Navigating Dominant Narratives and Data Accuracy: Implications for Energy Security

About This Brief

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Introduction

Understanding the nuanced interplay between narratives and market expectations within the energy sector is imperative for economists and policymakers alike. These narratives, often rooted in data-driven analyses, wield significant influence over market dynamics, impacting commodity pricing and investment trends. Decision-makers in both the public and private spheres, however, must consider the fundamental differences between narratives based on their respective assumptions—and in particular, the weight they give to policies, which can change from year to year and dramatically change market projections.

Delving into these narratives and discerning underlying sentiments are crucial for unlocking insights vital for ensuring energy security. By scrutinizing data-driven narratives, stakeholders can adeptly navigate the intricacies of the energy market, anticipating trends and making informed decisions. Moreover, the accuracy of data and forecast modeling is paramount in addressing both immediate and long-term energy challenges.

In the face of a volatile energy landscape, precision in data analysis provides the certainty necessary for effectively managing risks associated with energy security. This focus on narratives and data accuracy is central to shaping a resilient energy market landscape, particularly amid the ongoing environmental concerns driving the transition toward secure, affordable, and sustainable energy solutions.

Flaws in Forecasting—and their Consequences

In recent years, the energy market has faced a multitude of shocks triggered by the COVID-19 pandemic, the ensuing supply shortages, and the Russia-Ukraine conflict. Compounded by recession fears and economic slowdowns, alongside geopolitical factors such as the Red Sea crisis, these events have sown additional tensions and uncertainties within the market.

Amid these challenges, uncertainty has clouded fundamental dynamics notably since the pandemic. The Organization of the Petroleum Exporting Countries (OPEC) has sought to restore stability, especially on the supply side, through monitoring, forward-looking decisions, and improved messaging.[1] Research from the US Federal Reserve shows that OPEC's market projections and messaging stabilize crude oil prices by reducing volatility.[2]

However, divergent expectations between energy data organizations like OPEC and the IEA complicate navigating energy market uncertainties. In 2021, the IEA's report, "Net Zero

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by 2050: A Roadmap for the Global Energy Sector,” found that under stringent and effective net-zero emissions (NZE) scenario policies, clean energy deployment would surge, and fossil fuel demand could decrease by more than 25 percent by 2030 and 80 percent by 2050.[3] As such, it also stated , “As clean energy expands and fossil fuel demand declines in the NZE Scenario, there is no need for investment in new coal, oil and natural gas.”[4]

Since the report’s publication, the energy sector has experienced an upheaval, leading the IEA to continually revise its demand forecasts upward. Despite these revisions, data-driven projections have influenced investor decisions, contributing to supply shortages in the post-pandemic recovery phase and an uncertain, unbalanced market due to investment gaps. In 2023, Saudi Arabian energy minister, Prince Abdulaziz bin Salman al-Saud, emphasized the crucial need to address the investment shortfall caused by incorrect demand projections and warned: “Energy security is shackled by lack of investment due to flawed demand projections.” Eventually, the IEA acknowledged “the security of oil supply remains a pressing concern for governments across the globe.” [5]

In March 2024, in a letter to the IEA, US Sen. John Barrasso (R-WY) and Rep. Cathy McMorris Rodgers (R-WA) voiced their concern that the decision to pause the permitting process for US LNG exports was influenced by the IEA’s projections of future natural gas demand.[6] The letter highlighted concerns about the stark differences in those natural gas demand forecasts compared to projections from the US Energy Information Administration, OPEC, BP, and the Institute of Energy Economics, Japan. They pointed out the broad range of expected increases in natural gas demand, from 20 percent to 47 percent by 2050, contrasted sharply with the IEA’s projections, which range from a 40 percent decline to 4 percent growth. This discrepancy led to questions regarding the foundation of the IEA’s scenarios.[7]

Both long-term forecasts and short-term projections hold substantial influence over policy decisions and investment strategies. While long-term forecasts and scenarios provide insights into trends and developments over the next decade or two, short-term forecasts focusing on months or a year ahead can also have significant impacts.

For instance, in March 2022, the IEA’s short-term forecast indicating a potential loss of 3 million barrels per day (mb/d) of Russian crude and refined products from April 2022 had a notable effect.[8] This forecast prompted US President Biden to order the release of 1 mb/d until a total of 180 million barrels of the US Strategic Petroleum Reserve (SPR) in late March 2022.[9] This release schedule was truly historic, both in its magnitude and its rapid execution. Despite anticipations, Russian supplies didn’t drop as forecasted by the IEA, highlighting the complexity of energy markets and the challenges in predicting and responding to supply disruptions.

Despite short-term boosts, the IEA remains cautious about the economic outlook and its potential impact on demand. Growth is expected to continue being skewed towards non-OECD countries, with China’s dominance gradually diminishing. The IEA anticipates China’s demand growth to decelerate to 620,000 b/d from the substantial 1.7 mb/d increase observed in 2023.[10] In contrast, OPEC presents a more optimistic outlook for the global economy in 2024, forecasting a robust increase in global oil demand by 2.2 mb/d this year.[11]

Policy-Based vs. Classical Forecasting Models

While most data publishing agencies,

including the IEA, keep details of their forecasting methodologies undisclosed, their forecasts often differ significantly from other data-driven projections. This discrepancy arises from variations in assumptions, data collection methods, analysis, and interpretation, shaping shaping their market projections. These methodological disparities highlight the complexities and inherent uncertainties in predicting energy market trends.

According to the IEA, its medium- to long-term outlooks utilize a scenario approach that relies on the Global Energy and Climate (GEC) Model to examine future energy trends.[13] The GEC model constructs various scenarios based on a different set of underlying assumptions regarding the evolution of the energy system over time. These scenarios underscore the significance of government policies in shaping the future of the global energy system.[14] The IEA's forecasts, unlike other reputable market projections, lack a "reference" or "base case" scenario, which would typically provide a realistic view of the market that is based on economic factors, against which the deviations caused by policy-based projections can be measured.

The IEA methodology's emphasis on the impact of policies on future market fundamentals, alignment with net-zero emissions targets by 2050, and lack of a base-case scenario is a critical distinction from other energy organization's approaches. This approach could be beneficial for providing scenarios envisioning the future based on today's policies and measuring their implications on energy market fundamentals and energy security. However, policies change, influenced by geopolitical tensions and environmental concerns,

Table 1. IEA World Energy Outlook 2023

Scenario name	Description
Stated Policies Scenarios (STEPS)	Mirrors existing policy frameworks, analyzing energy-related policies on a sectoral and national level as of August 2023, alongside those in progress. Predicts an average global temperature rise of 2.5°C by 2100 with a 50 percent probability. Considers planned manufacturing capacities for clean energy technologies.
Announced Pledges Scenarios (APS)	Assumes the complete and punctual realization of all climate pledges made by governments and industries globally as of August 2023. Predicts a 1.7°C increase in average global temperature by 2100, with a 50 percent probability. Encompasses nationally determined contributions (NDCs), net-zero objectives, and targets for electricity access and clean cooking.
Net Zero Emissions by 2050 (NZE)	Outlines a trajectory for the global energy sector to attain net-zero CO_2 emissions by 2050 without counting on emissions reductions from other sectors. Ensures universal access to electricity and clean cooking by 2030. Targets net-zero emissions by mid-century, aiming to stabilize the temperature at 1.5°C above pre-industrial levels. Fully updated in 2023.

Source: IEA, World Energy Outlook, 2023

Table 2. OPEC World Oil Outlook 2023

Scenario name	Description
Reference Case	Assumes continuation of progress in energy policies that are technically and financially viable.
Advanced Technology (AT)	Outlines a technology-focused strategy to limit global temperature rise to below 2°C. Involves widespread implementation of carbon capture and direct air capture technologies, and investment in hydrogen networks and circular carbon economy principles.
Laissez-Faire	Offers an optimistic outlook, particularly for developing economies, with quicker return to higher economic growth. Policies gradually tighten but lack coordinated efforts to reduce future emissions. Both primary energy and oil demand remain higher compared to the Reference Case.

Source: OPEC, World Oil Outlook, 2023

“Policies change, influenced by geopolitical tensions and environmental concerns, making such forecasts prone to inaccuracies and a shaky basis for investment and market decisions.”

making such forecasts prone to inaccuracies and a shaky basis for investment and market decisions. The IEA and OPEC present distinct scenarios for forecasting energy trends and guiding policy decisions. IEA's WEO 2023 scenarios, like Stated Policies Scenario (STEPS) and Announced Pledges Scenario (APS), target net zero emissions and align with Paris Agreement goals, emphasizing rapid decarbonization and advanced technologies like Carbon Capture, Utilization, and Storage (CCUS) (See Table 1). Conversely, OPEC's WOO 2023 scenarios, including the Reference Case and Advance Technology (AT), encompass broader policies and market conditions. (See Table 2). While both organizations address climate change, IEA focuses more explicitly on net-zero targets, while OPEC emphasizes energy transition and affordable access. Understanding these variances is vital for navigating the energy transition and shaping future policies.

Acknowledging the dynamic challenges of balancing global supply and demand, environmental and net-zero policies have trended toward realism in the past three to four years. This trend intensified after the Ukraine-Russia conflict, due to the EU's reliance on Russian energy sources. The reality of shifting geopolitical influences on energy markets demonstrates that the narratives driving policymaking and investments should be based on classical forecasting and lead to policies that create resilience and preparedness for the future, not the other way around.

The Way Forward

In the evolving energy landscape, an emphasis on policy objectives and their impacts on the fundamentals might overshadow the real-time market dynamics and essential factors driving energy markets, potentially leaving us unprepared for future challenges. The criticality of factors such as population growth, economic expansion, technological progress, energy access, affordability, and demographic transitions cannot be understated. Specifically, the growing energy demand from artificial intelligence across various industries signifies an often-underestimated aspect that must be integrated into future energy demand forecasts.

The energy transition, marked by rapid growth in renewables, transportation electrification, AI and cloud computing, emphasizes the need for understanding evolving market dynamics. Neglecting these trends may lead to misaligned investments, risking energy security. Projections that consistently underestimate market fundamentals and demand threaten the reliability and affordability of energy supply.

Acknowledging the critical importance of data and forecast modeling accuracy is essential as stakeholders navigate the complexities of the energy landscape. Access to reliable data and modeling assumptions is particularly crucial as the energy system shifts to alternative sources that are heavily dependent on minerals with different ownership, production, processing, and distribution dynamics compared to traditional energy sources.

Improving data-based forecast modeling is therefore vital for informed, refined, and robust strategies that address current and future energy challenges, and support the pursuit of a resilient, sustainable, and energy secure future for all.

Endnotes

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