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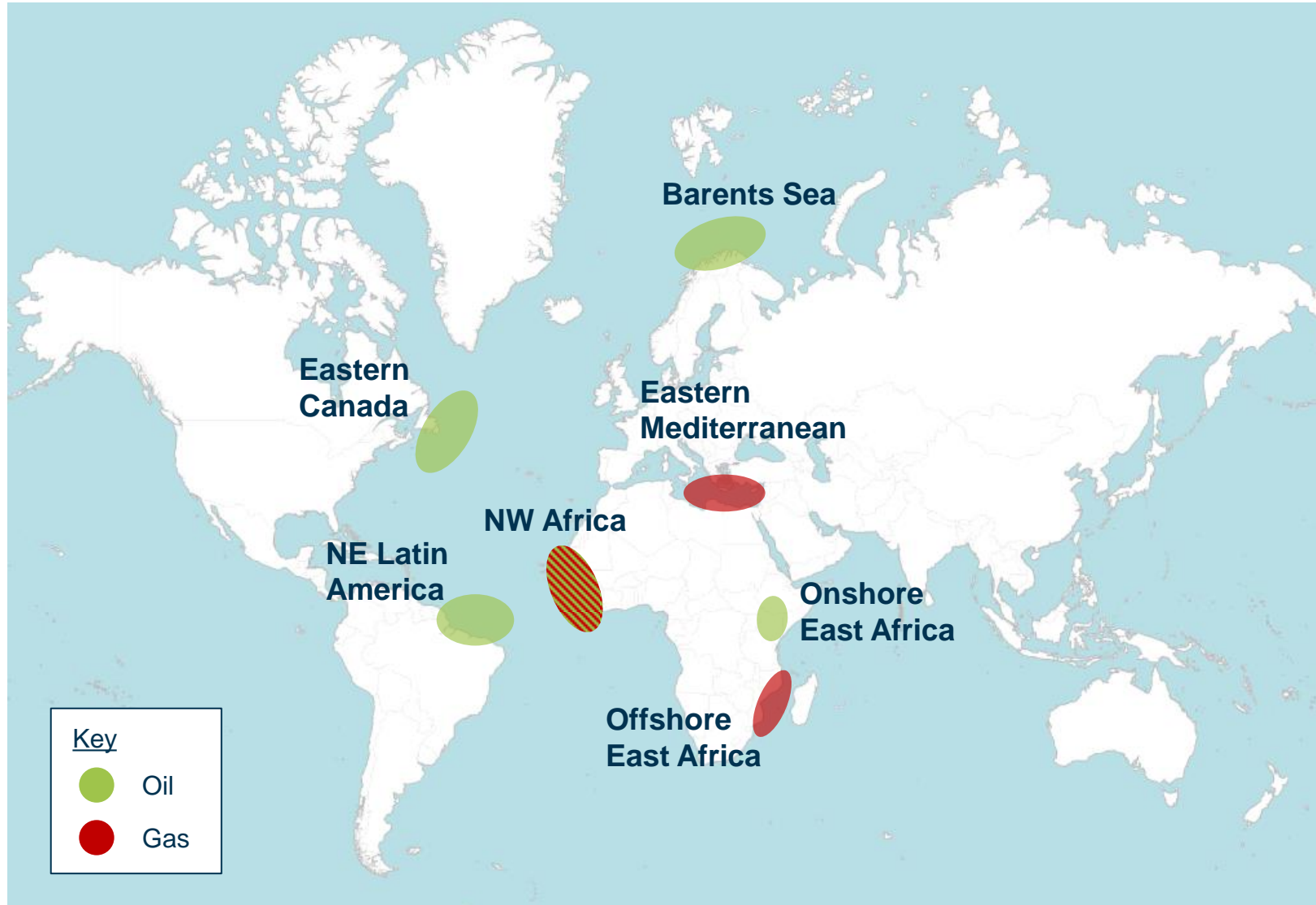
## **Finding New Exploration Provinces**

20<sup>th</sup> September 2016

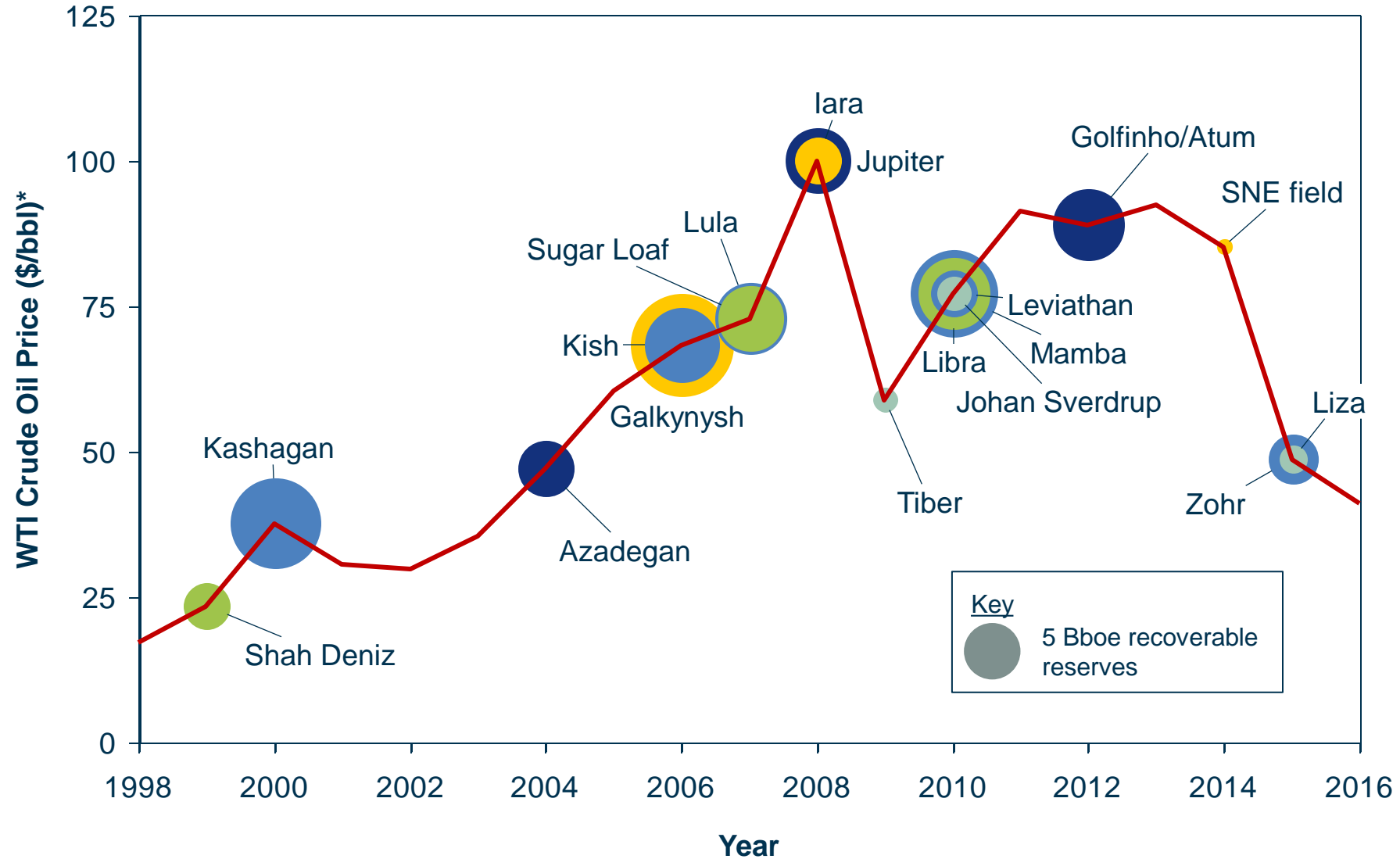
The Geological Society, London



**Over the past 2-5 years a number of new promising basins have opened up.**

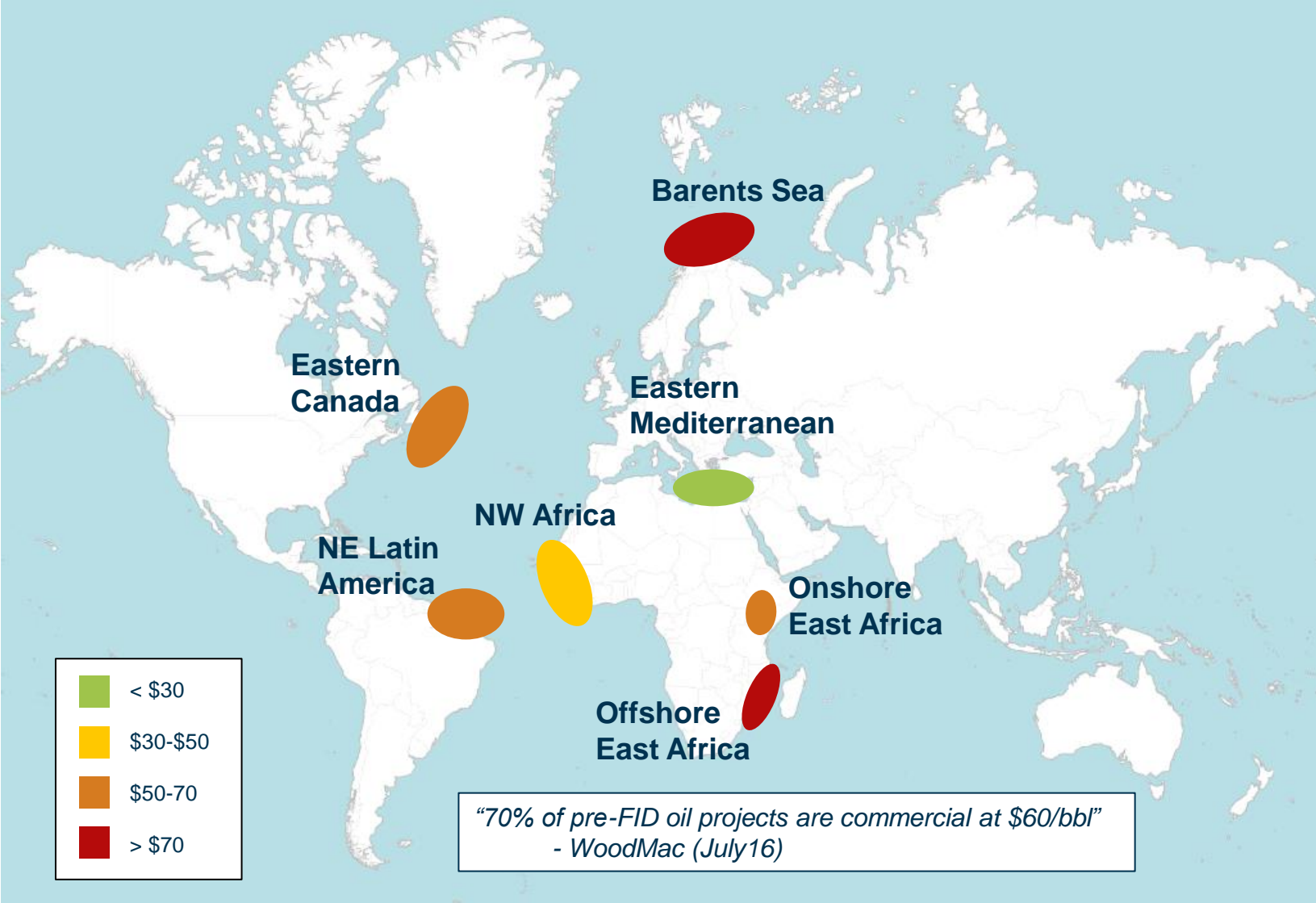


# Higher oil prices have led to significant discoveries, but the recent drop in oil price has seen a marked reduction.



\* Adjusted for inflation to March 2015

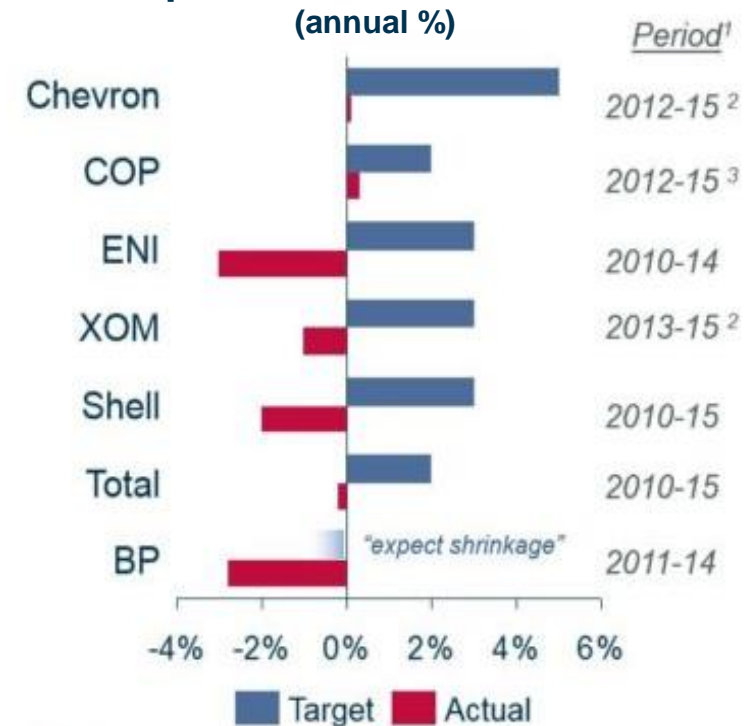
# Despite cost reductions, not all frontier basins are viable at the current price



# High exploration and development capex didn't deliver the reserves or production growth IOCs were targeting.

- In 2010 IOC set ambitious growth targets, (see chart) but:
  - Exploration success fell short, sharply increasing finding costs
  - Increasing size and complexity saw project cost overruns and delays
  - Companies missed production targets by 1.9mmboe/d
- In 2015/16, 5 of the 7 companies set targets to sustain or grow production, but:
  - Capital budgets have been reduced by 40-50%, but costs are only down ~25%
  - Only 2.8 Bn barrels were discovered in 2015, the lowest annual volume since 1954
  - Frontier exploration has virtually stopped!
- **Something has to change for these new targets to be met in a low price environment- but does Exploration have a role?**

Production growth targets vs. production delivered



<sup>1</sup> Targets set over different periods across different companies, actuals are for the period 2010-14

<sup>2</sup> Target given to 2107

<sup>3</sup> No time horizon given for target

Source: <http://www.strategicfit.co.uk/strategy/cost-cutting-not-enough-to-hit-ioc-growth-target/>

# What does the industry need to make frontier exploration attractive?

## Where next for exploration?

- More exploration in proven basins vs new technology in new basins?
  - More value has come from mature basins in the past
- How do we keep skills in exploration?
  - Avoid a repeat of demographic gap created by low activity in late 80-90s



### What can the industry do?

- Change working practices to reduce costs and improve efficiency?
  - Further collaboration between companies and suppliers to drive improvement in efficiency
- Breakthrough technologies to fundamentally change commerciality of frontier resources
  - Eg Ultra-deep water, harsh environments, deep/tight reservoirs, heavy oil

### What can governments do?

- |                                       |   |   |
|---------------------------------------|---|---|
| Incentives for exploration drilling   | - | Tax breaks (Norway )  |
| Make more data available              | - | Seismic studies over certain areas (UK)                       |
| Increase licence flexibility          | - | Licence options, Irish Sea & Integrated EP contracts (Mexico) |
| Direct NOC activity in frontier areas | - | NNPC drilling in Chad basin (Nigeria)                         |

At the present rate of exploration investment & discoveries a shortfall in supply will occur within the next 10 years

