Allocating Capital In The Energy Transition

Federal Reserve Bank of Dallas

November 2023

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Veriten Introduction

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Research

- Thought partnerships with key energy organizations & companies
- Annual retainer

Future of Energy

Investing

- Identify, invest and assist high growth companies in line with the firm's macro views via **NexTen** Fund
- Gain a better understanding of what energy solutions really work

Strategy & Ideas

- In-depth advisory and consulting services for our thought partners and our investors
- Offer unique solutions to complex problems leveraging Veriten ecosystem

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Our Community of Thought Partners & Investors

Thought Partners

- IOCs
- Onshore, Offshore and Diversified E&Ps
- Domestic & International Service Providers
- LNG Exporters
- Infrastructure & Downstream
- Minerals & Mining
- Electricity Providers
- Global Diversified Energy
- Private Investors

Investors

- Public Energy Corporations
- Family Offices
- Current & Former Energy Executives
- Entrepreneurs
- Financial Institution

Private Content, Custom Research, Investment Ideas, Strategic Advice and Future of Energy Community

The End of the Oil Age…Again?

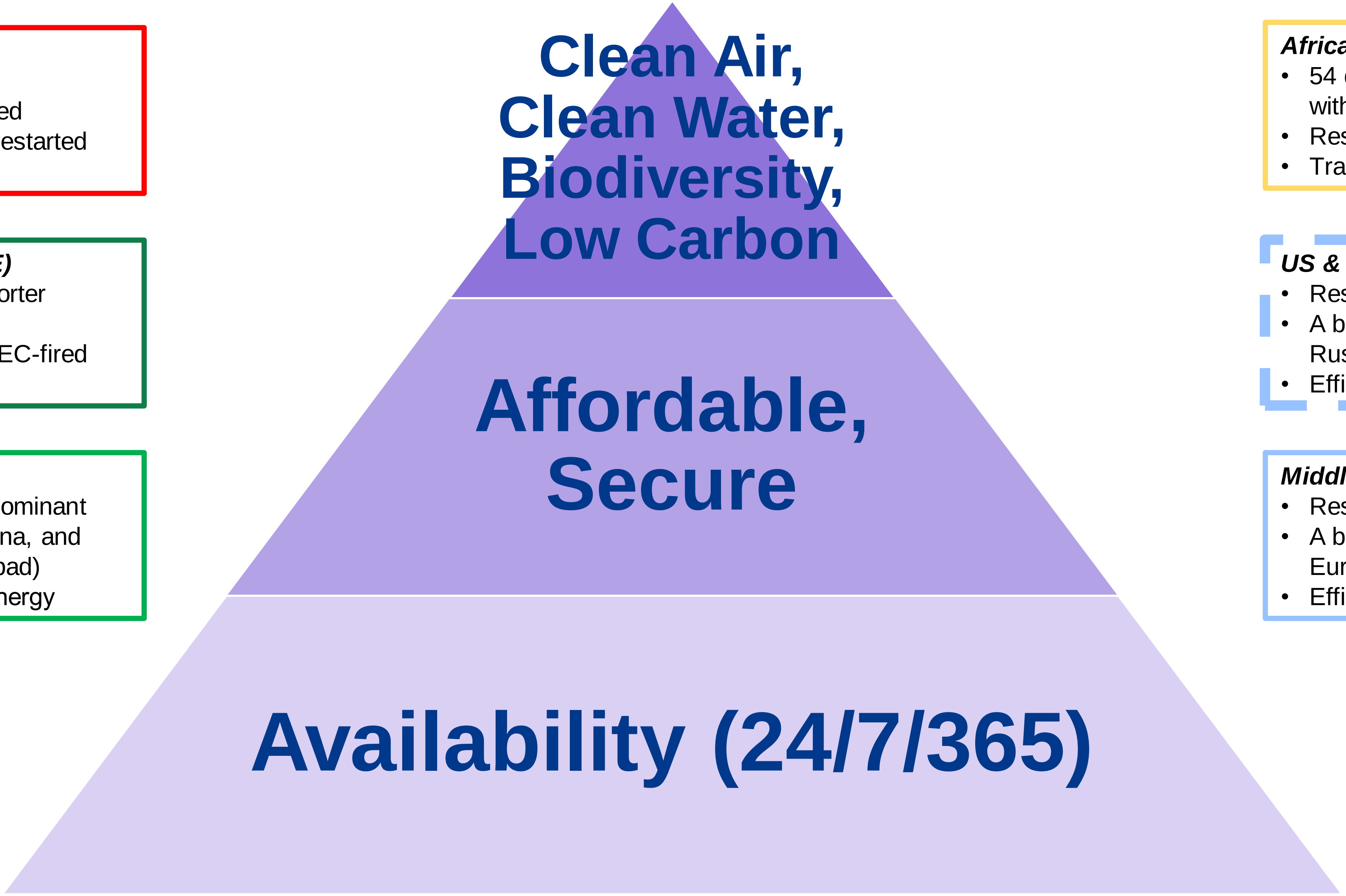
The End of the Oil Age™ has been forecast many times over many decades

Energy: A Hierarchy of Needs

Germany (AVOID)
- Russian gas cut off
- Nuclear plants closed
- Lignite coal plants restarted

China (ON DEFENSE)
- Large crude oil importer
- Growth in EVs
- Coal-fired EVs>OPEC-fired ICE vehicles

India (ON OFFENSE)
- Poverty reduction dominant
- Learn from US, China, and Europe (good and bad)
- "All of the above" energy



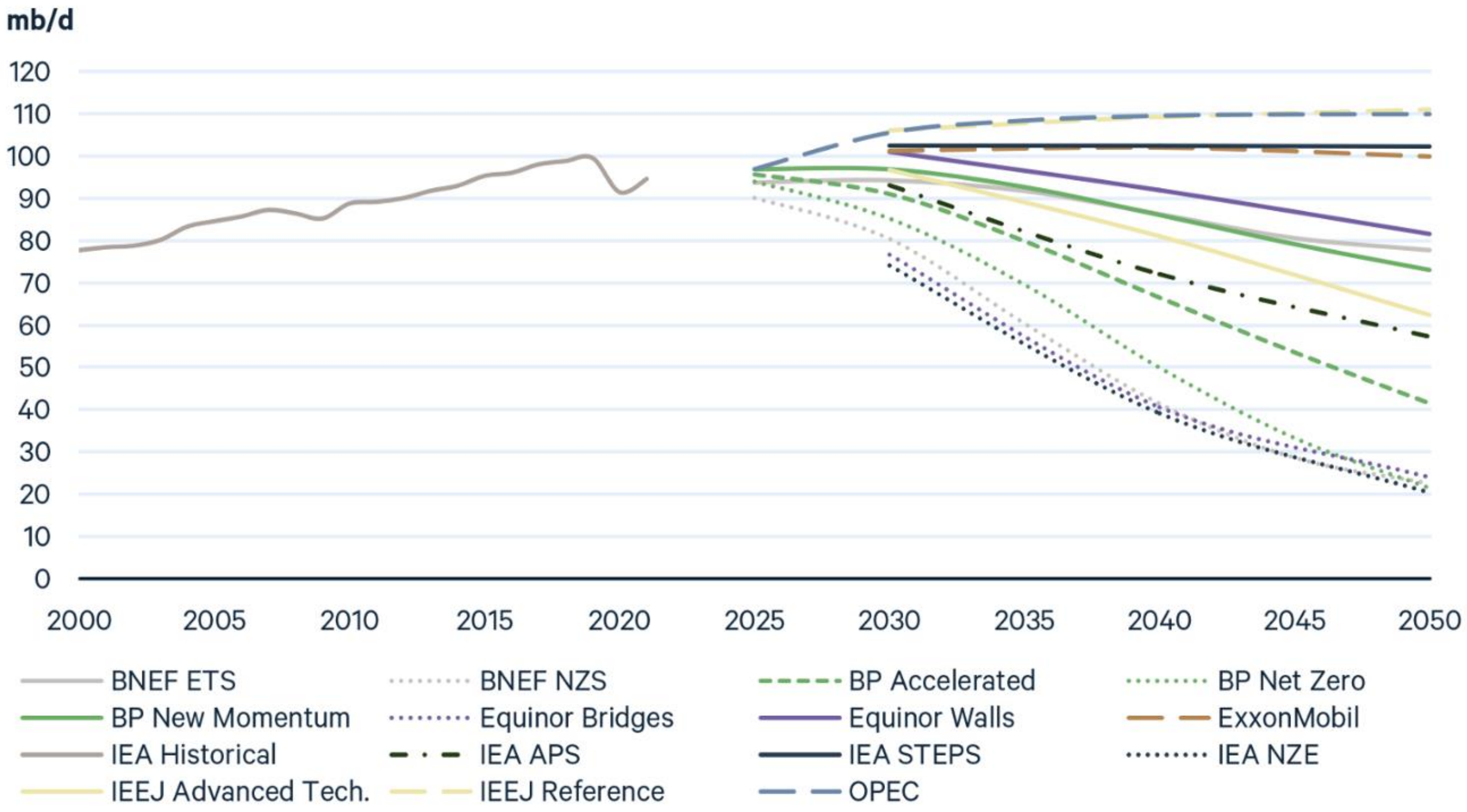
Africa (LOOKING FOR HOPE)
- 54 diverse countries, each with S/D/poverty metrics
- Resource rich continent
- Transition won/lost here

US & Canada (OPPORTUNITY)
- Resource rich export potential
- A balance to Middle East, Russia, and elsewhere
- Efficiency gain opportunity

Middle East (OPPORTUNITY)
- Resource rich export potential
- A balance to US, Canada & Europe
- Efficiency gain opportunity

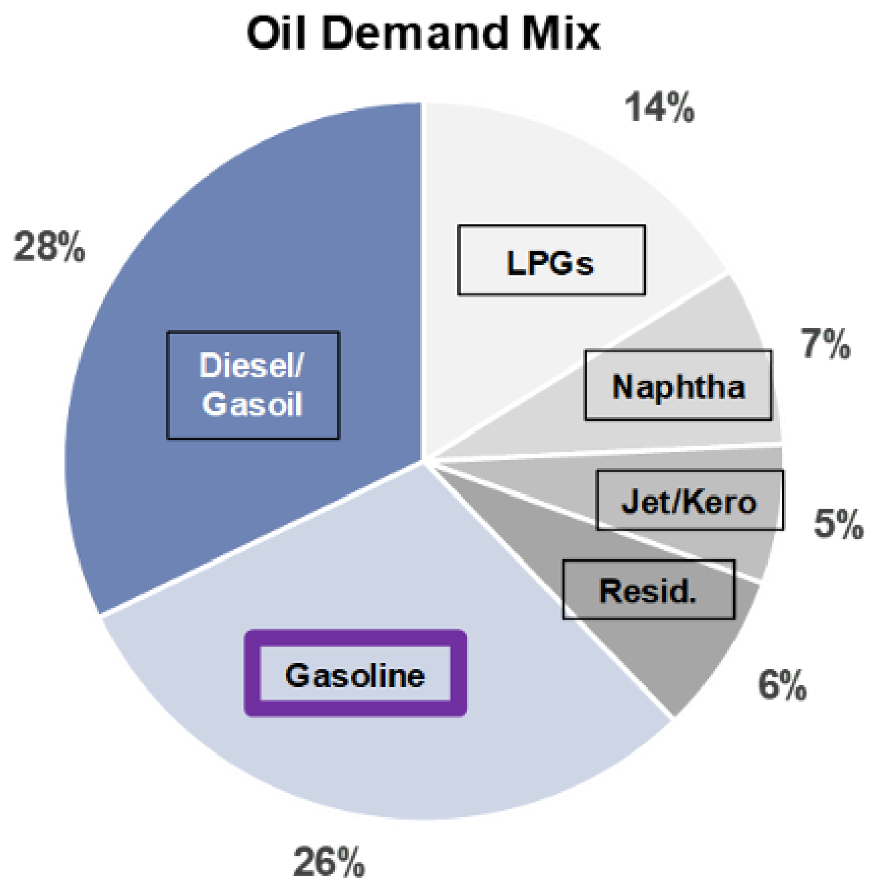
Source: Veriten.

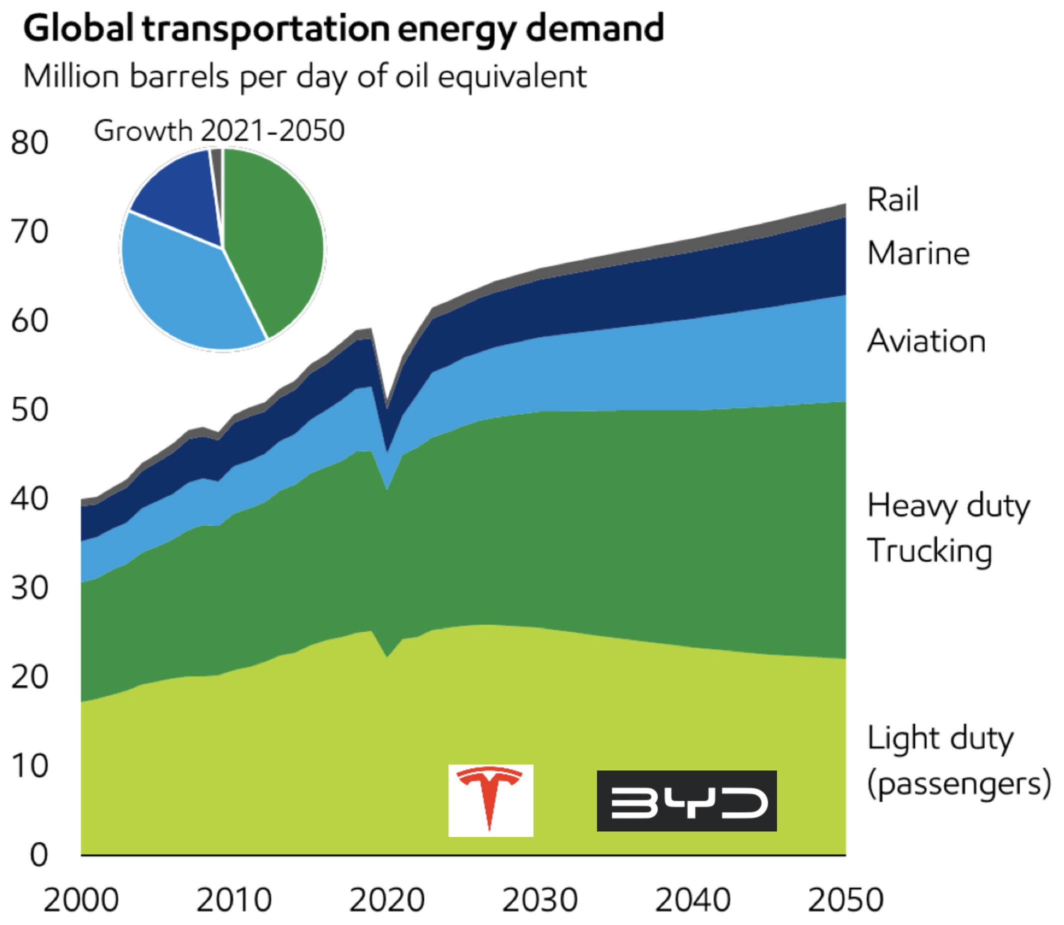
Consensus View: Flat-to-Falling Oil Demand



Source: Resources For The Future.

Demand For Oil Is Not Limited To Consumer EVs

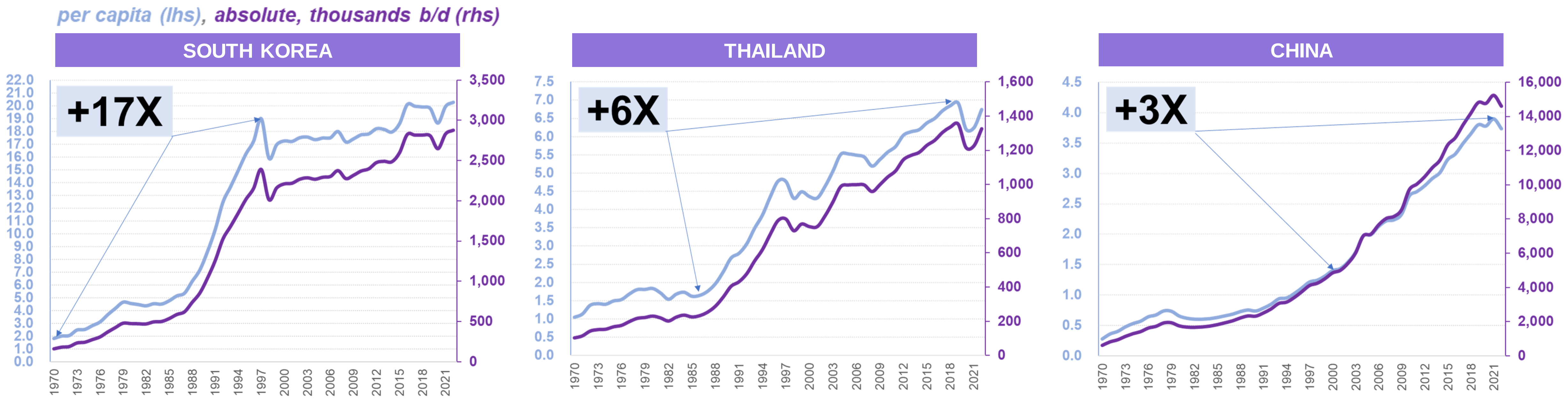




Source: IEA, ExxonMobil, Veriten.

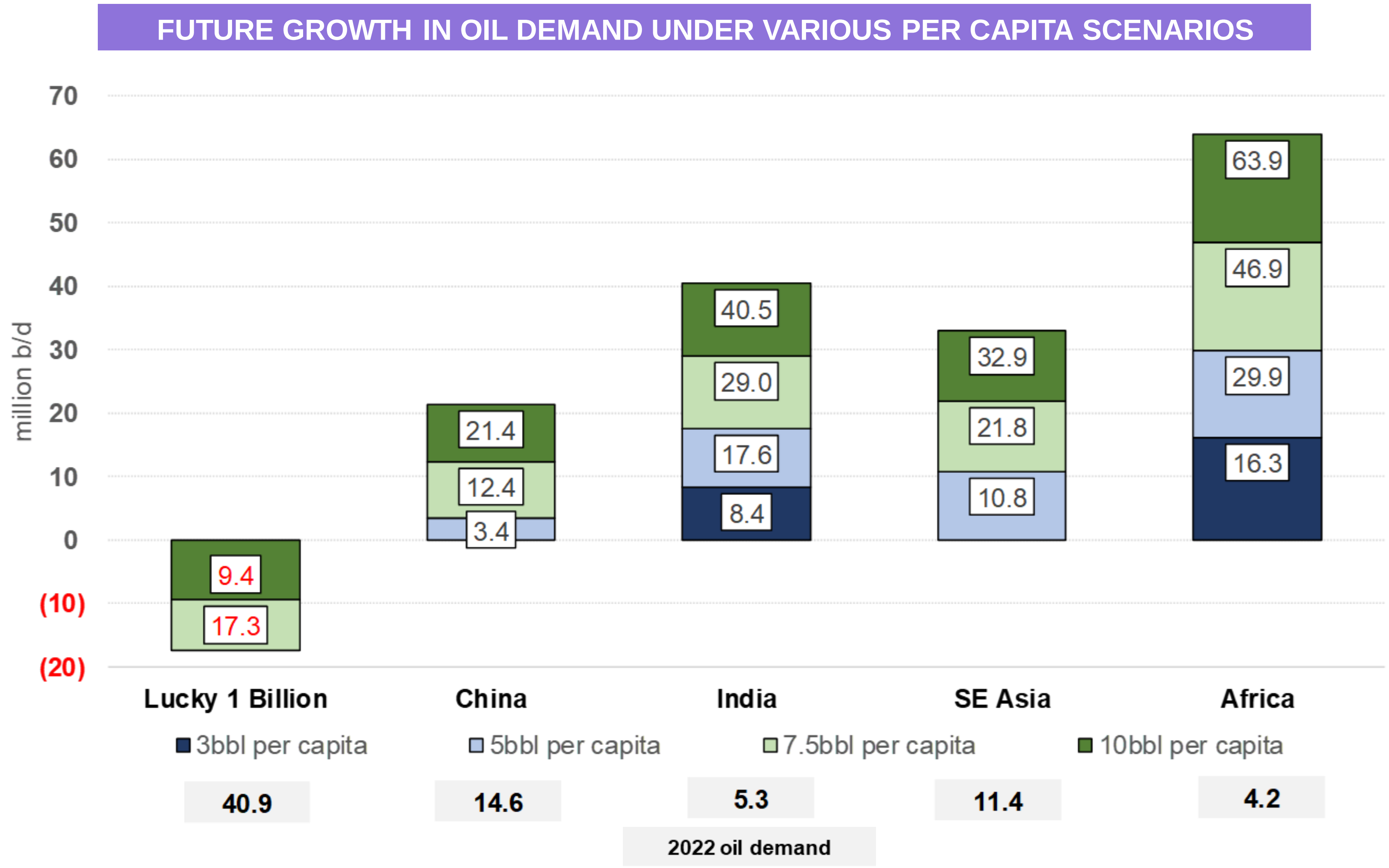
Moving Up The Income And Oil Demand S-Curve

	Oil Demand (mn b/d)	Oil Demand per Capita
The Lucky 1 Billion People *(United States, Western Europe, Canada, Japan, Australia, New Zealand)*	41	13.3
The Other 7 Billion People	**59**	**3.2**



Source: EI Statistical Review of World Energy, Our World In Data, Veriten.

Total Addressable Market For Oil (Energy) Is Massive



Source: EI Statistical Review of World Energy, IEA, Our World In Data, Veriten.

Geopolitics: Avoiding China’s Oil Import Path

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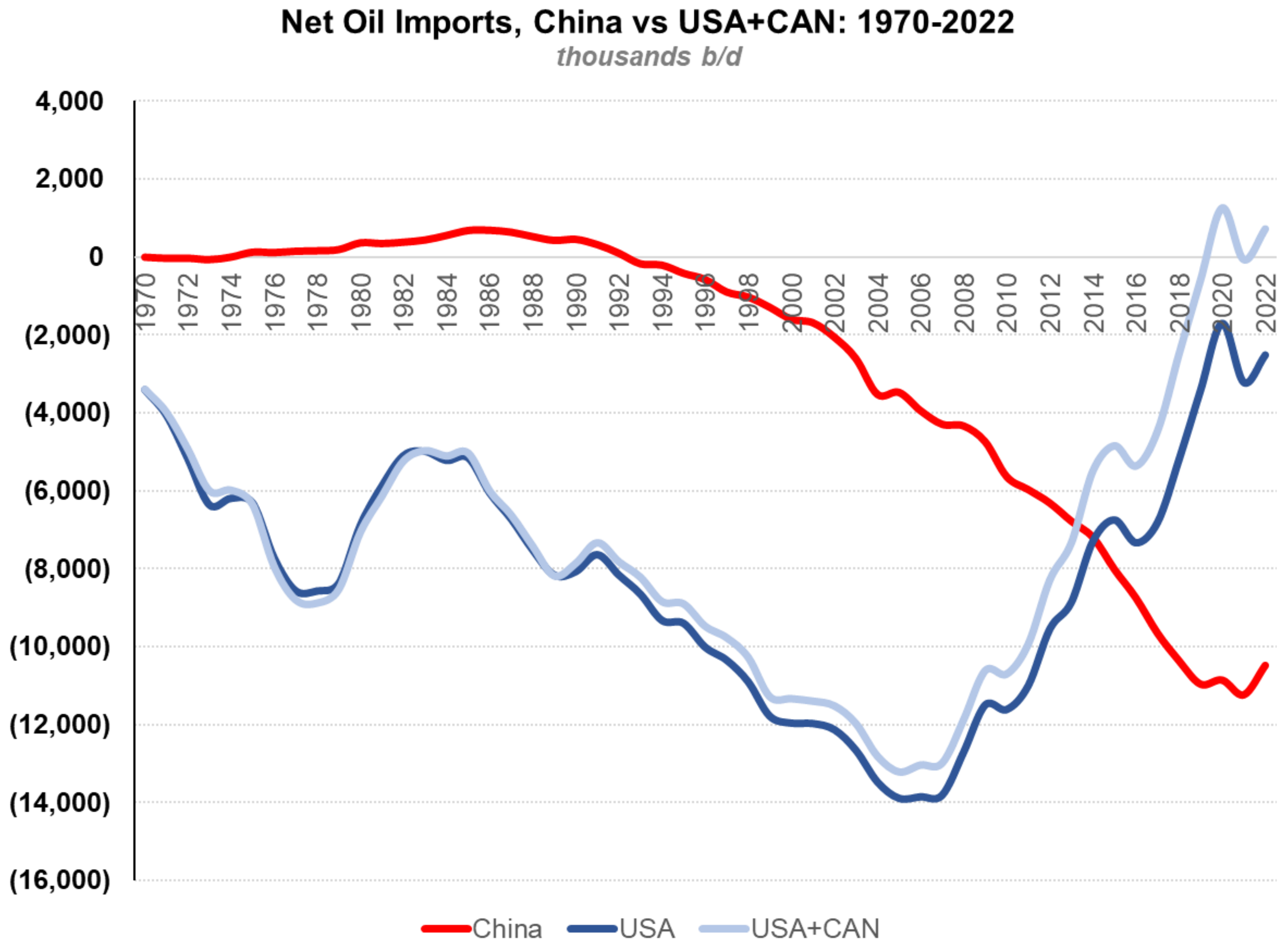
Availability + geopolitics drive energy choices

Key goal: Avoid energy import dependence

New energies are inevitably domestic



Source: EI Statistical Review of World Energy, Veriten.

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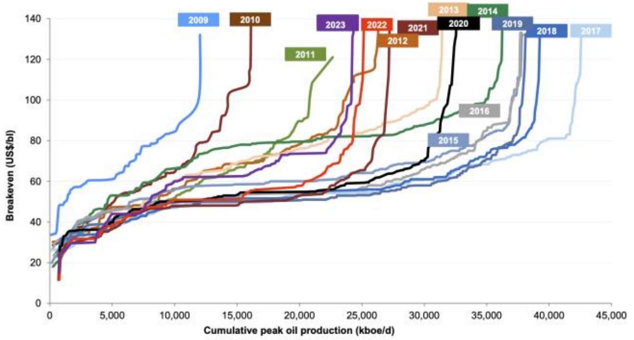
Super Vol Now...Super-Cycle Coming

1



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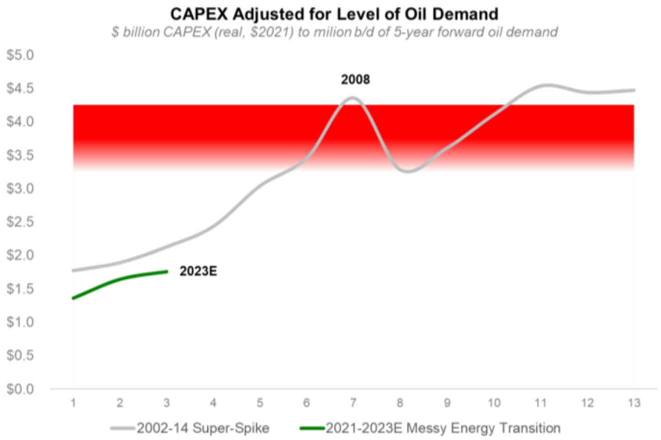

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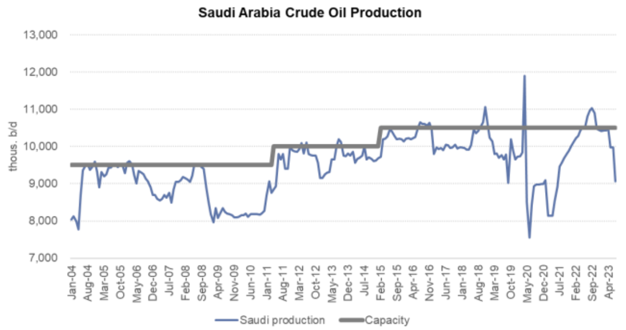


(1) Oil cost curve steepening; (2) CAPEX remains close to trough levels; (3) Deliverable OPEC spare capacity is limited. HOWEVER, long-dated oil range-bound thus far.

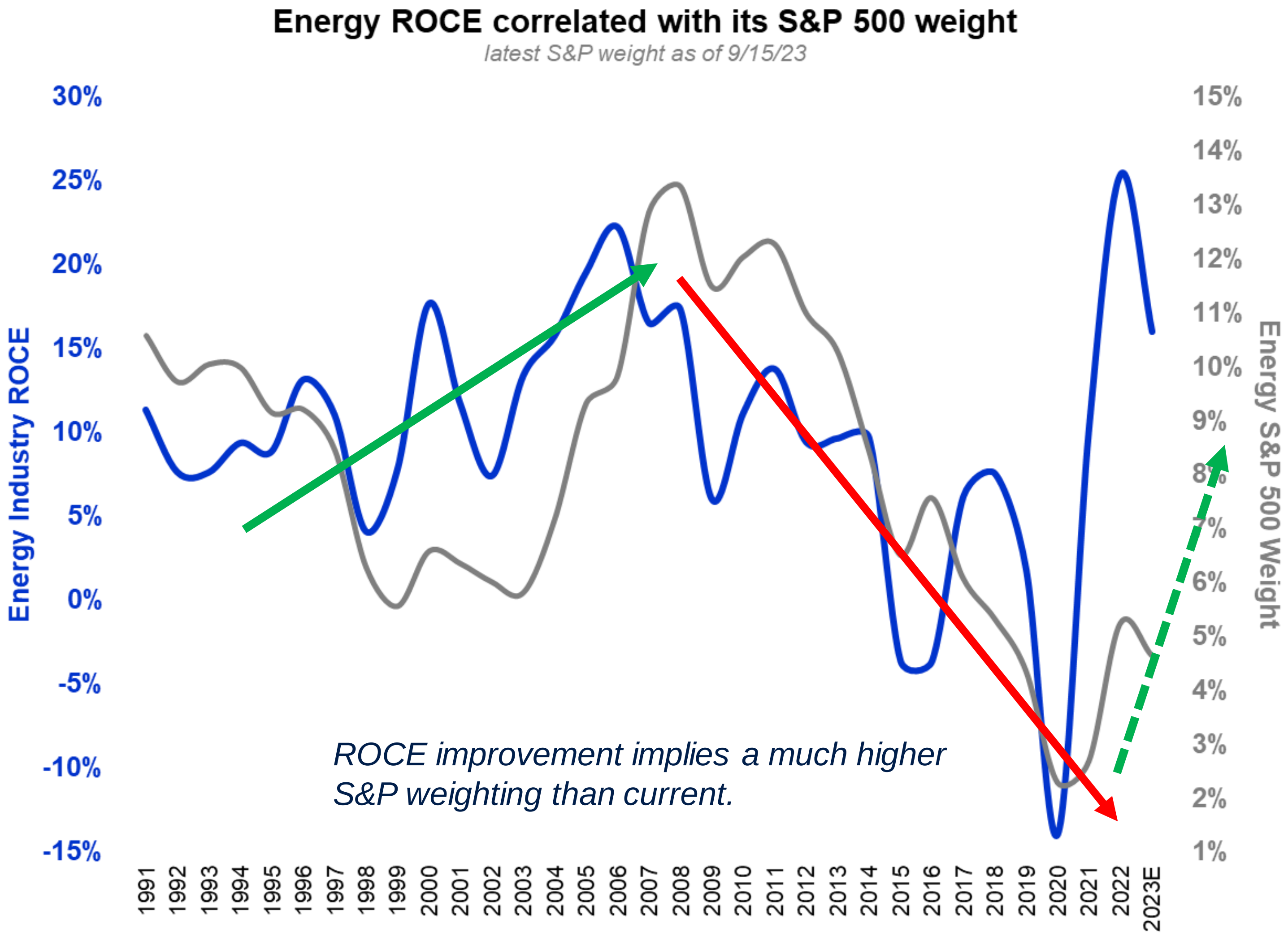
Source: Bloomberg, Goldman Sachs Research, S&P CapitalIQ, IEA, Veriten.

Long-Term ROCE Cycle Drives Capital Flows

(1) ROCE recovery well in excess of S&P weight

(2) Investors question sustainability of upcycle

(3) Super Vol backdrop drives uncertainty



Source: Bloomberg, S&P CapitalIQ, Veriten.

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"Quadrilateral of Death": To Be Avoided

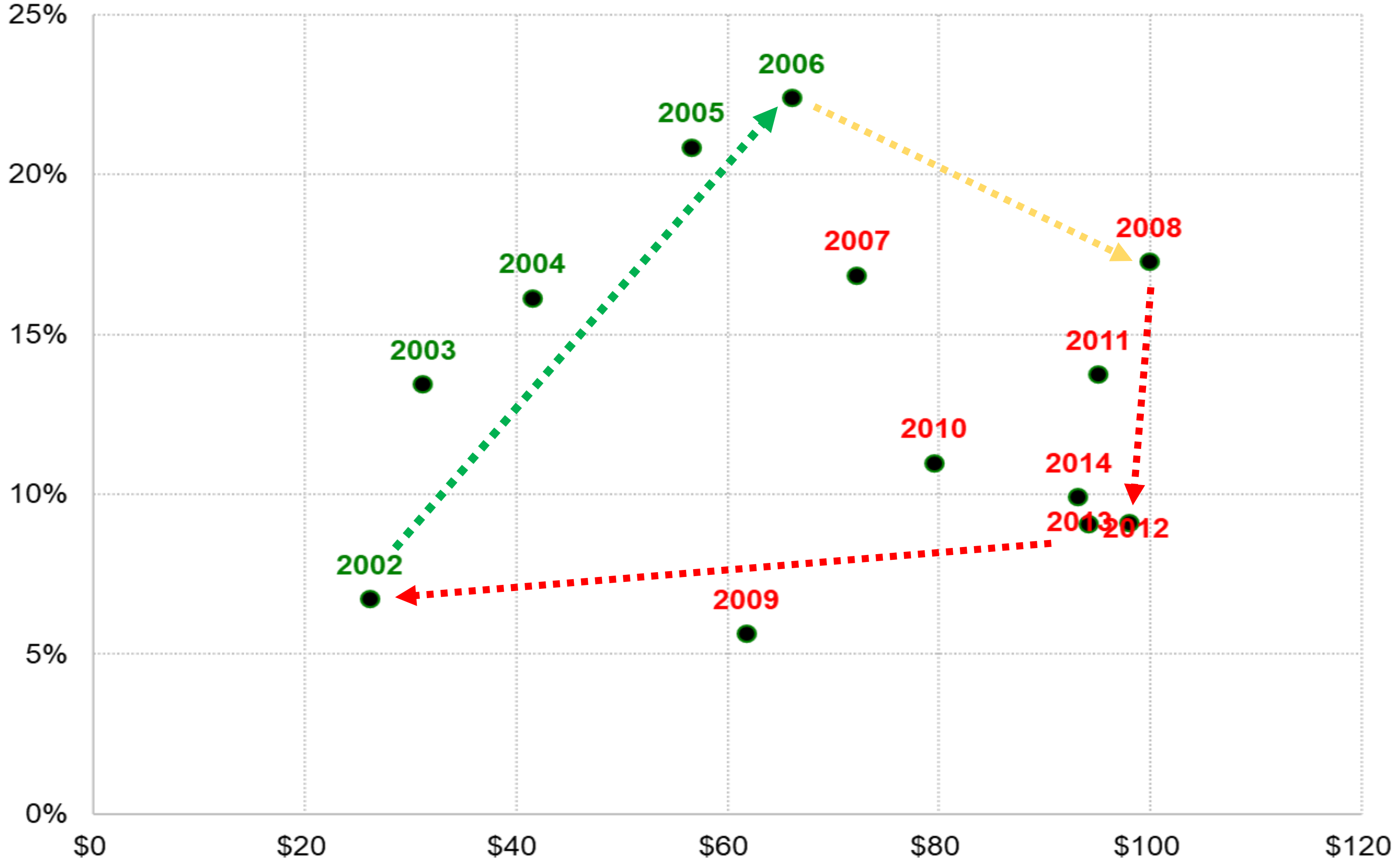
(1) 2002-2006: Oil price and ROCE both up sharply

(2) 2008 vs 2006: Oil +$35, ROCE -5%

(3) 2012 vs 2002: Oil up 4X, ROCE flat!!!

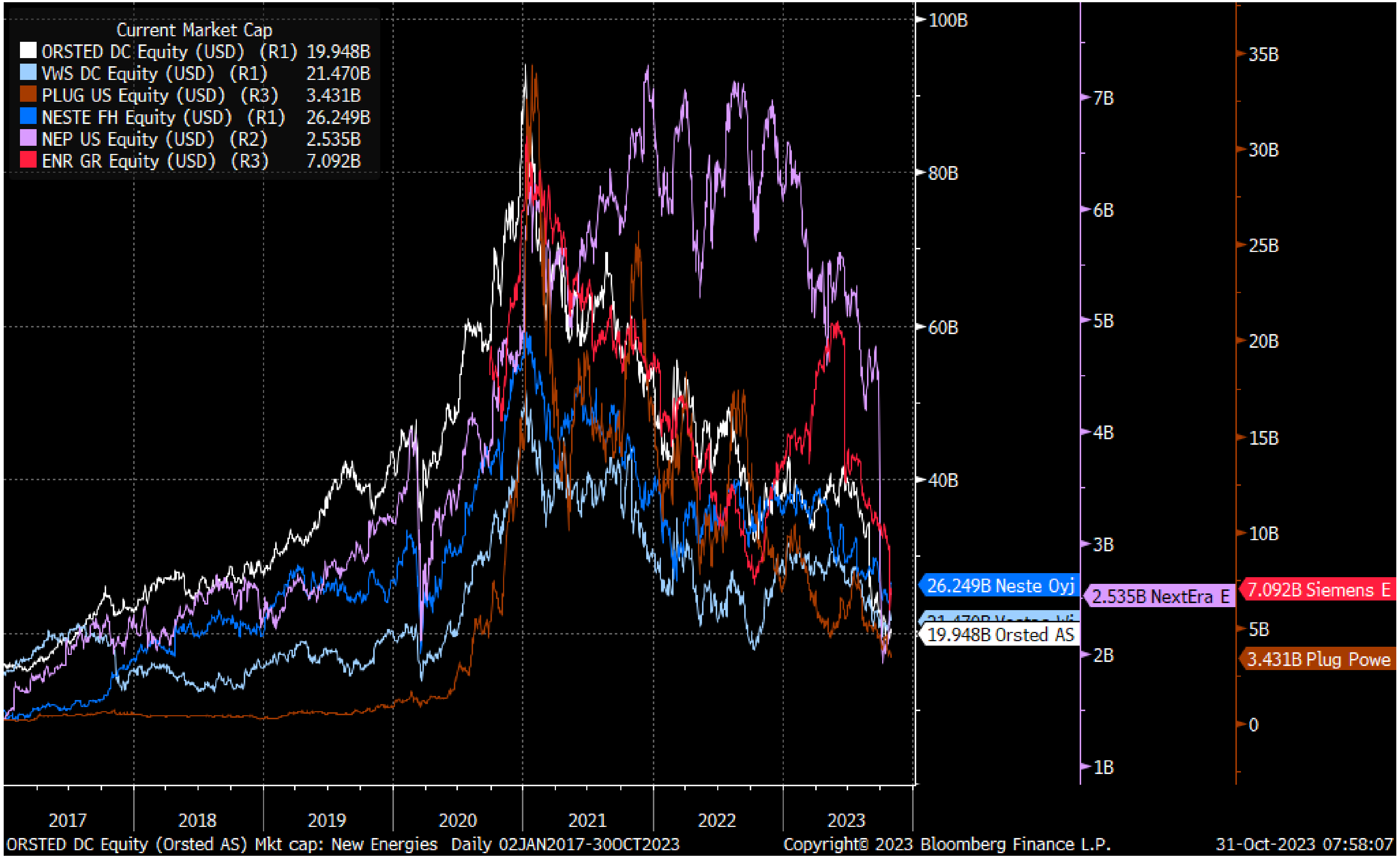
ROCE vs WTI Oil Price: 2002-2014

Industry median ROCE (y), WTI ($/bbl, nominal, x)



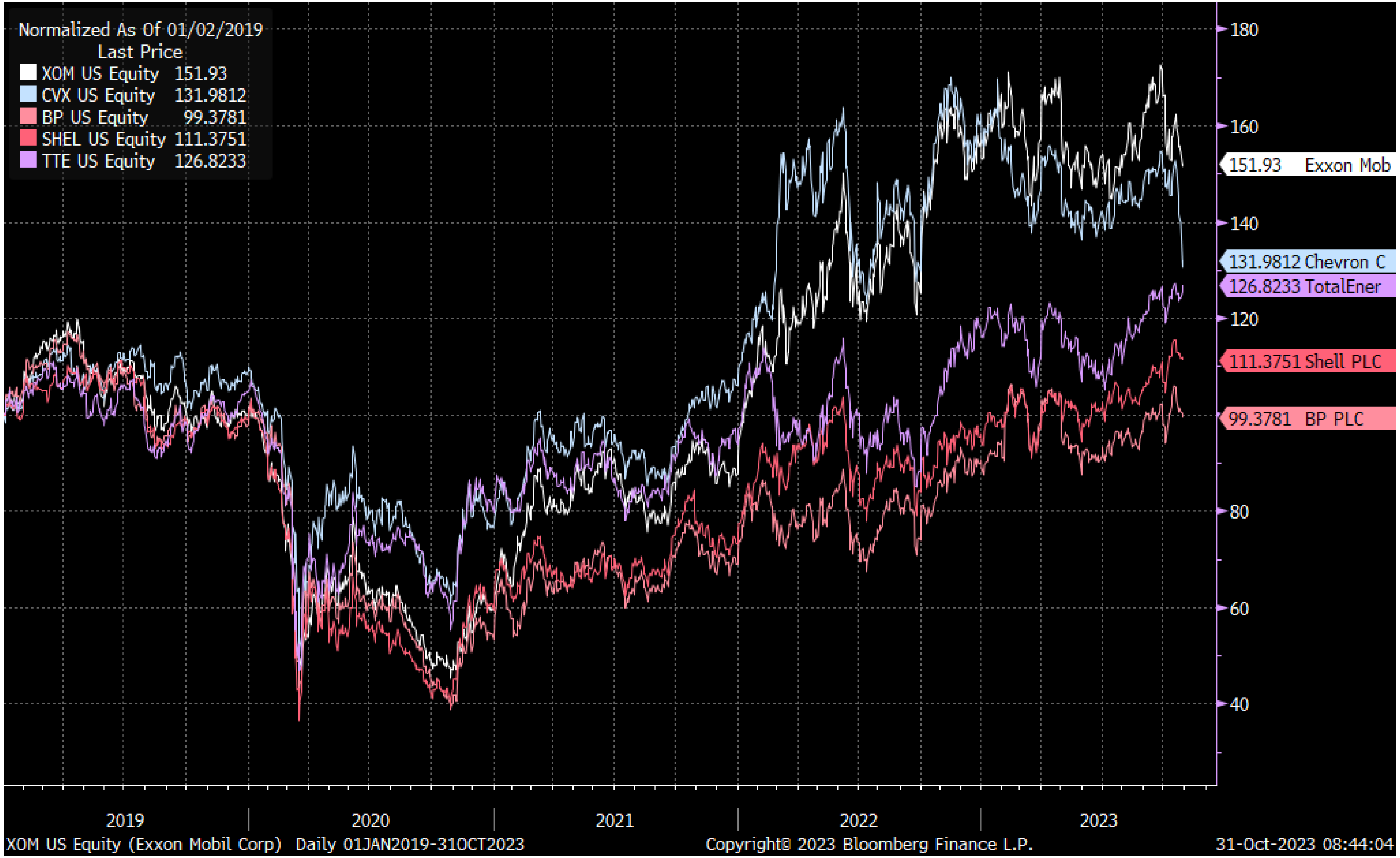
Source: Bloomberg, S&P CapitalIQ, Veriten.

Leading New Energies Equities Collapsing



Source: Bloomberg.

US Super Majors Outperforming Europeans



Source: Bloomberg.

Capital Allocation Uncertainty

- **TRANSITION:** Long-term oil demand uncertainty
- **RECESSION:** Near-term GDP concerns in China, EU, USA
- **COMMODITY:** Super Vol vs super-cycle
- **CAPITAL MARKETS:** "Don't waste my money, this time!" leading to no growth, dividends/stock buyback focus
- **ESG:** Glasgow Financial Alliance for Net Zero is ***biggest threat*** to healthy energy markets and funding access
- **M&A:** Survive via size, scale, and extending asset duration

Let's Fast Forward 10 Years

1. **Hydrocarbon demand** has grown (including coal!) as developing countries place a premium on energy security and economic growth

2. Oil and natural gas are sold on a certified, methane-free basis. **Scope 1 oil and natural gas emissions** are on-track to be eliminated

3. **Reduced U.S. oil and gas growth opportunities** but increased non-North American activity / investment

4. **Energy always surprises in new directions** and the intensity with which the world is pursuing new alternatives almost **ensures hard to predict technological breakthroughs**

5. **Transition mineral extraction** gets cleaner but is a bottleneck and costs matter to consumers (EVs showing signs of market share plateau)

6. Power demand growth and changing mix drive **resilience and cost issues**. New solar & wind construction required to have a storage solution

Energy companies with flexibility, scale & strong leadership will thrive

7. **New nuclear technologies** make first deployments (including in industrial applications), setting up future meaningful increased nuclear contribution to the energy mix

8. **Hydrogen** (and derivatives) as a super-fuel is still many years away

9. Significant improvements are made in **circular economy applications** - we get much better at using waste streams to generate energy while decarbonizing

10. **The IRA and European subsidy programs** spawn new technologies but create unintended consequences, leading to overproduction of unnecessary assets

11. **Structurally higher energy costs** for consumers is a drag on developed world economic growth

12. **Countries and regions with good economic and energy policy choices will thrive**, namely India and the Middle East