



# Carbon Neutrality, Implications on Future Policies, and Strategies of Hydrocarbons

World Bank Energy Transitions Dialogue in MENA

# Carbon Neutrality, Implications on Policies and Strategies of Hydrocarbons

- Myth-busting Hydrocarbons outlooks
- Races reshaping key players' strategies, positioning in energy transition

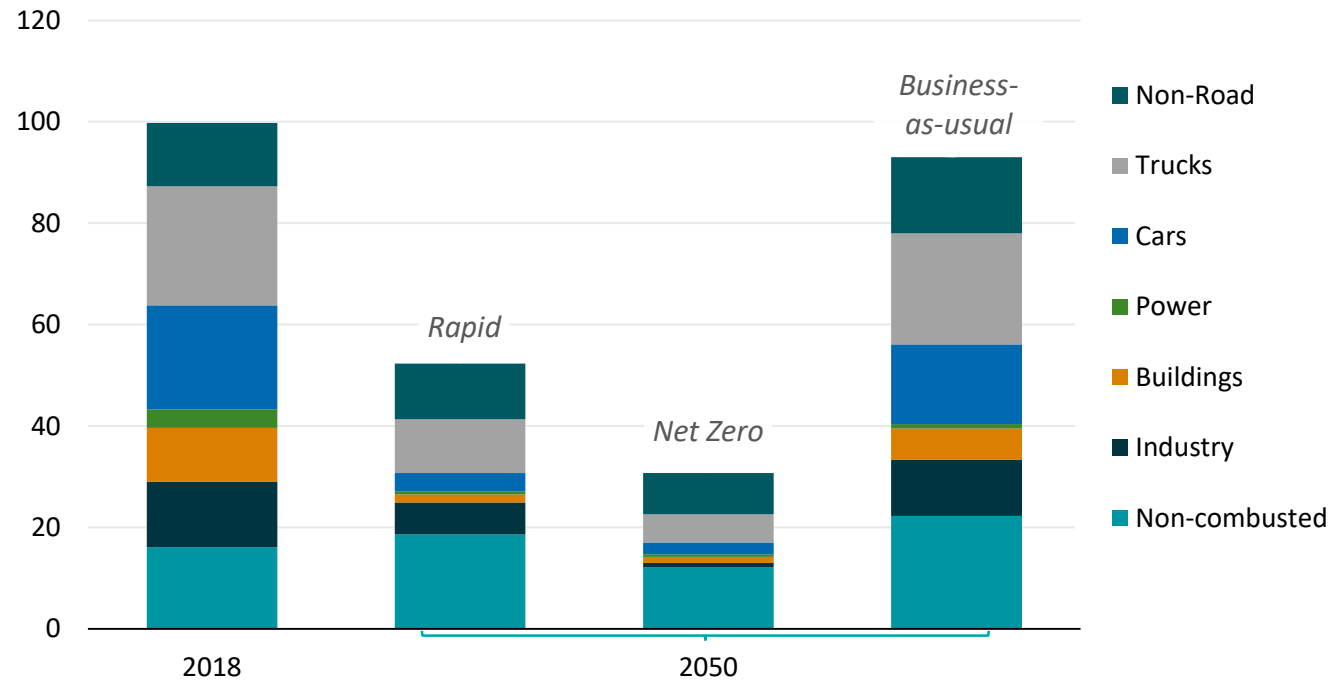
# Myth-busting Hydrocarbons Outlooks

## Myth #1: Demand for oil and gas can only peak and decline

- Development of incremental demand (e.g. petrochemicals, blue hydrogen and ammonia) could lead to an undulating plateau – policies, carbon prices/taxes?

Liquid Fuels Demand by Sector

Million barrels per day



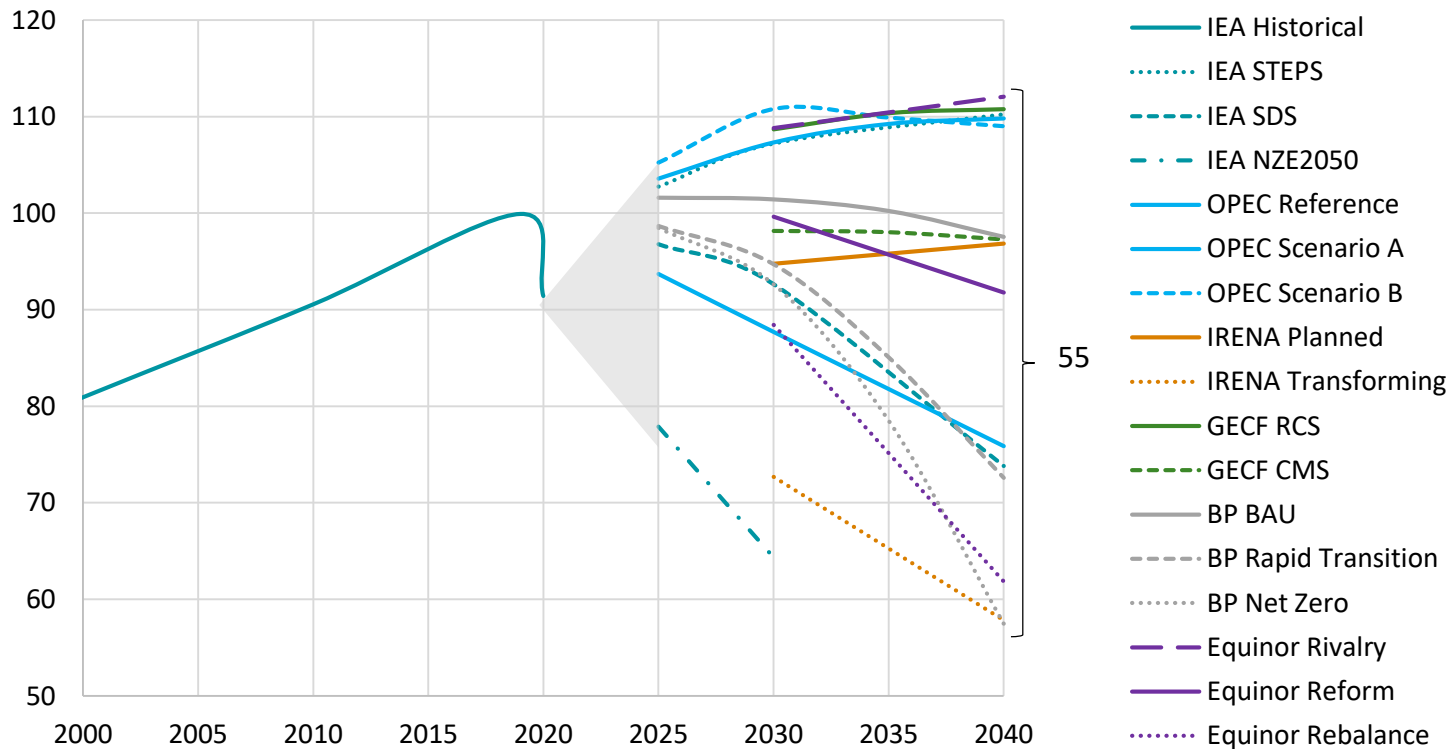
Source: BP 2020 Energy Outlook, IEF

# Myth-busting Hydrocarbons Outlooks

## Myth #1: Demand for oil and gas can only peak and decline

### Liquids Demand Scenarios Through 2040

Million barrels of oil equivalent per day



Source: IEF, IEA, OPEC, IRENA, GECF, BP, Equinor

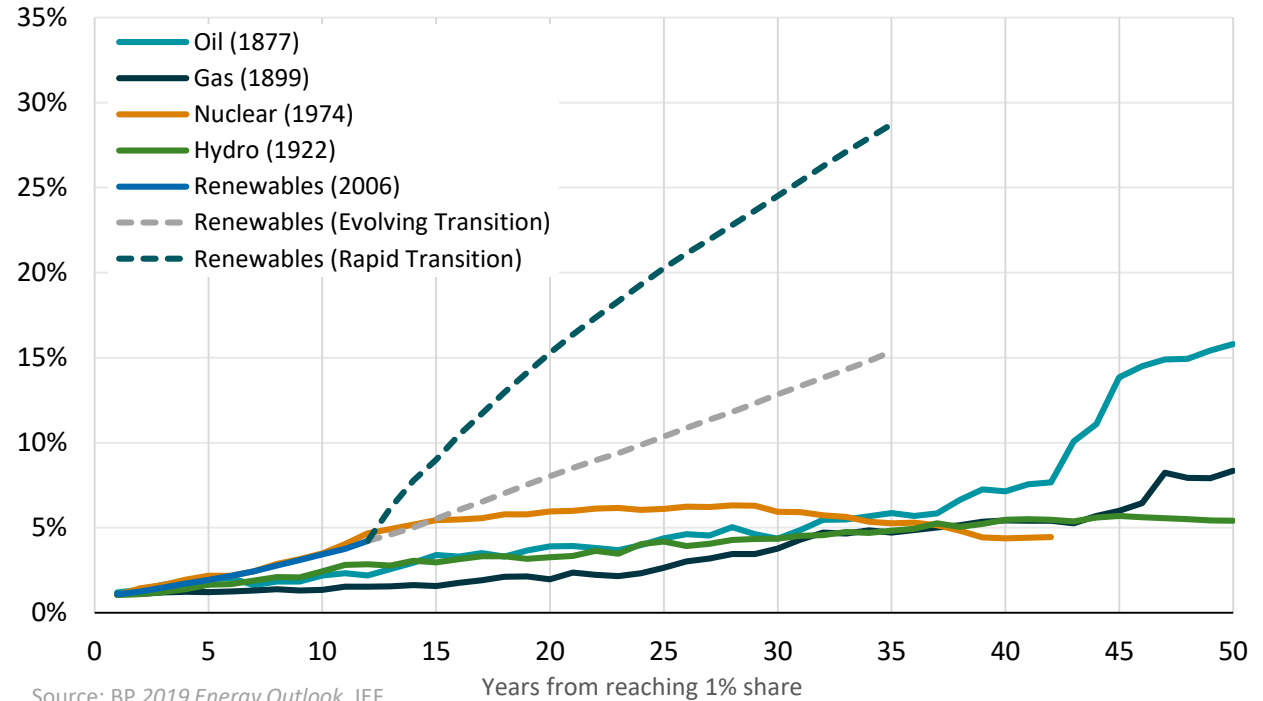
# Myth-busting Hydrocarbons Outlooks

## Myth #2: Technology break-through can lead to net-zero in 3 decades

- Historically, only two technologies (nuclear, RE) reached 5% of world energy in less than 15 years

Speed of Penetration of New Fuels in Global Energy System

Share of world energy

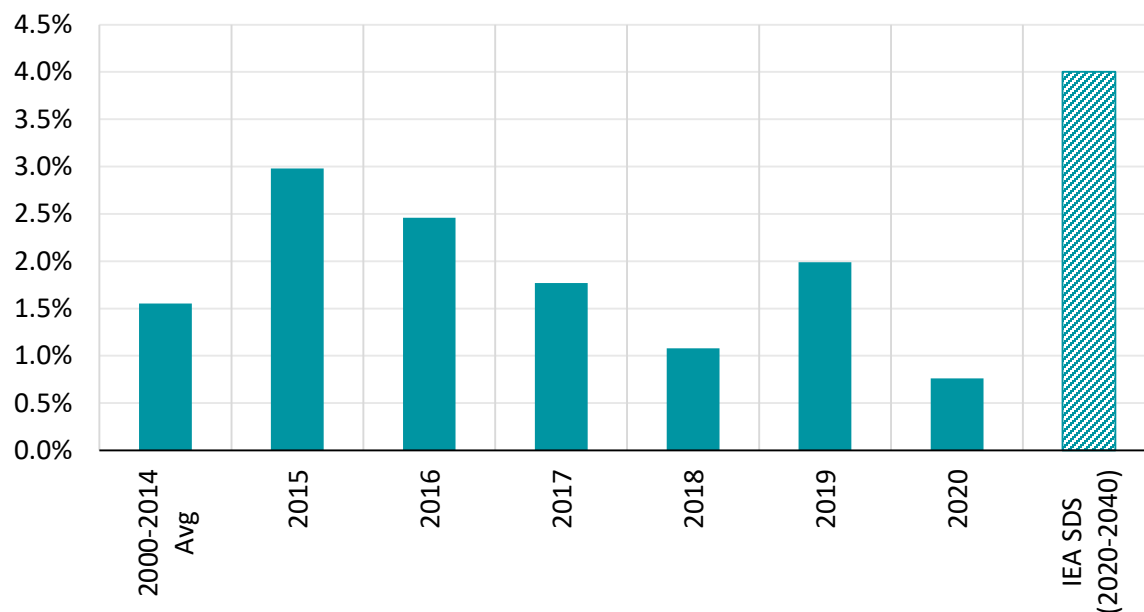


# Myth-busting Hydrocarbons Outlooks

## Myth #2: Technology break-through can lead to net-zero in 3 decades

- Energy efficiency gains contribute 40% of the reduction in energy-related GHG emissions through 2040 in IEA's Sustainable Development Scenario (SDS)
- SDS assumes energy intensity improvement will double vs. past two decades

Annual Average Change in Primary Energy Intensity Improvement



Source: IEA Energy Efficiency 2020, IEF

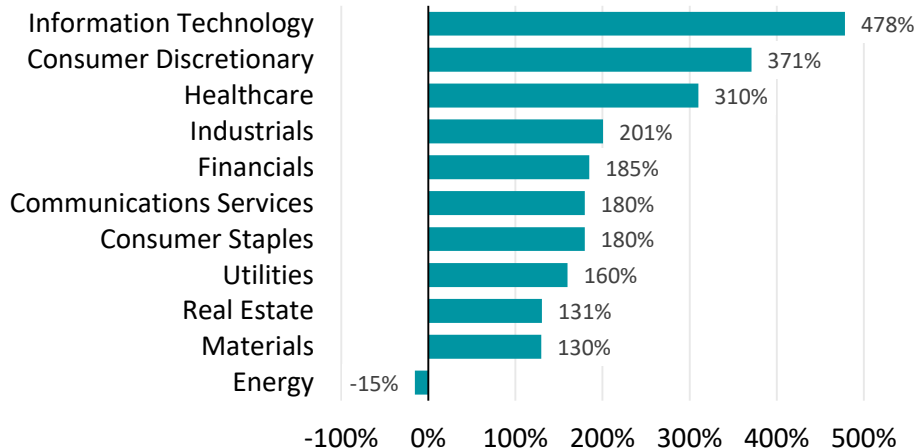
# Myth-busting Hydrocarbons Outlooks

## Myth #3: Investors are abandoning the sector because of ESG risks

- Energy remains preferred industry in infrastructure
- Sector hit by 3 crises in one decade, delivering lower returns to shareholders

### S&P 500 Sector Returns

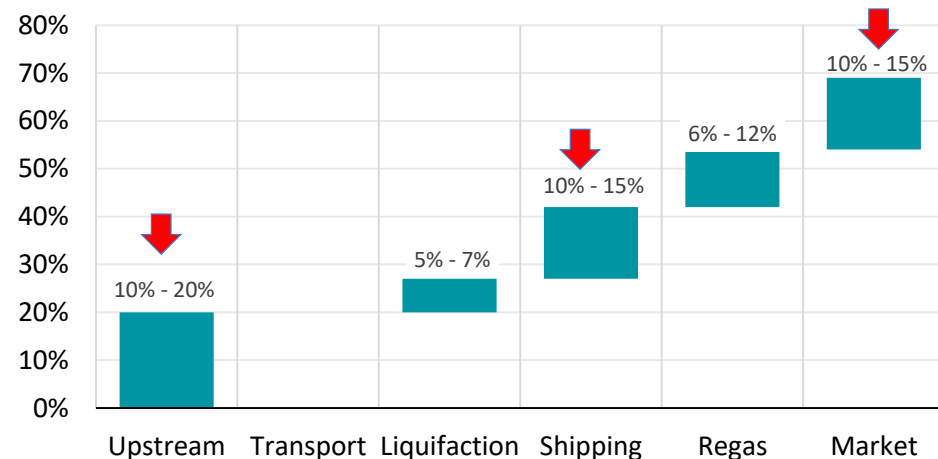
10 Year Total Returns (%) March 1, 2021 - March 1, 2011



Source: IEF, Bloomberg

### Gas Value Chain Options and Typical Returns

Returns hurdle rate of 15% leads to integrated value chain plays



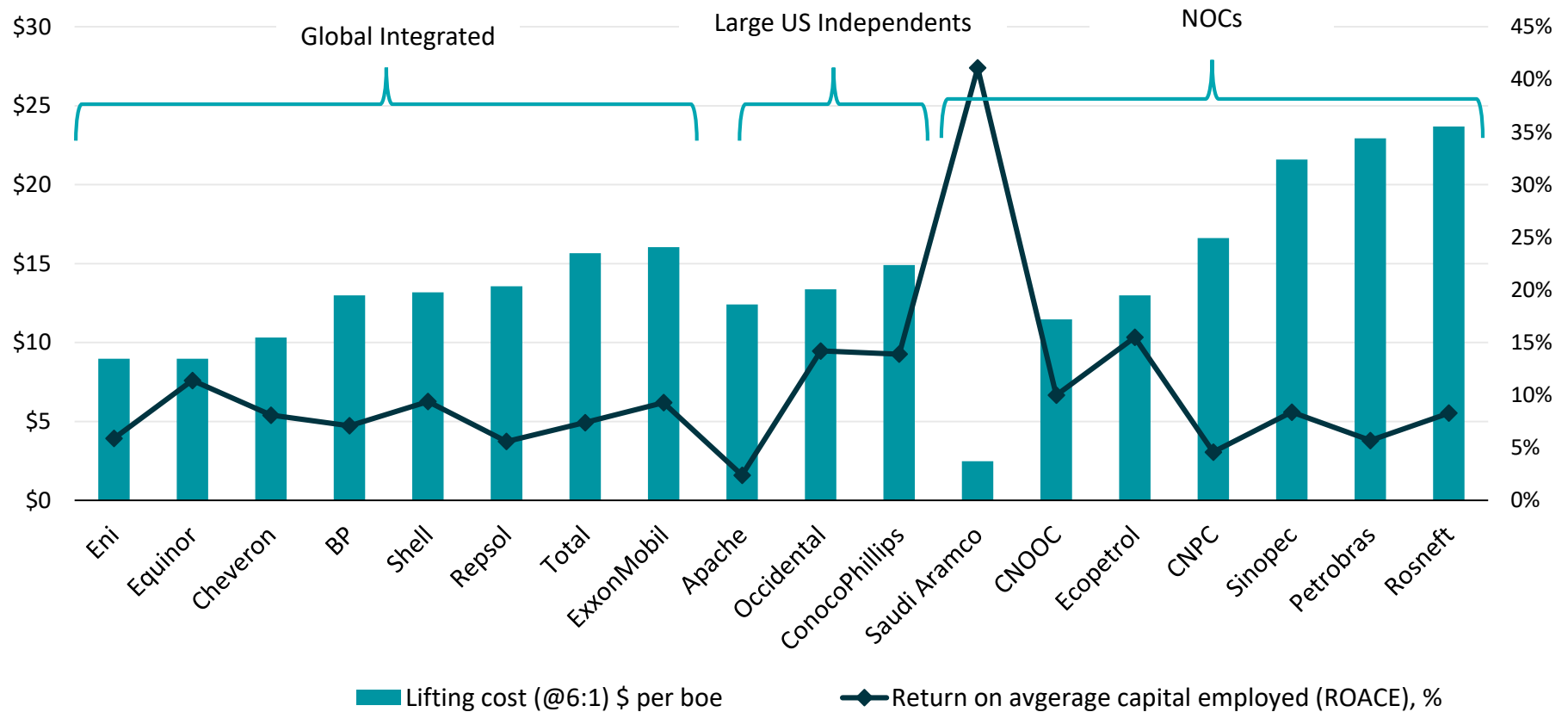
Source: IEF

# Race Reshaping Players' Strategies

## Costs and return on capital

### Lifting Costs (2018) and Returns

Lifting cost (@6:1) \$ per boe | ROACE %



Source: IHS Markit, IEF

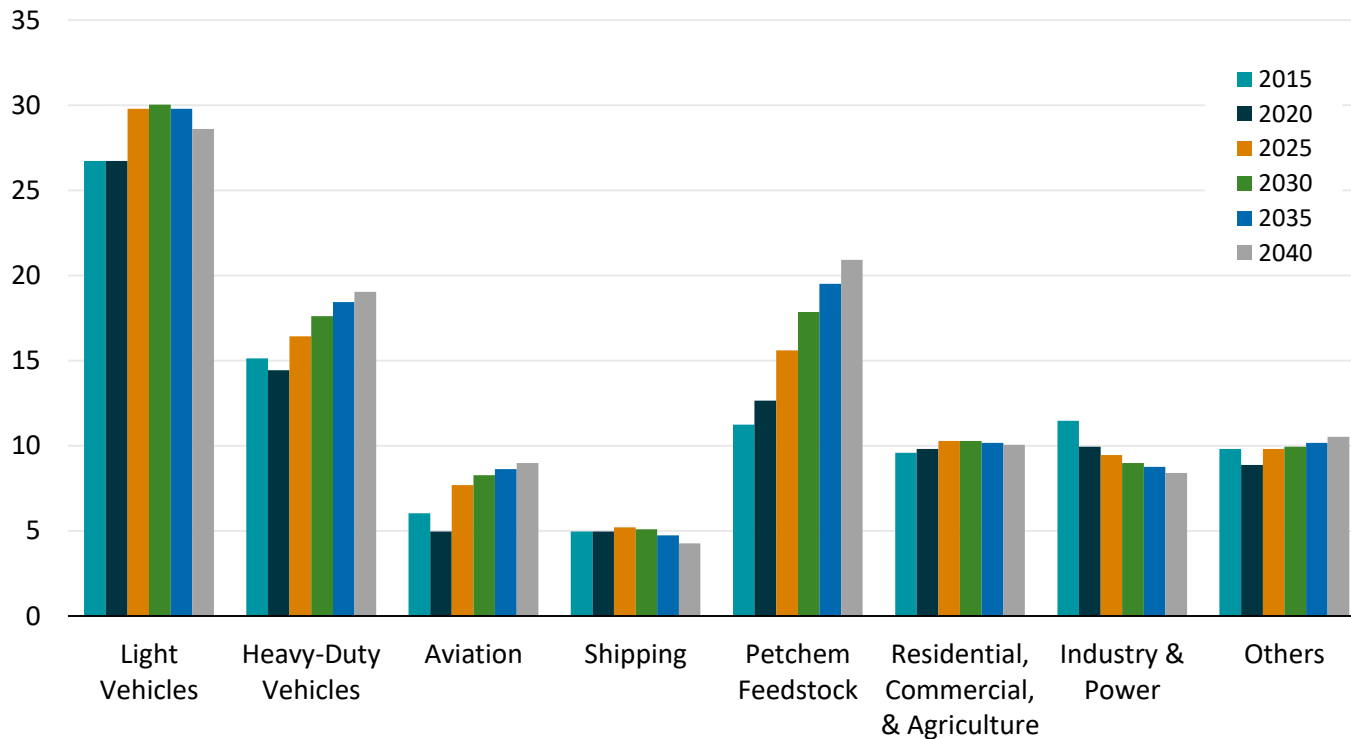


# Race Reshaping Players' Strategies

## Integration and efficiency

### Global Liquids Demand By Sector

Million barrels per day



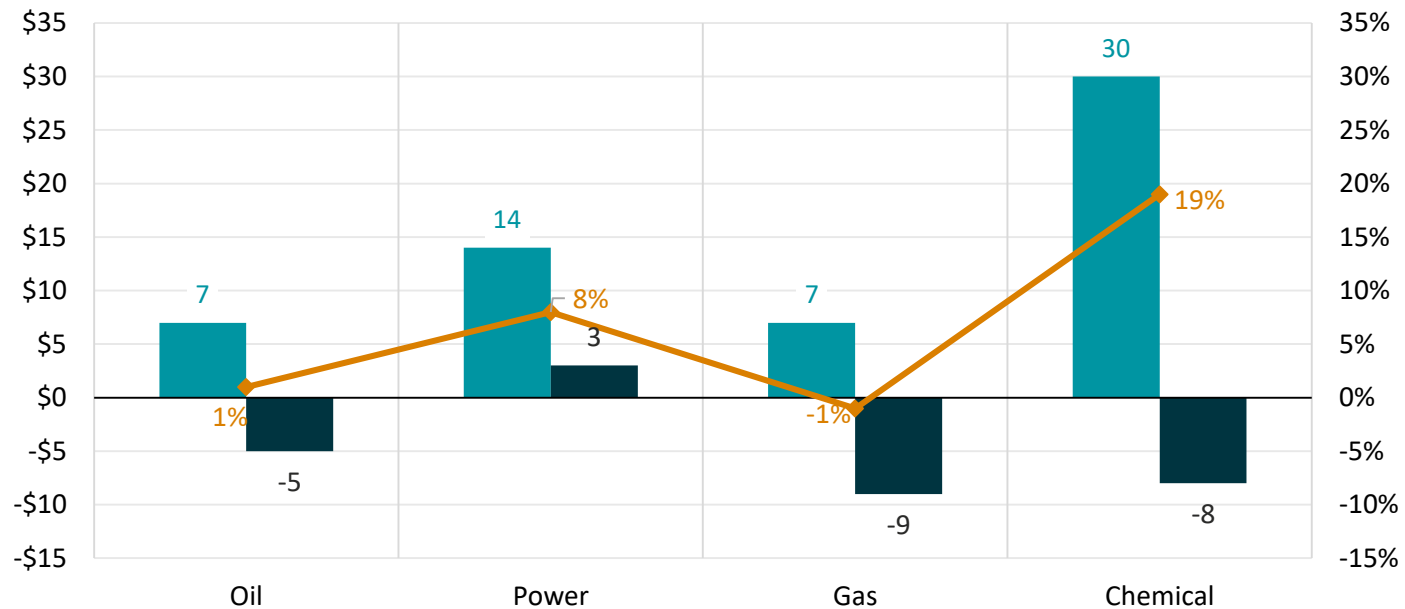
Source: Wood Mackenzie *Macro Oils Long Term Outlook H1 2020*, IEF

# Race Reshaping Players' Strategies

## Integration and efficiency

5 Year Outlook: Y-Y Change in Investments By Sector in MENA

Billion USD



Source: APICORP, IEF

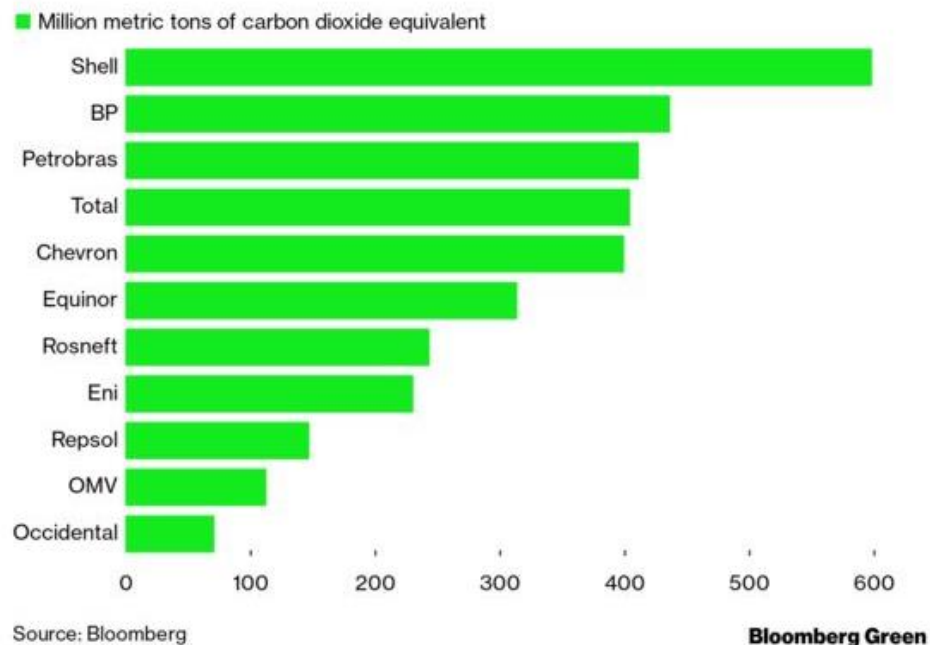
Planned Committed % Total Change

# Race Reshaping Players' Strategies

## Digitalization and Technology

- Future constrained by Vaclav Smil's paradox (in search for lower energy/power density)
- All technologies needed, in addition to efficiency spurred by digitalization (production, consumption and trade)

Scope 3 emissions make up 90% of most oil companies' total emissions



# Race Reshaping Players' Strategies

## Industry

- De-integration upstream downstream, spin-offs, M&As, consolidations
- Service companies, squeezed margins, technology offering key
- Do more with less, capital efficiency, return value to shareholders (includ. Gov)

## Governments

- Policy intervention through tax breaks, price signals, funding incentives
- Government-led investments but interdisciplinary private sector key
- Local content drive: focus on technology services, associated manufacturing
- Visibility on carbon pricing, taxation, cross-border
- Support targeted financing with optimal risk/returns to accelerate transition

## Investors

- “Death valley” still an issue for financing innovation
- Industry involvement key in selecting applications (CCUS/EOR, Hydrogen, storage)



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