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Angolan upstream investment and fiscal attractiveness

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1 October 2024

Upstream market trends

First some context

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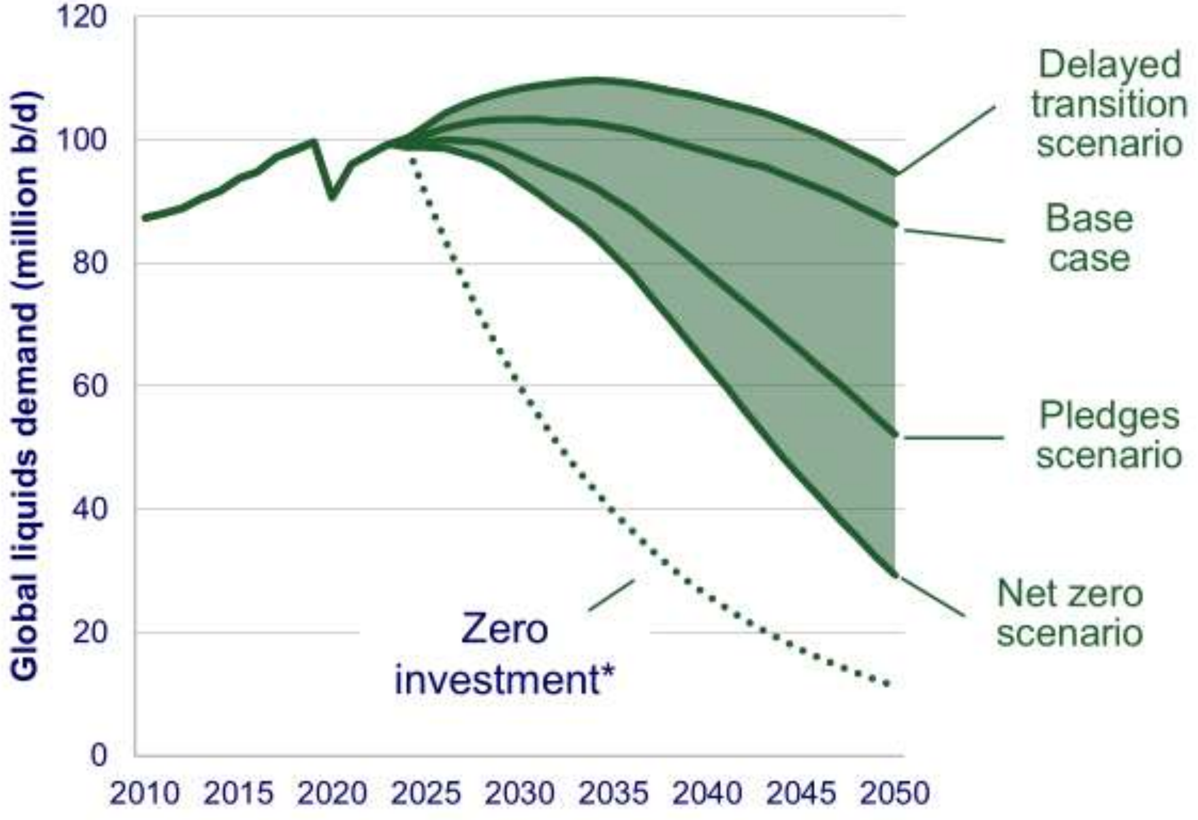
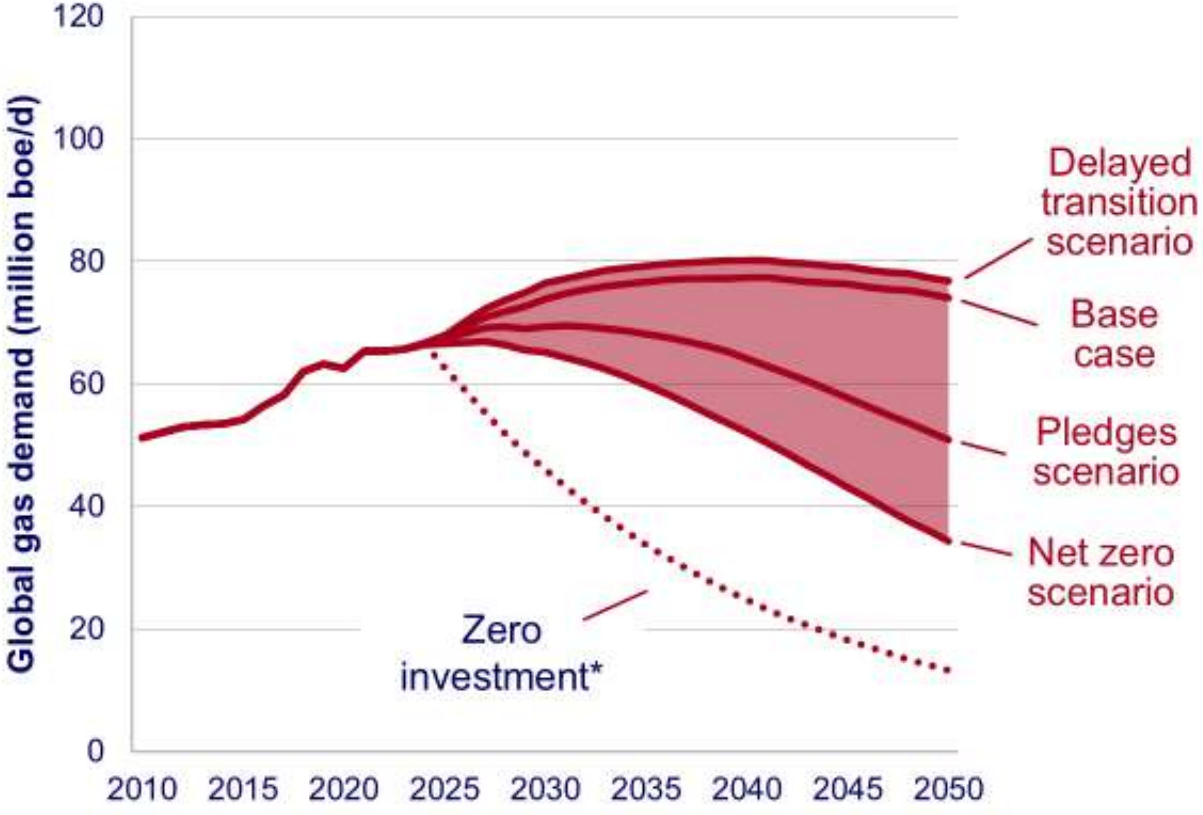
The energy transition makes strategic planning more complex

Operators are targeting resilience and sustainability; gas demand is more resilient than oil in all outcomes

Oil demand uncertainty



Gas demand uncertainty



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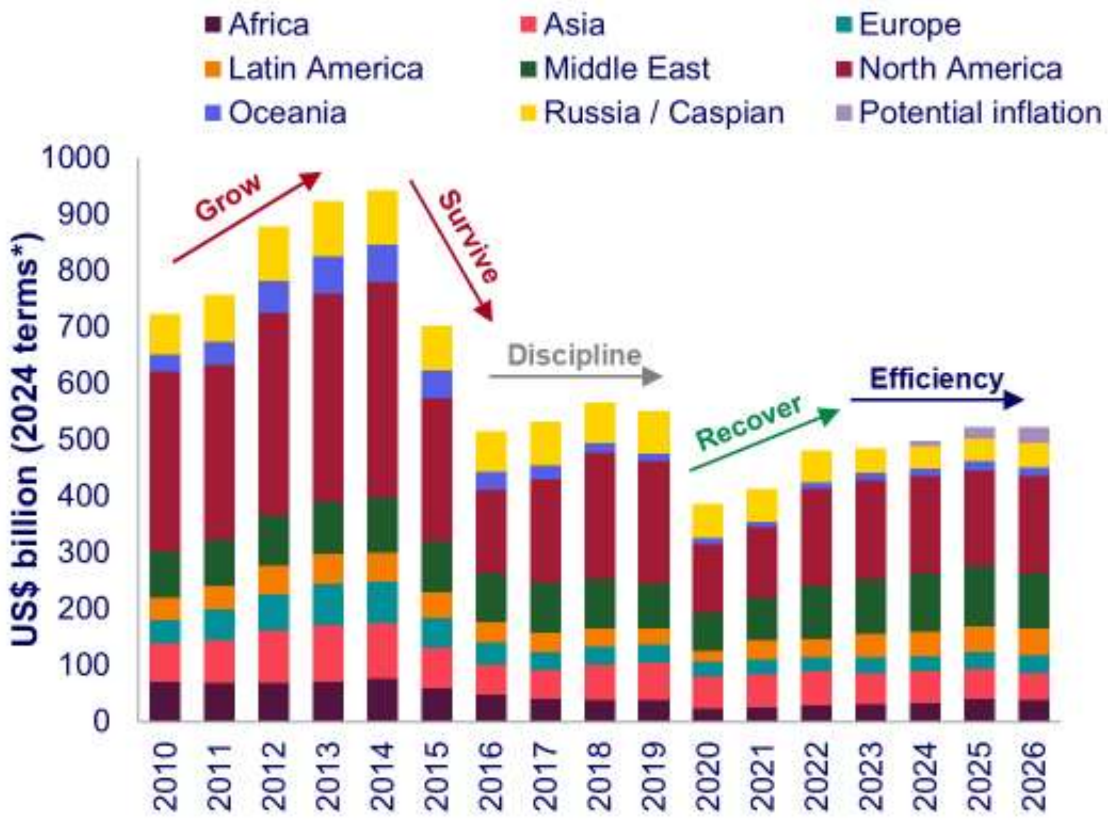
Source: Wood Mackenzie Energy Transition Service 2024, excludes bio energy. *Zero investment assumes decline rates of 6% for gas and 8% for oil.

Having rebounded from the pandemic, global capex is now flattening out

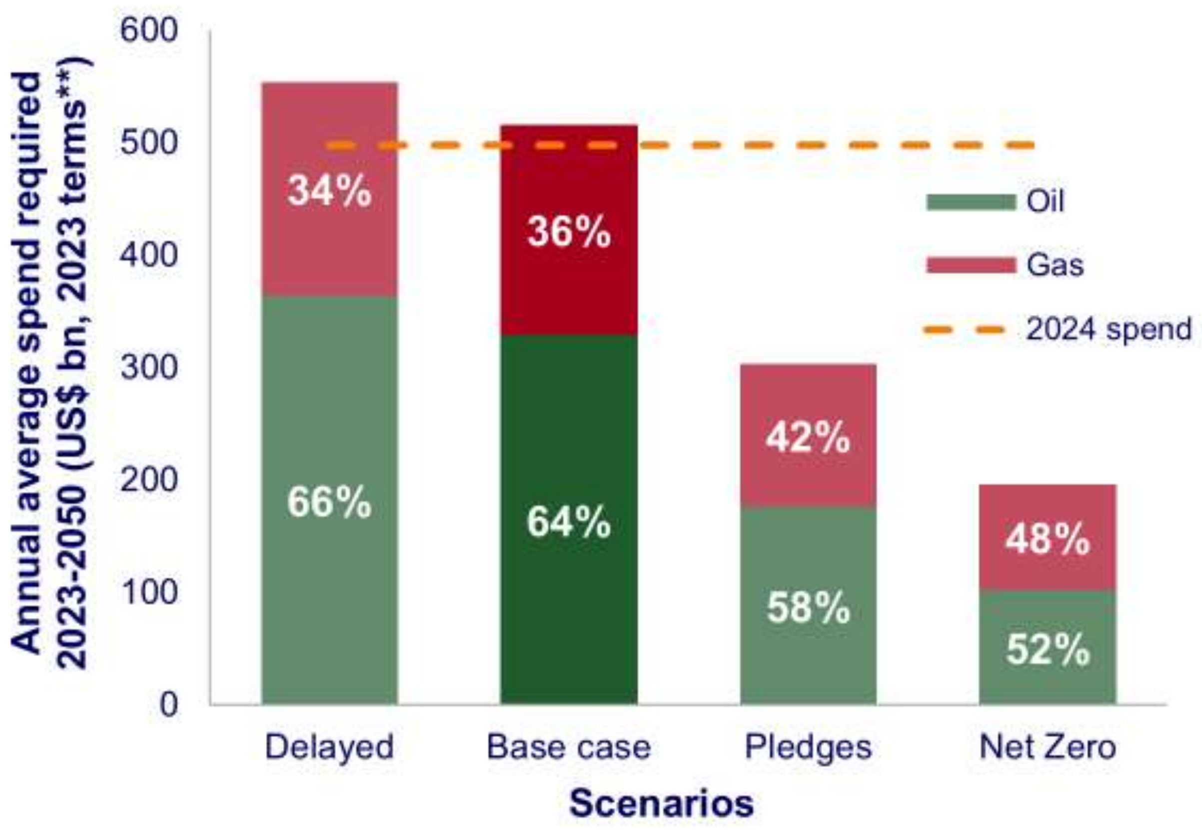
Despite price and spend turbulence, the oil and gas industry has consistently added volume

Upstream development capex and mindset



Source: Wood Mackenzie Lens Upstream. * Adjusted to 2024 terms using US CPI, the results are directionally the same using US or global PPI.

Global upstream oil and gas development capital scenarios



Source: Wood Mackenzie Upstream. Required capital calculation based on base case unit cost assumptions. However, the delayed transition scenario would be highly inflationary, increasing the resultant absolute capex requirement. ** Adjusted to 2023 terms using US CPI.

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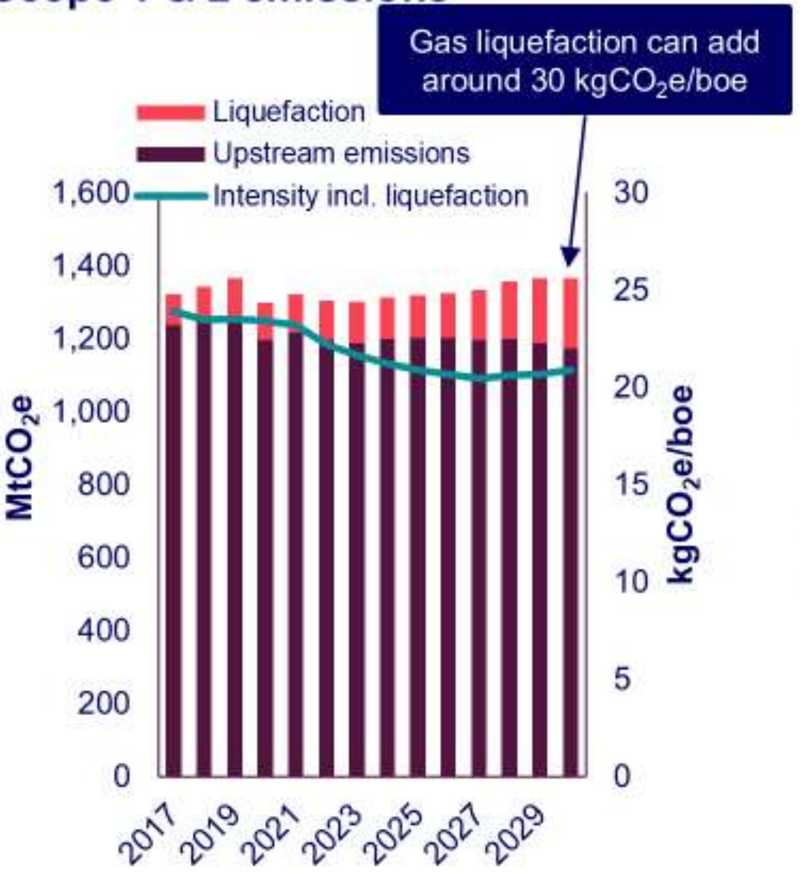
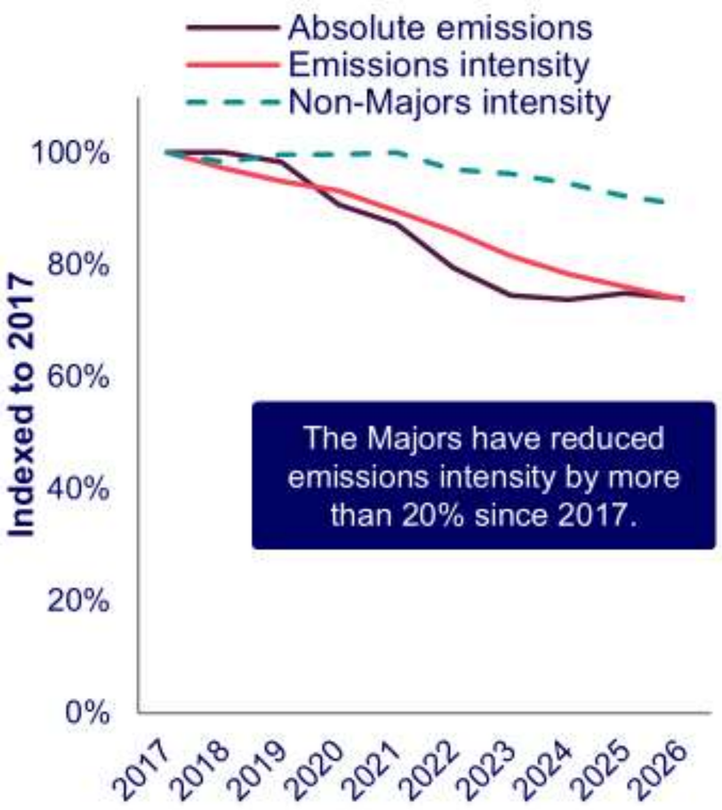
Global upstream scope 1 & 2 emissions intensity has been cut by 11% since 2017

The Majors have outperformed the sector, but the sector is off-track for 2030 targets

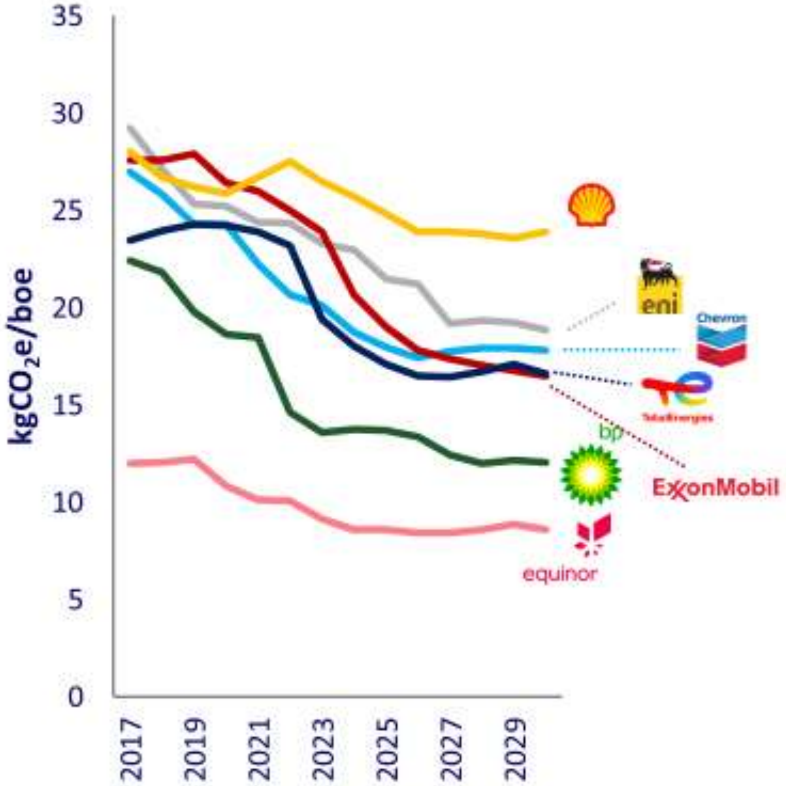
Scope 1 & 2 emissions



Majors' net equity emissions



Net equity emissions intensity



Source: Wood Mackenzie Emissions Benchmarking Tool

The world needs more high-quality oil and gas regardless of demand expectations

Advantaged resources will command the greatest capex, drive M&A and is most wanted by end-users

Advantaged resource characteristics

Strong economics

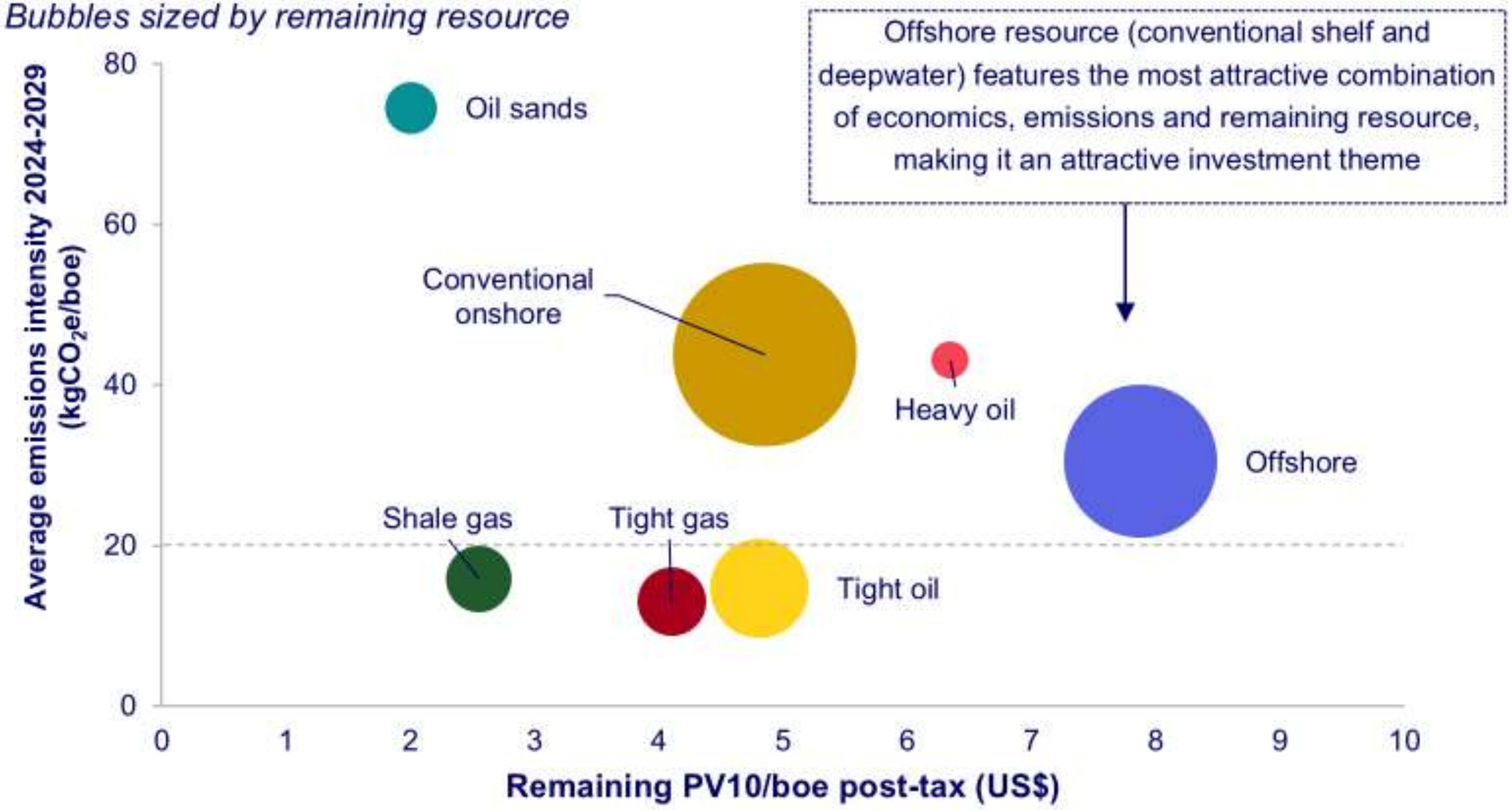
Low emissions

Low risk

Improving the quality of discovered resources and exploration will be critical to increase advantaged resources

Emissions intensity and economics by resource theme

Bubbles sized by remaining resource

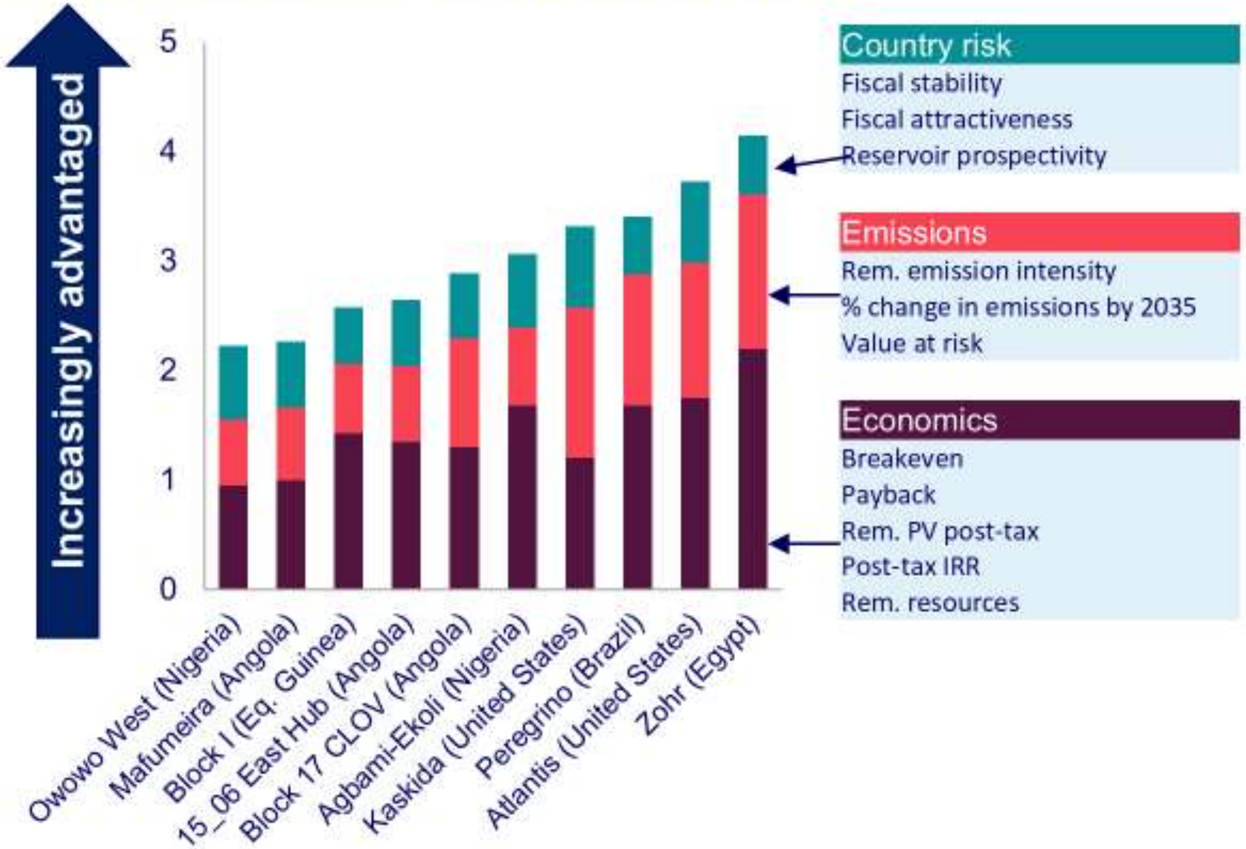


Source: Wood Mackenzie. NPV based on US$65/bbl Brent oil price.

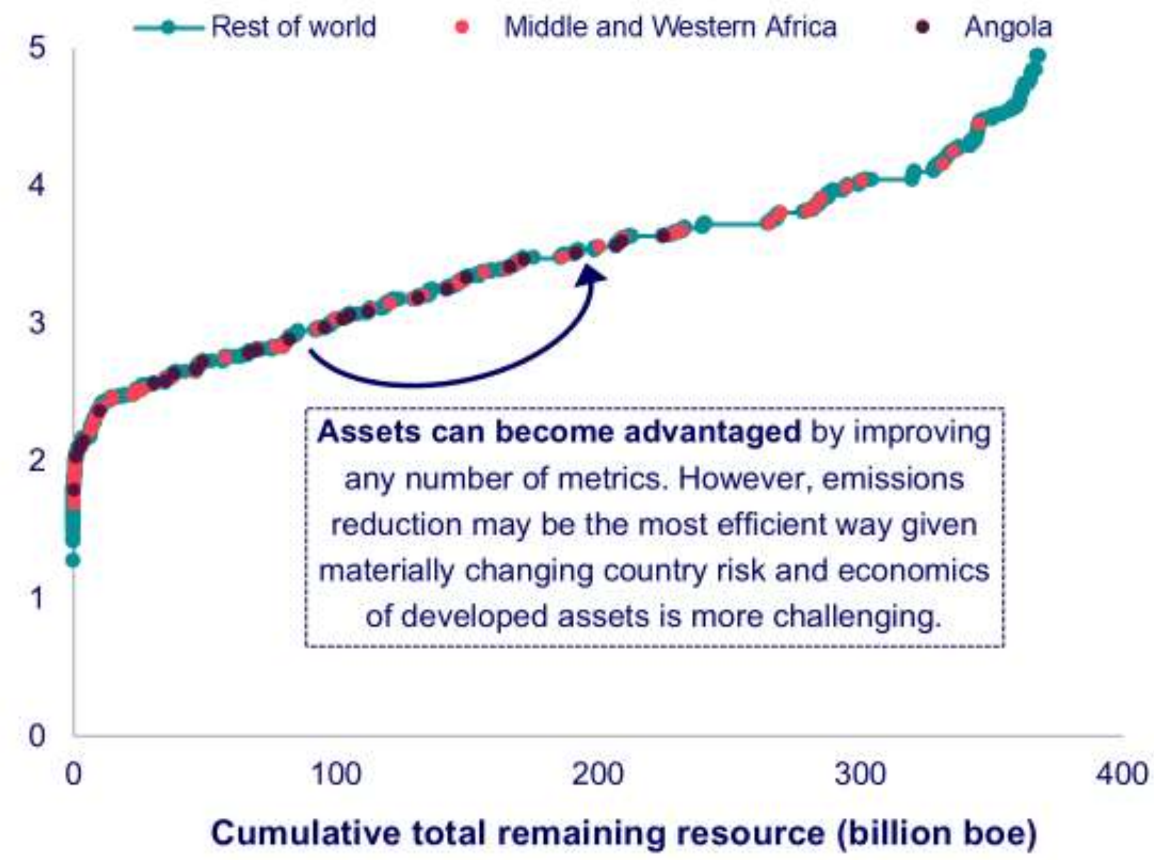
Determining which assets are advantaged

By combining economics, emissions and country risk we can identify advantaged assets

Select assets ranked by advantage score



Offshore assets by advantaged score



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Source: Wood Mackenzie. Sample offshore assets.

Africa and Angola focus

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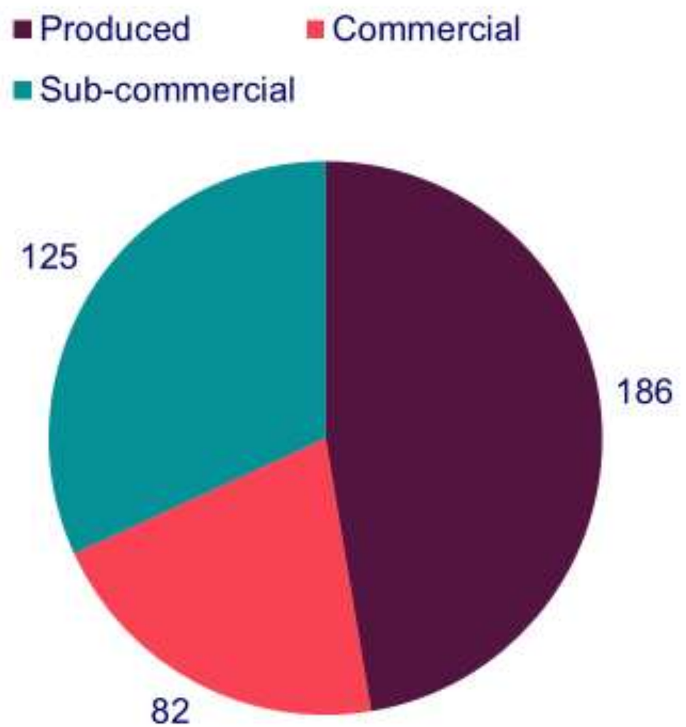
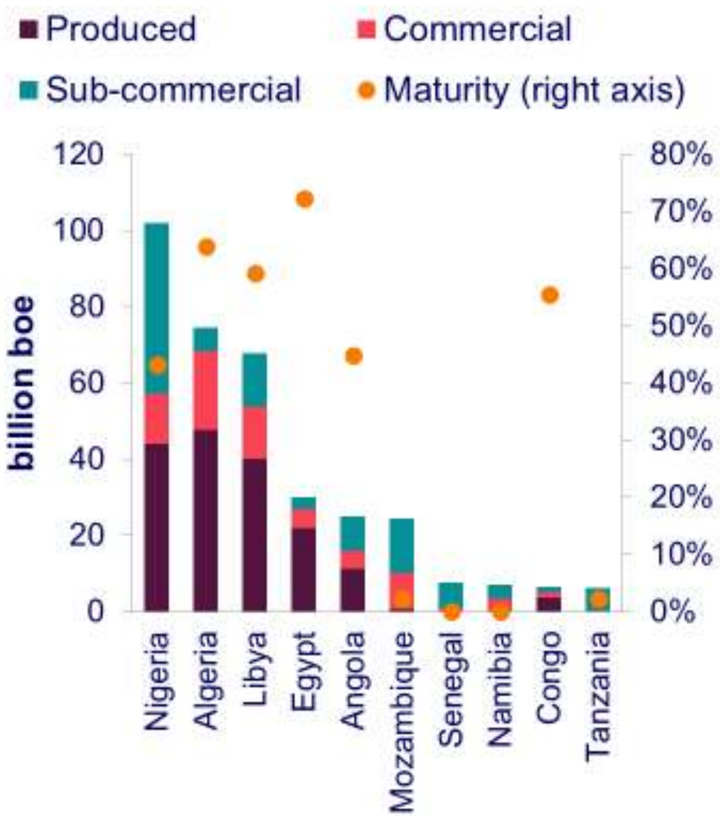
Africa holds more than 200 billion boe of remaining oil and gas resources

Angola is ranked 5th on the continent for remaining resources

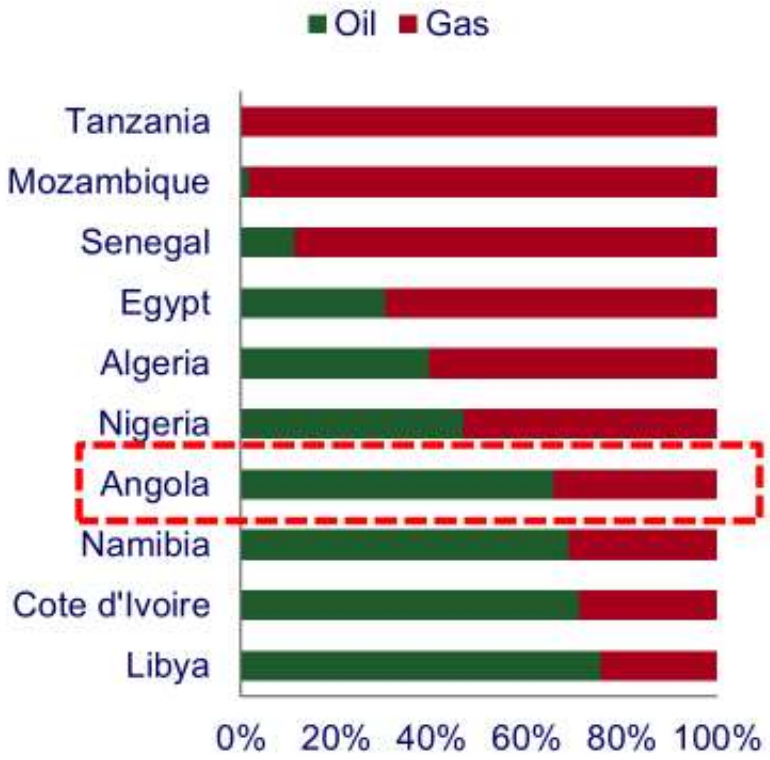
Africa oil and gas resources (392 bnboe)



Resources for top 10 countries



Remaining resources split by HC type

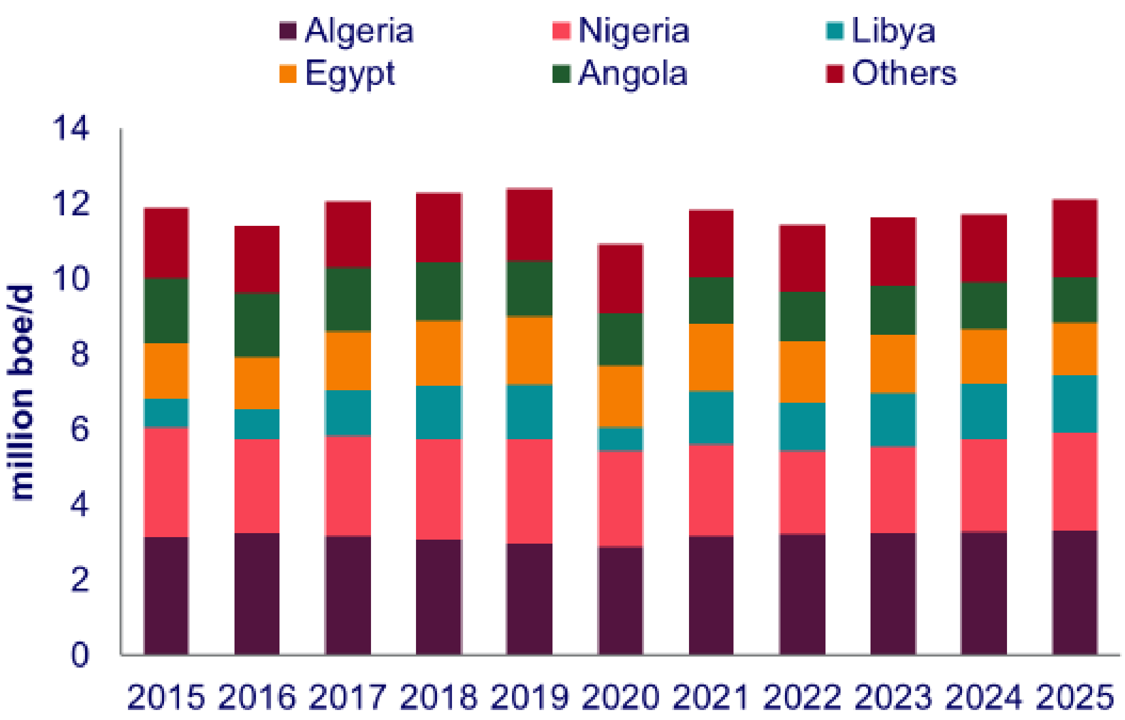


Source: Wood Mackenzie Lens Upstream

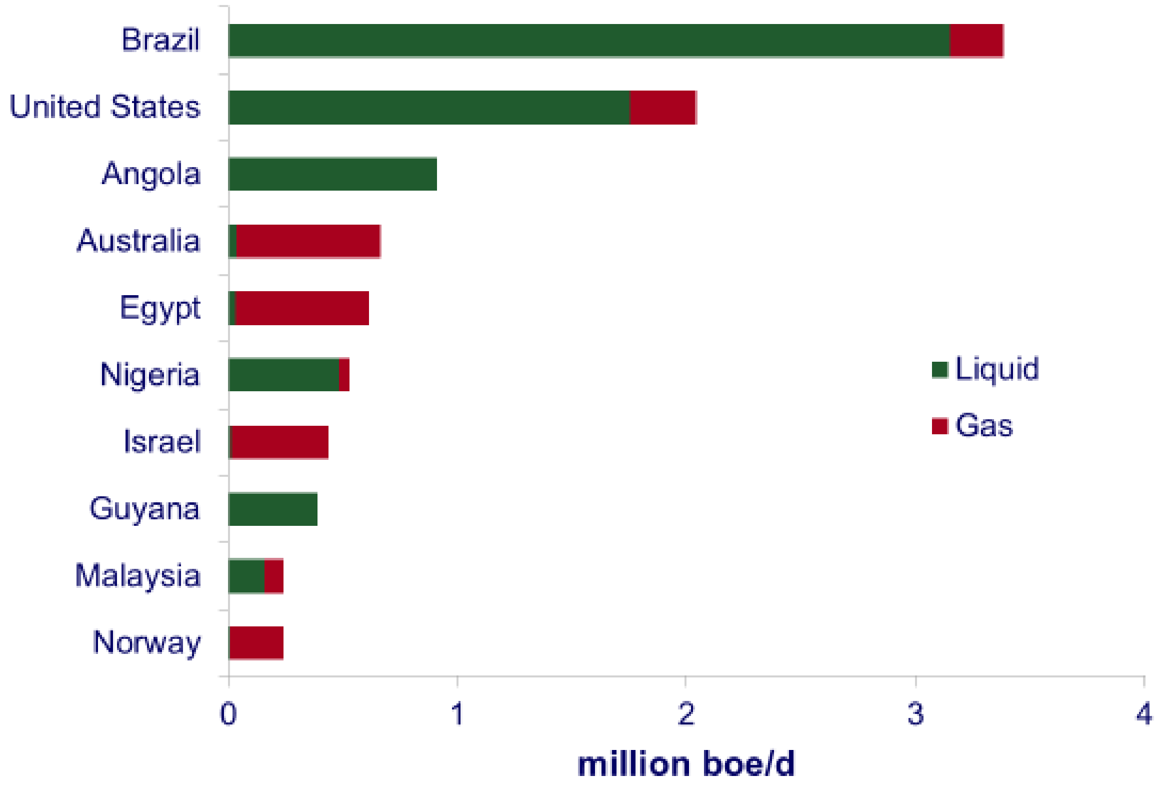
Angola is a deepwater leader in Africa and third ranked globally

But deepwater production is down by a third over the past decade

Africa oil and gas production



Top 10 deepwater producers

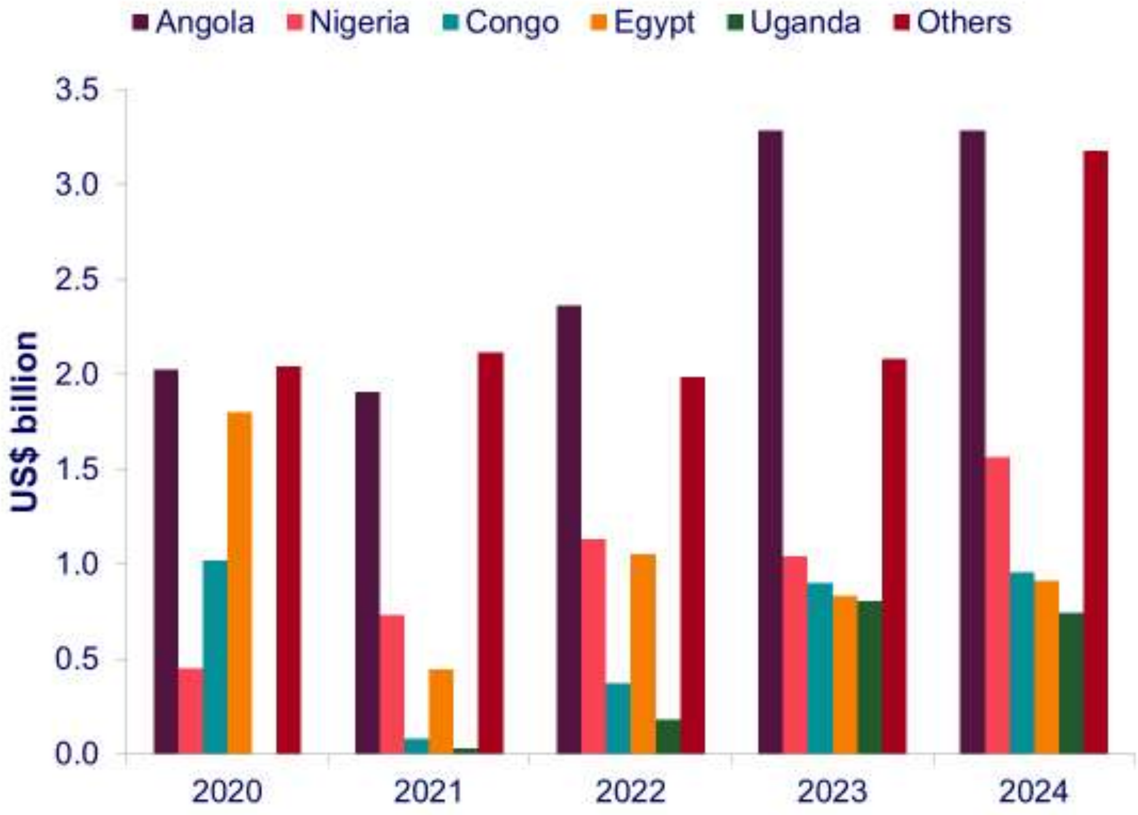


Source: Wood Mackenzie Lens Upstream

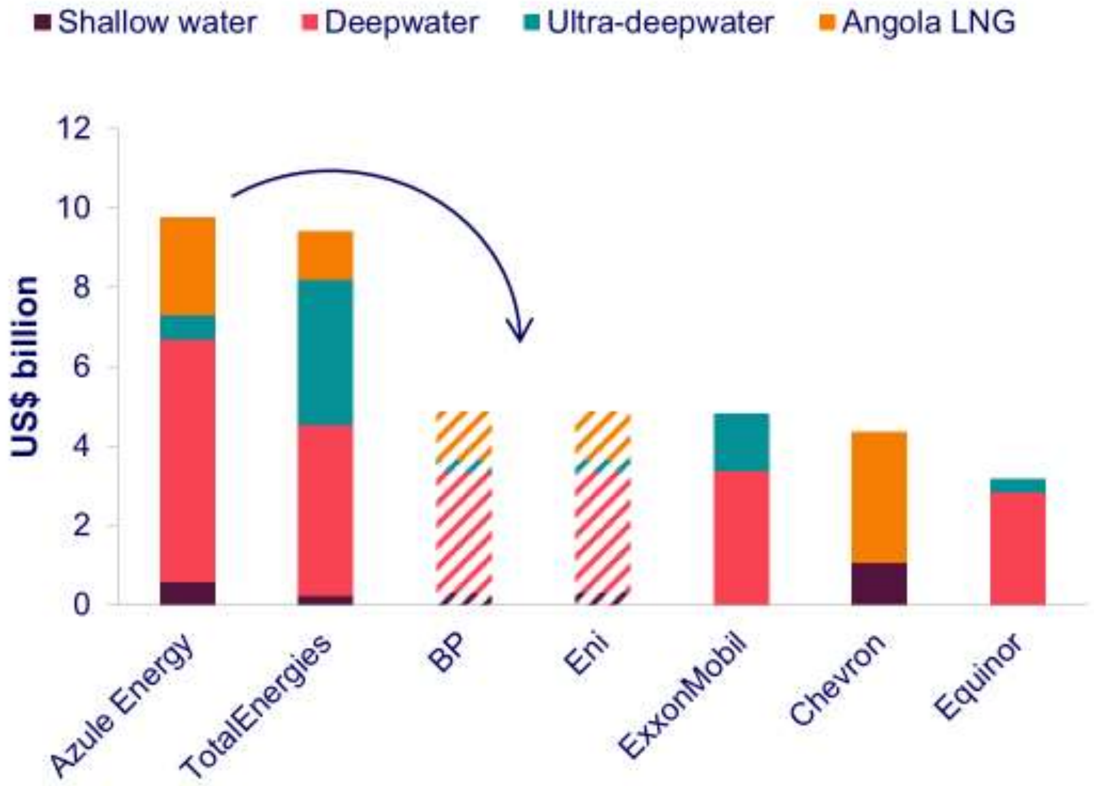
Majors' investment and net present value in Angola

Angola has the highest upstream investment weighting to the Majors globally*

Majors' upstream investment trends in Africa



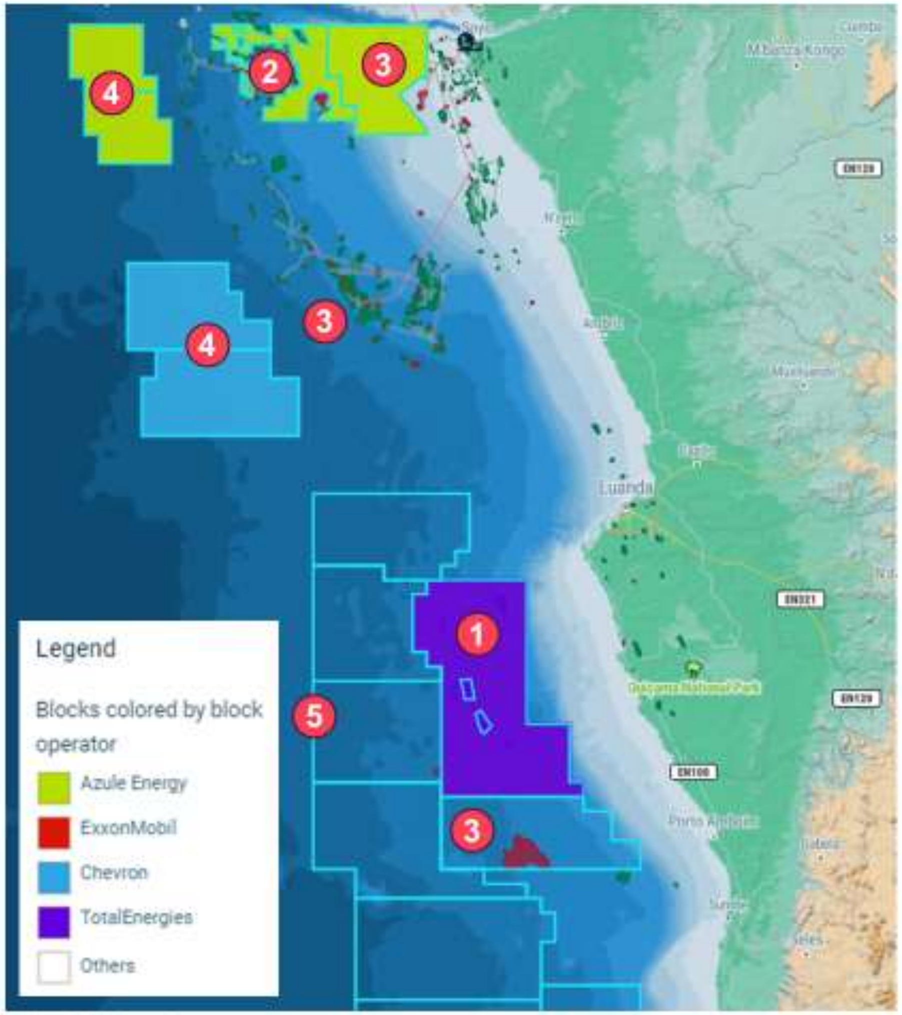
Angola net present value for the Majors



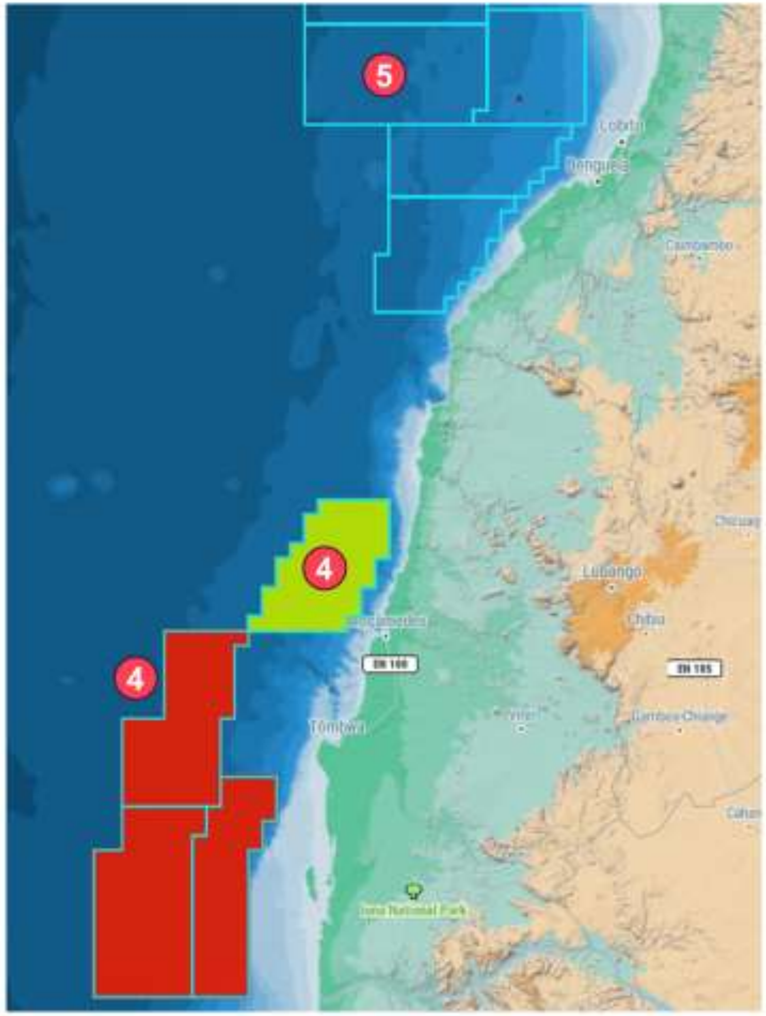
10% discount rate, 1 January 2024, US$65/bbl long-term Brent oil price.

Source: Wood Mackenzie. *excluding Cyprus with preliminary spend only and Italy with Eni playing a major domestic role as a national champion

Angola upstream: six things to look for in 2024-2026



1. **Kaminho** progress – next contract awards and innovative cost initiatives?
2. **Block 15/06** – what new field developments will go ahead?
3. **Angola's next gas project?** The Gas Master Plan outlines the prize.
4. **Wildcats:** will frontier wells succeed? Will the Namibe be opened?
5. **Deepwater bid round** 2025: will we see new entrants, and what terms will be offered?
6. **M&A activity**: what assets and companies will be traded?



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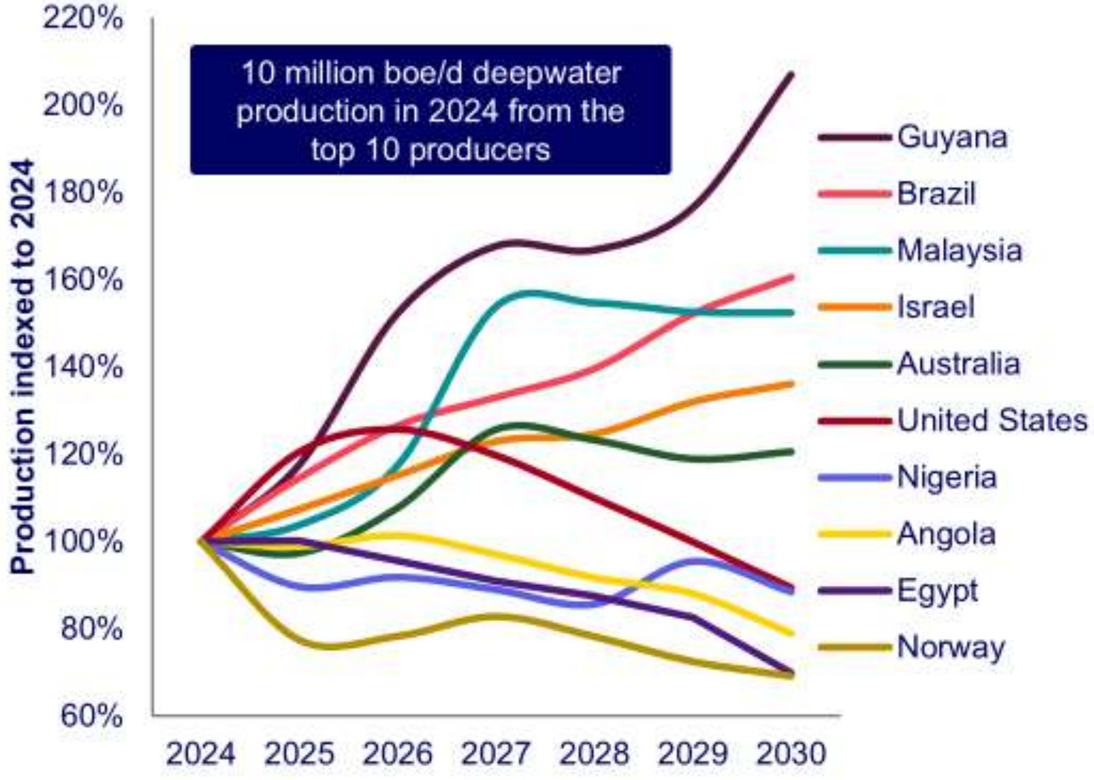
Source: Wood Mackenzie Lens. Numbers are not in order of importance.

Angola fiscal benchmarking

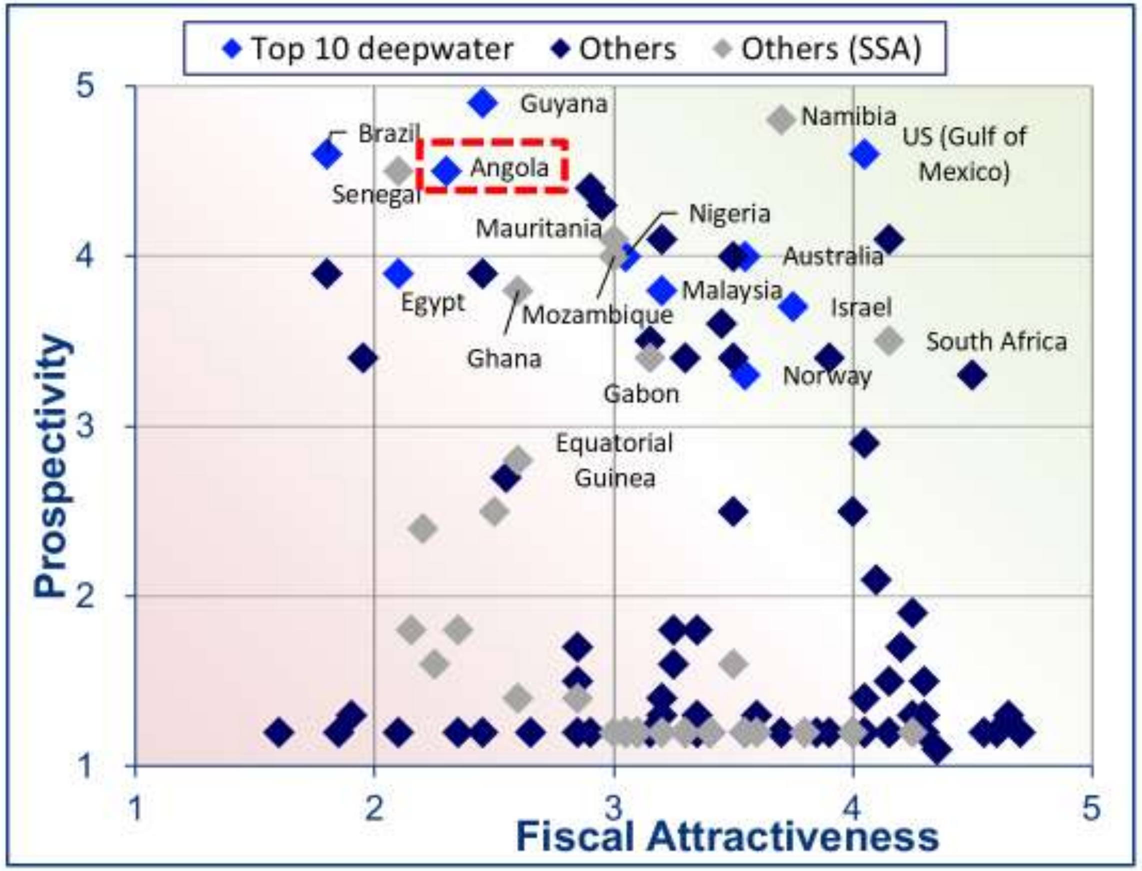
There is a large competitive landscape among deepwater producers

Resource scale and quality varies enormously

Indexed production for top 10 deepwater producers



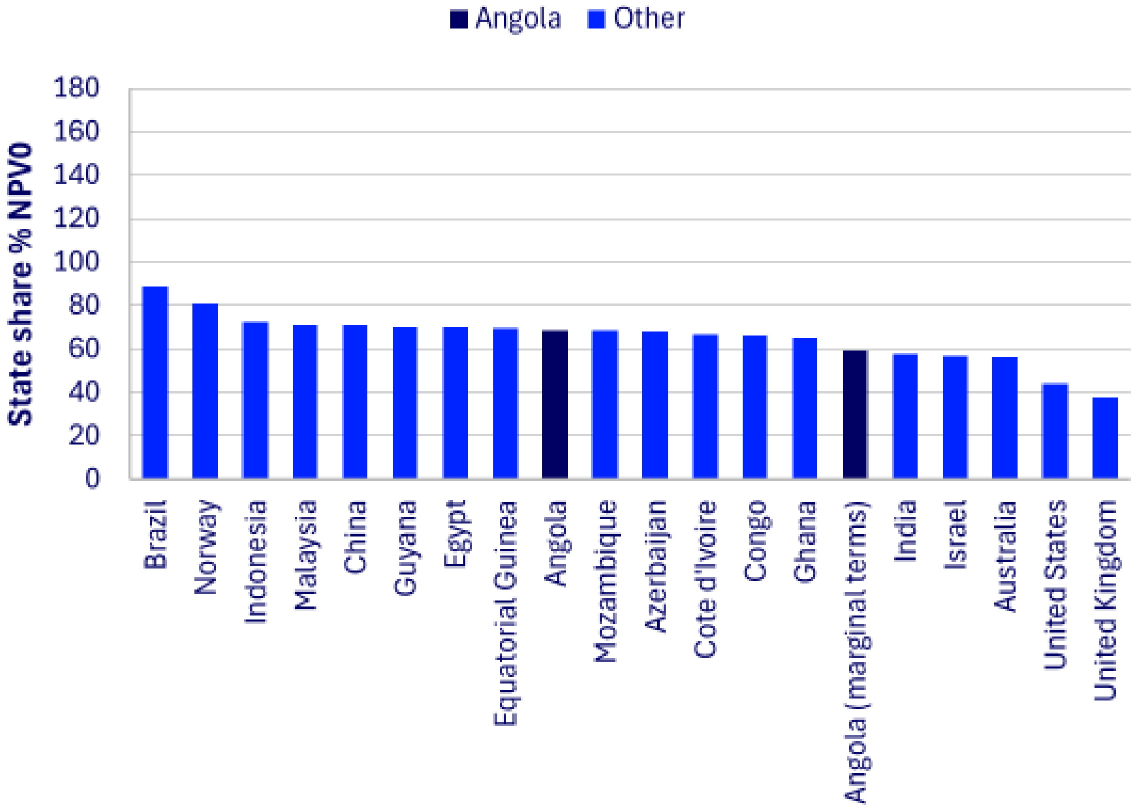
Prospectivity and Fiscal attractiveness indices



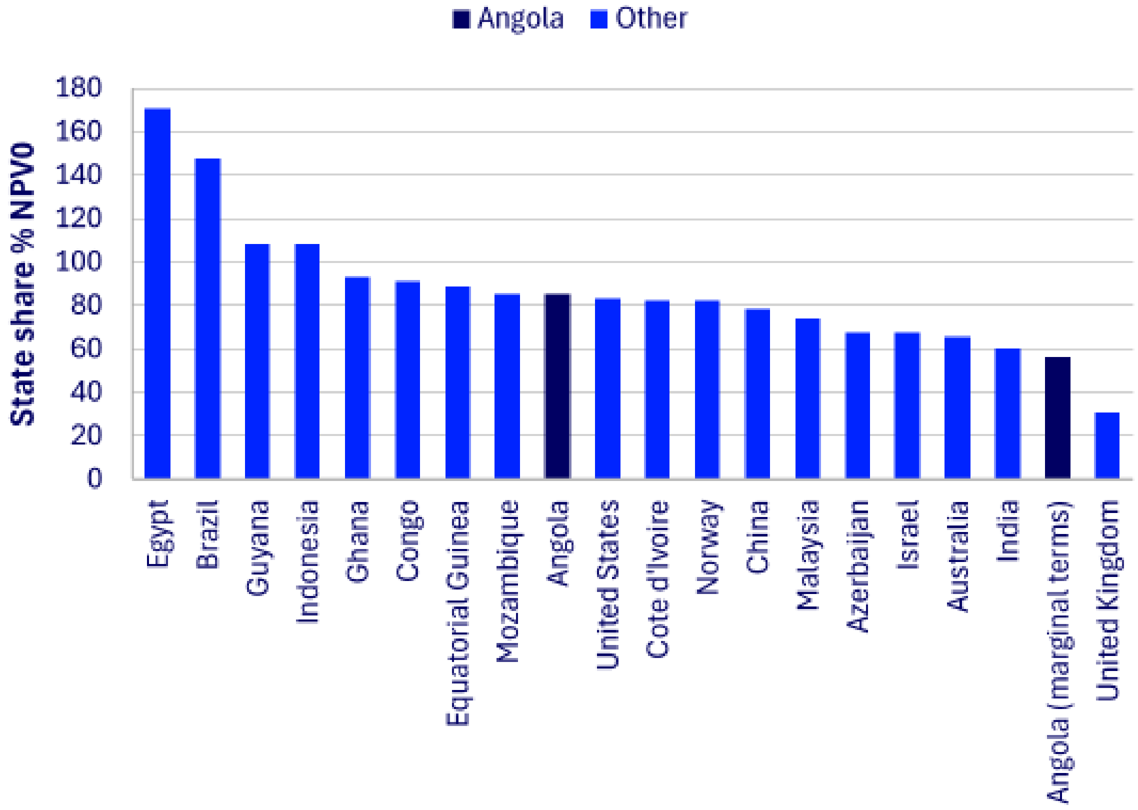
Angola marginal field terms are globally competitive

The standard terms rank mid-table

Benchmarking of 400 mmbbl oil field, US$24/bbl total cost



140 mmbbl oil field, US$45/bbl total cost



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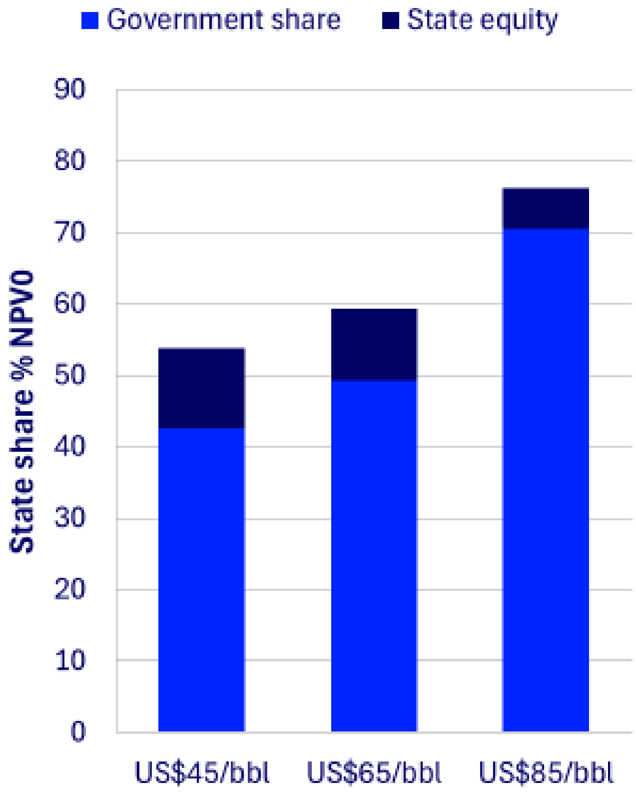
Source: Wood Mackenzie Lens fiscal benchmarking. Total cost = capex + opex.

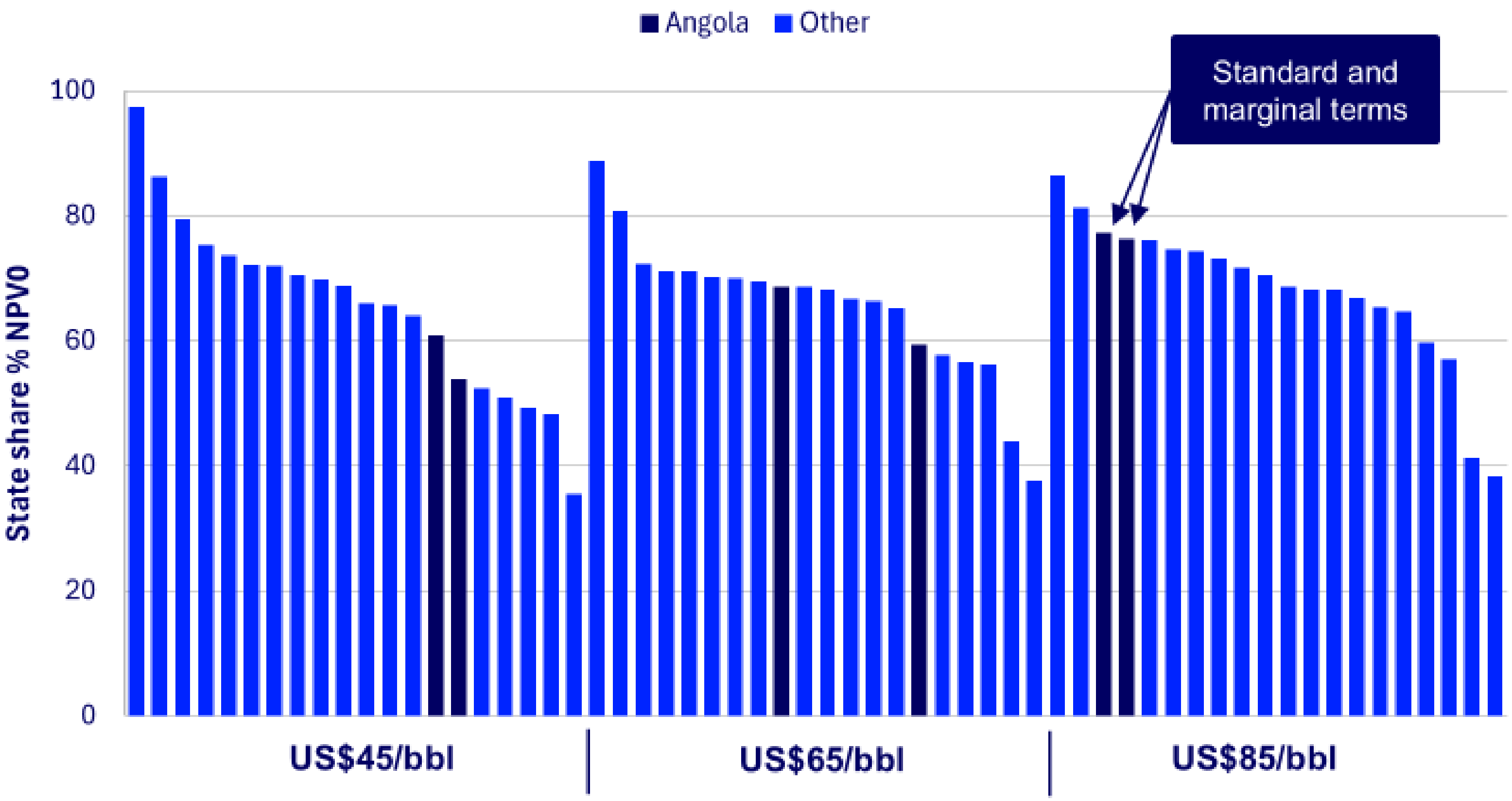
Angola remains competitive at low prices – resilient barrels

Progressive tax system takes more of the revenues at high oil prices

400 mmbbl oil field (marginal terms)



Fiscal benchmarking and oil price sensitivity



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Where next for Angola to remain competitive?

Everything gets more difficult as the basin matures

Success factors

- **The regulator role is working well**
- **Investment has leapfrogged Sub-Saharan African peers**
- **The Majors have been committed to deepwater growth and investment**

Keeping an edge

- **Fiscal incentives have unlocked projects**
- **Licensing rounds have attracted new and local players**
- **International NOCs are playing a bigger role**

Ongoing work

- **Sonangol to further reform its business…IPO?**
- **A stronger roadmap on decarbonisation and net zero**
- **Unlocking new basins and new resources**

WoodMac: Global Outlook, Regional Knowledge

Wood Mackenzie is ideally positioned to support consumers, producers and financers of the new energy economy. We provide commercial insight and access to our experts, leveraging our integrated proprietary data and analytics.

- **2,000 employees** across **30 locations**, close to customers and industry contacts
- Over **700 sector-dedicated analysts and consultants** globally
- **Leaders in upstream,** the energy transition and cross-commodities

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