Allocating Capital In The Energy Transition
Federal Reserve Bank of Dallas
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Veriten Introduction

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

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

Future of Energy

Strategy & Ideas
- In-depth advisory and consulting services for our thought partners and our investors
- Offer unique solutions to complex problems leveraging Veriten ecosystem
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™ has been forecast many times over many decades.
Energy: A Hierarchy of Needs

Clean Air, Clean Water, Biodiversity, Low Carbon

Affordable, Secure

Availability (24/7/365)

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

The Lucky 1 Billion People
(United States, Western Europe, Canada, Japan, Australia, New Zealand)

The Other 7 Billion People

<table>
<thead>
<tr>
<th>Source: EI Statistical Review of World Energy, Our World In Data, Veriten.</th>
<th>Oil Demand (mn b/d)</th>
<th>Oil Demand per Capita</th>
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<tbody>
<tr>
<td></td>
<td>41</td>
<td>13.3</td>
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<td>59</td>
<td>3.2</td>
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The Lucky 1 Billion People:

- Oil Demand (mn b/d): 41
- Oil Demand per Capita: 13.3

The Other 7 Billion People:

- Oil Demand (mn b/d): 59
- Oil Demand per Capita: 3.2
Total Addressable Market For Oil (Energy) Is Massive

Future Growth in Oil Demand Under Various Per Capita Scenarios

- **Lucky 1 Billion**
  - 3 bbl per capita: 9.4 million b/d
  - 5 bbl per capita: 17.3 million b/d
  - Total: 26.7 million b/d

- **China**
  - 3 bbl per capita: 21.4 million b/d
  - 5 bbl per capita: 12.4 million b/d
  - 7.5 bbl per capita: 17.6 million b/d
  - 10 bbl per capita: 8.4 million b/d
  - Total: 59.9 million b/d

- **India**
  - 3 bbl per capita: 40.5 million b/d
  - 5 bbl per capita: 29.0 million b/d
  - 7.5 bbl per capita: 17.6 million b/d
  - 10 bbl per capita: 8.4 million b/d
  - Total: 95.5 million b/d

- **SE Asia**
  - 3 bbl per capita: 32.9 million b/d
  - 5 bbl per capita: 21.8 million b/d
  - 7.5 bbl per capita: 10.8 million b/d
  - 10 bbl per capita: 29.9 million b/d
  - Total: 95.4 million b/d

- **Africa**
  - 3 bbl per capita: 63.9 million b/d
  - 5 bbl per capita: 46.9 million b/d
  - 7.5 bbl per capita: 29.9 million b/d
  - 10 bbl per capita: 16.3 million b/d
  - Total: 156.0 million b/d

Source: E1 Statistical Review of World Energy, IEA, Our World In Data, Veriten.
Geopolitics: Avoiding China’s Oil Import Path

Availability + geopolitics drive energy choices

Key goal: Avoid energy import dependence

New energies are inevitably domestic

Net Oil Imports, China vs USA+CAN: 1970-2022

Super Vol Now...Super-Cycle Coming

(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.
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.
“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!!!

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.

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.

Energy companies with flexibility, scale & strong leadership will thrive.