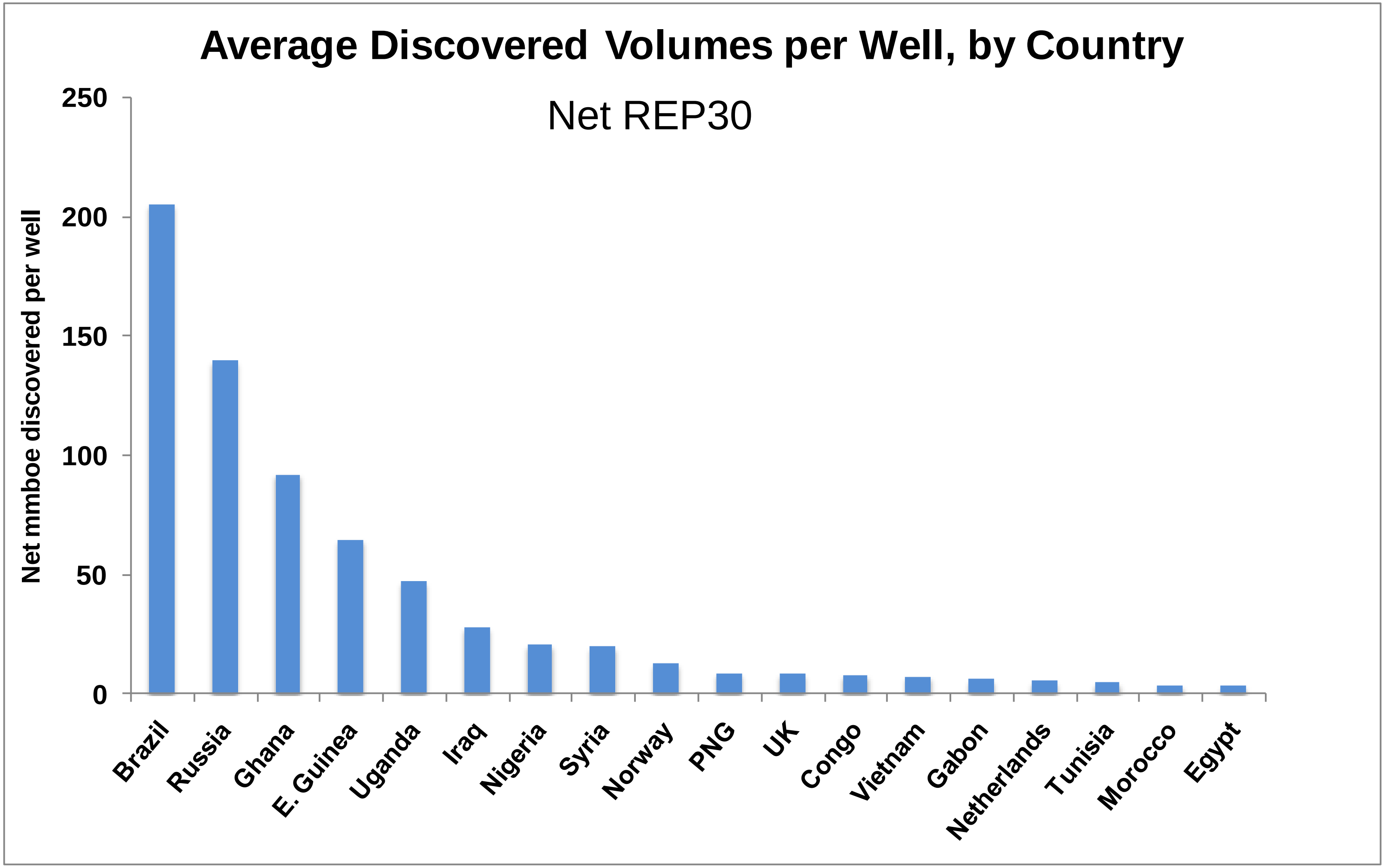


Biggest bang for the exploration buck 2008-9



Exploration Strategy and Outcomes

Commercial Success Rate	Strategy	Example	Activity (Net Wells/Yr)	Impact
>1 in 2	Selective emerging plays	Heritage	Low (2/yr)	**High**
	Geophysics driven, maturing plays	Melrose	High (5/yr)	**Low**
1 in 2 to 1 in 3	Active, emerging play explorers	Tullow	High (7-8/yr)	**High**
1 in 3 to 1 in 4	Maturing play explorer	Det Norske	Mod (2-3/yr)	**Moderate**
> 1 in 4	Active, multi-play, (inefficient but occasionally' lucky')	Lundin	Mod (4-5/yr)	**High**
		Addax		**Low**
Zero	Infrequent, unsuccessful explorers	ROC	Low (2/yr)	**Zero**

2008 & 2009 Mid-Cap Exploration Performance - Summary

- Net exploration wells down 18-23% on 2008
- Average commercial success rates at 1 in 3 but volumes discovered increased to 1,500 net mmboe in 2009 from 800 net mmboe in 2008.
- Less than 5% of discoveries were >250 mmboe and 45% were <10mmboe
- <u>Material</u> exploration success is concentrated in just a few companies and a few countries
- Four different exploration strategies highlighted with differing success rates and impact.

Final Thoughts

- It is not clear what exploration is for in many of the study companies
  - To replace production?
  - To grow the company?
- 11 of the 29 companies failed to do either and the exploration strategy in these cases needs to be challenged
- Larger mid-cap E&P companies need to focus on exploring <u>emerging</u> plays in order to discover the volumes required to grow the reserves base.
- Smaller companies can still grow through exploration in maturing areas but performance tails off progressively as evidenced by the lower discovery sizes (and higher finding costs) in the UK versus Norway.

Further Reading !

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MULTI CLIENT REPORT:

Mid Cap E&P Exploration Performance 2008-2009

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