Risky Bet:
National Oil Companies in the Energy Transition

Natural Resource Governance Institute

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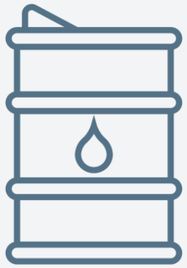
National oil companies are important



1

Half the world’s
oil and gas

2

280 million people
in poverty

3

Financial
entanglement

This time is crucial

Rising oil price

Spending carbon budget &
Advancing energy transition

Climate Managed

- 2 degree warming
- Low oil & gas prices (c.$40)
- $400bn (out of $1.9trn) fails to break even
- Less funds to diversify & adapt

Climate Breakdown

- Over 2 degree warming
- High oil & gas prices (c.$60 - 70)
- $1.9trn breaks even
- But still need funds to diversify & adapt

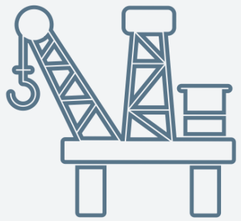
1 Method

2 Results

3 Policy

Method

1



Take all investments shown in Rystad Energy UCube expected from 2021 to 2030.

2

NOCs' share of capital expenditure to develop each project (real, 2021 prices).

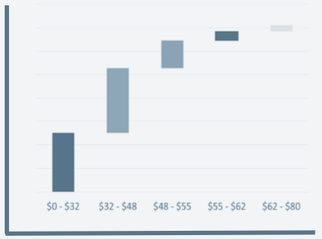
3

Aggregate NOC capex by each project's post-tax break-even price per barrel of oil equivalent. Break-even price as of 2021, not FID, using 10% discount rate.

4

Apply price scenarios ($55, $60, $70). For each scenario, we assume NOCs invest assuming this long-term price. But actual long-term price is $40

5



Calculate capex on projects for each NOC that fail to break-even in each scenario.

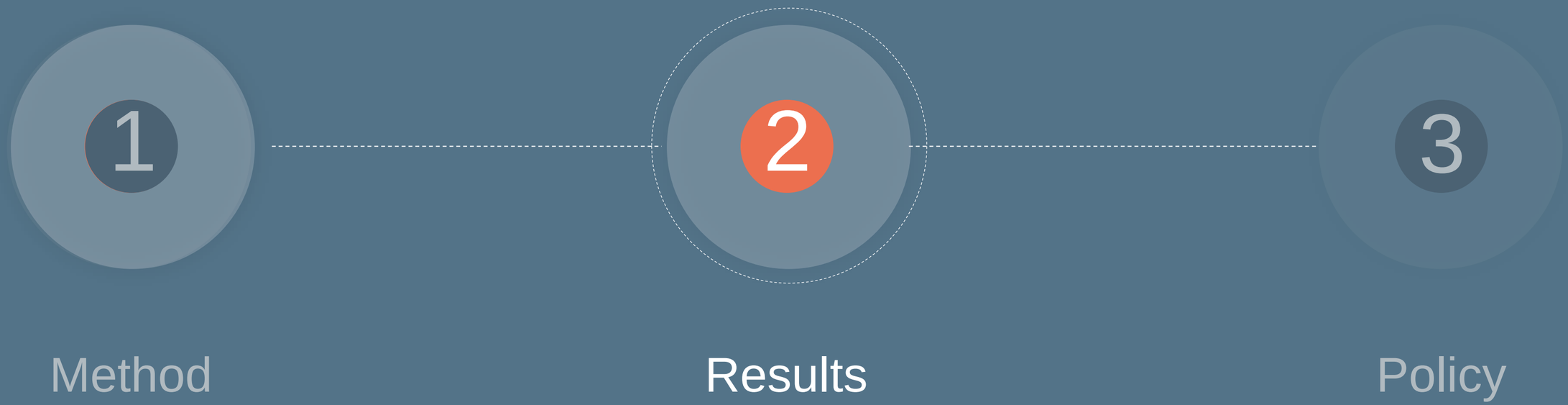
Oil price assumptions (real, 2020 prices)

Long-term assumptions

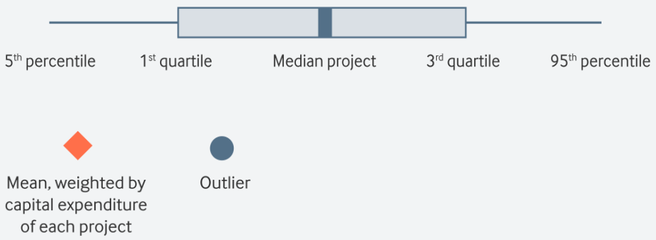
- $72 – IEA Stated Policies for 2.7 C (Carbon Tracker, 15% discount rate)
- $62 – IOC average (Westwood Energy, June 2020)
- $60 – Rystad base case as of 2020
- $55 – BP (company states is broadly consistent with Paris Agreement), and Rystad base case as of 2021

Long-term oil price estimated to be consistent with meeting or being close to meeting the Paris Agreement

- $50 – Van Meurs Energy
- $48 – IEA 'Sustainable Development' resulting in a 1.8C temperature rise (Carbon Tracker, using 15% discount rate)
- $40 – Wood Mackenzie (Oil Search)
- $38 – IEA 'Beyond 2 Degrees' resulting in a 1.6C temperature rise (Carbon Tracker, using 15% discount rate)

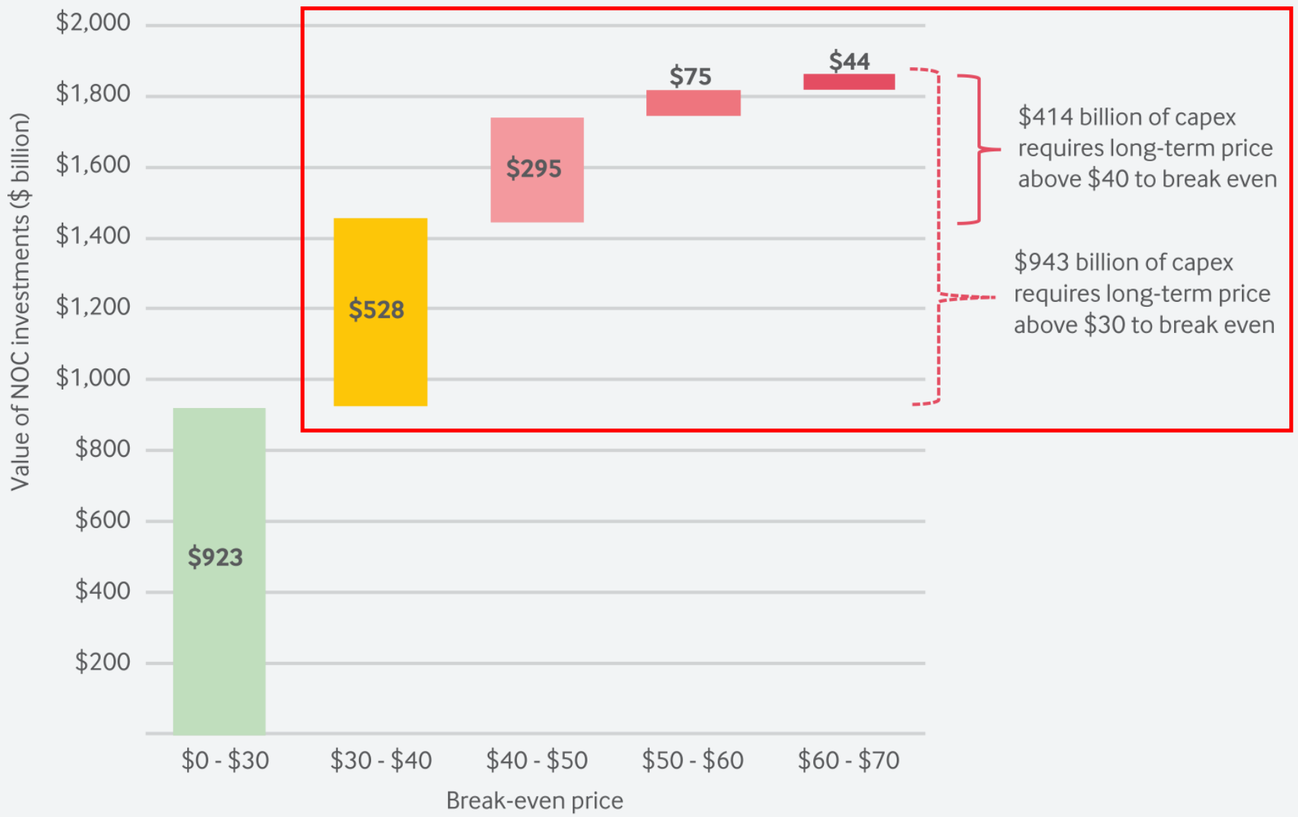

1
2
3
Method
Results
Policy

Range of post-tax break-even prices of the next generation of NOC investment

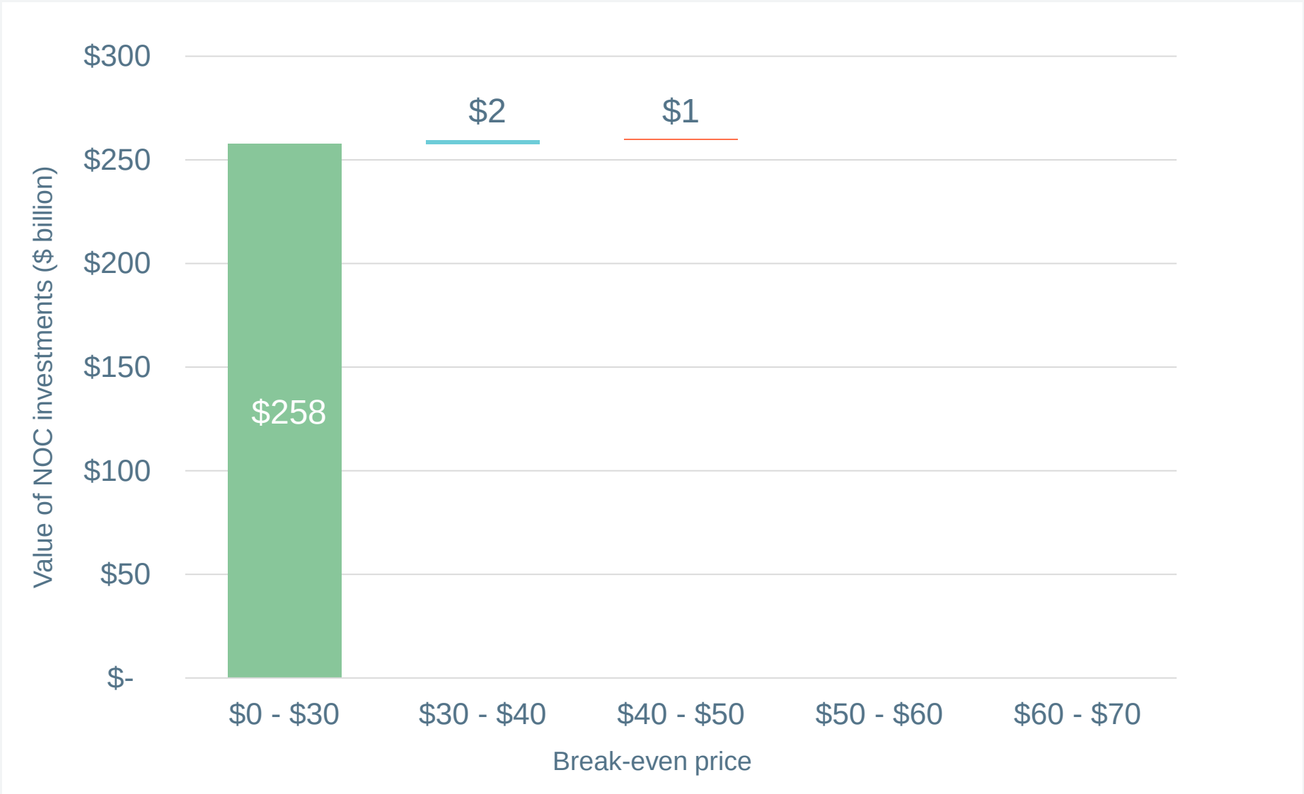


Following their current course NOCs could gamble $1.9trn, of which $400bn on projects won’t break even if we meet Paris target

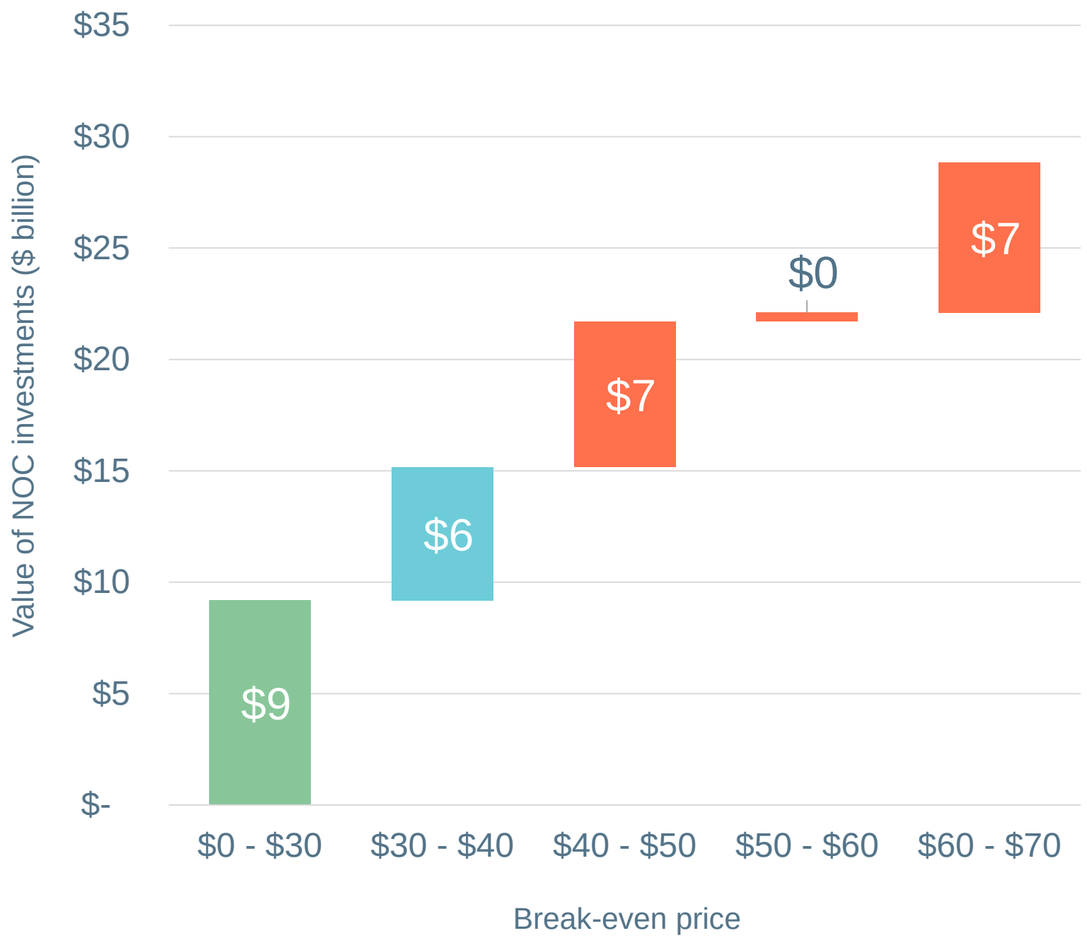
Value of NOC capital expenditure disaggregated by break-even price range



NOCs are not equal: Saudi Aramco looks quite “safe”



To maintain production, Nigeria’s NNPC needs to invest up to $14 bn in high cost projects.



Country	High risk capex as % of government expenditure
Mozambique (ENH)	179%
Azerbaijan (SOCAR)	157%
Oman (OOC)	61%
Nigeria (NNPC)	53%
Congo (Rep.) (SNPC)	42%
Turkmenistan (Turkmengaz)	41%
Algeria (Sonatrach)	36%
Qatar (Qatar Petroleum)	31%
UAE (ADNOC, ENOC)	30%
Malaysia (Petronas)	29%
Russia (Gazprom, Rosneft)	27%
Colombia (Ecopetrol)	21%
Ghana (GNPC)	18%
India (ONGC)	16%
Brunei (PetroleumBrunei)	14%
Norway (Equinor)	12%
Vietnam (PetroVietnam)	10%
Kazakhstan (KazMunayGas)	10%

NOCs place bets, countries face consequences

VS

High debts put NOCs on the back foot.

Comparison of estimated break-even prices of NOCs' current global portfolio,
and NOCs' long-term debt as a proportion of general government revenue

Obstacles

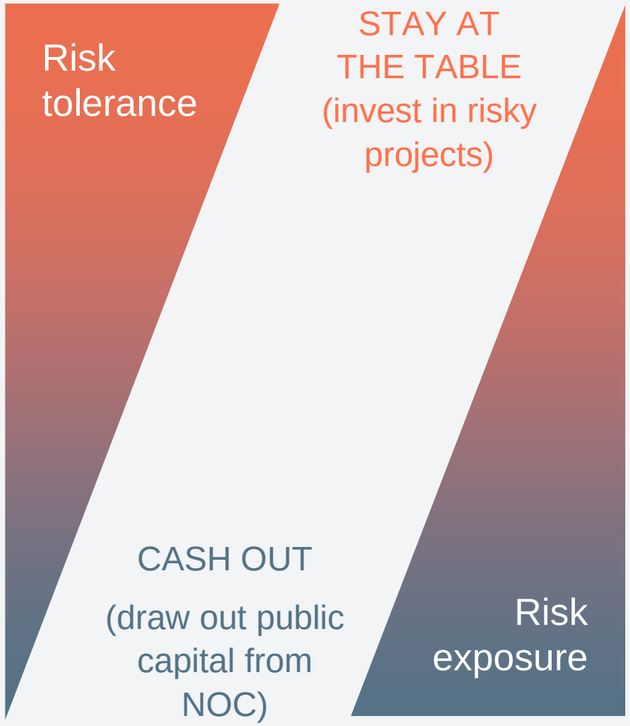
- Many, conflicting responsibilities
- Outsize control of public revenue
- Expansionist
- Weak accountability

Method

Results

Policy

Governments need to:

ASSESS RISK EXPOSURE & TOLERANCE	SET GOAL	IF CASHING OUT...
NOC EXPOSURE		**Control cash flows:** • Maintain high taxes on NOC • Set NOC borrowing limits (inc. domestic borrowing) • Consider divestment, listing shares
		Place explicit limits on NOC exploration & development spending
COUNTRY TOLERANCE		**Improve reporting and corporate governance. Disclose:** • The assessment report • Project costs, NOC capital invested • Long-term price assumption • Reserves under lower prices • Borrowing – inc. from domestic lenders