Energy Policy Research Foundation

United States Senate

Committee on the Budget

Hearing on

"Left Holding the Bag: The Cost of Oil Dependence in a Low-Carbon World"

March 29, 2023

Lucian Pugliaresi
President
Energy Policy Research Foundation
Washington, DC
epring.org

Chairman Whitehouse, Ranking Member Grassley and members of the Senate Budget Committee, I want to thank you for including me in this hearing on budget and financial risks from stranded assets that may occur during a transition to a low carbon future.

I am President of the Energy Policy Research Foundation, Inc. (EPRINC), a non-profit public policy research organization. EPRINC was founded in 1944 and studies energy economics and policy issues with special emphasis on oil, natural gas, and petroleum product markets. I have worked on a broad range of energy policy and related energy security issues for my entire career, both in and out of government, beginning with the 1973-74 Arab oil embargo. This included policy work at Departments of Interior, State, Energy and the EPA, as well as on the National Security Council staff under President Reagan. For the last seven years, EPRINC has undertaken a joint effort with our partners in Tokyo, the Institute for Energy Economics, Japan (IEEJ) to evaluate the potential of emerging Asian economies to make greater use of natural gas and LNG to support energy security and improved environmental outcomes.

Introduction

The North American oil and gas production platform is an instrument of national power and wealth creation that can deliver affordable, reliable, and secure energy that sustains our national economy. Today the United States is the world's largest oil and gas producer and a net exporter of both oil and gas to the world market. This production platform operates at a high level of efficiency and solves a wide range of complex technical and cost challenges starting with the exploration and production of oil and gas, its distribution to processing facilities and export markets, and the production of transportation fuels to American consumers and a wide range of essential products, including fertilizers, pharmaceuticals, and plastics. Both natural gas and refined products routinely move through cross-border pipelines in Canada and Mexico and waterborne supplies move in and out of U.S. ports. Efficient operation of this production platform has placed the United States in a unique position, not only to deliver affordable energy to U.S. consumers, but also to provide a secure energy lifeline to our allies. As shown in Figure 1, the U.S. alone provided over 80% of world demand for oil between 2010 and 2020. This production surge kept U.S. gasoline prices affordable for American consumers. More importantly, does anyone think the Europeans would have been able to sustain opposition to the Russian invasion of Ukraine without U.S. LNG?

Today, this production platform and its associated assets face two sources of financial risk; (1) an unanticipated, sustained and long-term reduction in consumer demand for petroleum fuels and feedstocks from a rapidly implemented energy transition, and (2) policy initiatives from U.S. and other governments to restrict the use of petroleum and other fossil fuels, i.e., a government mandated transition. As outlined in this testimony, the risk of stranded petroleum assets from a precipitous and permanent decline in demand remains quite low. The most significant risks are directly related to government policies and mandates that seek to halt domestic petroleum investment or restrict its development. Financial institutions responding to environmental, social and governance criteria that restrict investment in fossil fuel can also contribute to the risk of stranded petroleum assets.

How Risky Are Petroleum Assets?
Financial markets are efficient and are (appropriately) not pricing in substantial concerns from stranded asset risk for the petroleum sector. Despite repeated public warnings by environmental activists and ESG advocates about looming stranded asset risk for oil and gas companies, thus far U.S. investment grade (IG) bondholders—one of the most risk-averse groups of investors—have not shown any concern by shying away from longer-date energy bonds or requiring incremental credit spread for extending out the energy curve.

Note as shown in Figure 2, since the shale-related reset of world oil prices that began in mid-2014, the IG energy credit spread curve has not steepened meaningfully, other than from temporary spikes caused by oil price volatility (mainly the 2020 pandemic and related OPEC+ market share war). In 2020, there was record new issuance of U.S. energy bonds totaling $219 billion, with both IG and high yield energy bonds significantly outperforming over the year-to-date (YTD) and last 12-month (LTM) periods. Longer-dated bonds comprised 43% of the Bloomberg Barclays IG Energy sub-index as of May 28, 2021, up from 33% on June 30, 2014.

Using the risk-averse investment grade credit market as a barometer, since the 2015 signing of the Paris Agreement, the average maturity of energy bonds in the Barclays U.S. Credit index has actually lengthened (from 10.83 years at 12/31/15 to 12.14 years at 2/28/23), showing that buy-and-hold energy bondholders are not afraid about asset coverage extending out the maturity curve.

It also bears mentioning that between 2015-2021, more than 600 North American energy companies filed for bankruptcy, with an aggregate $321 billion of senior and unsecured debt between them. The financial markets were able to absorb these energy losses (which don't include scraped equity values). Despite increased oil price volatility and ongoing restructuring in the shale oil & gas industry since 2014, including a concerted effort by ESG and sustainability activists to choke off capital to fossil fuel companies, U.S. high yield investors have maintained exposure to, and continue to actively trade the energy sector, due to its significant market proportion and outsized return potential at various points in the oil price cycle.

Note that as of June 30, 2021, the energy sector comprised 13.4% of the Bloomberg Barclays High-Yield Corporate Bond Index, with total outstanding debt including a number of downgraded large-cap energy names (so-called “fallen angels”) that dropped out of the investment grade bond index during 2020 due to the pandemic and OPEC+ oil price war. Since the beginning of 2020, record new high-yield energy issuance of $108 billion through June 30, 2021 (on top of $58 billion of “fallen angel” bonds) has been easily absorbed by the market. Since the March 31, 2020 high-yield market trough, high-yield energy bonds have significantly outperformed the broader index by an aggregate 38.4% as oil prices have steadily recovered, highlighting how U.S. energy bondholders still remain focused on fundamentals, relative value and performance despite all of the press swirl around ESG. As shown in Figure 3 major index markets holding fossil fuel assets have outperformed so-called green energy index funds.

Technological breakthroughs or sudden shifts in consumer preferences have always presented risks to capital investments in all sectors of the national economy. Recall that before advances in the production of natural gas from unconventional oil and gas formations (so-called shale revolution), many U.S. companies invested and constructed natural gas import terminals under expectations of rapidly declining U.S. natural gas production. The surge in domestic natural gas production from advances in extraction technologies beginning in 2008 stranded these assets as the U.S. did not require facilities to import natural gas. Eventually many of these import terminals were repurposed as LNG export facilities. Another financial risk worth noting is the potential for stranded assets from the Biden Administration's initiatives to halt development of oil and gas on federal lands. States which have federal lands with oil and gas development potential directly benefit through bonus bid and royalty payment sharing programs under U.S. law. New Mexico is a case point as the state budget relies heavily on oil and gas revenues (Figure 4). In 2018 the state of New Mexico received nearly $500 million from a single lease sale. These are unrestricted funds that can be used for any state expenditure, including schools and health care.

Have We Overestimated the Pace of the Energy Transition?

Many proponents of proceeding with a rapid energy transition have argued that by accelerating production of electric vehicles, accompanied by a rapid buildout of wind and solar resources, we can free ourselves from price volatility and the supply chain disruptions now prevalent in world oil and natural gas markets. This strategy, however, at least in the near-term, has proven to be unrealistic. Any of these envisioned transitions will require mining, processing and procuring of large volumes of critical minerals. These critical minerals are subject to price escalation and are dominated by processing facilities in China (Figures 5 & 6).

The energy transition is going to take time, likely many decades after 2050, and will prove more elusive than current expectations. More importantly, policy measures to accelerate the transition will undermine the ability of energy markets to supply consumers with reliable and reasonably priced energy, especially in times of supply disruptions. The long history of energy development shows that most new energy sources are additive rather than substituting for legacy fuels (Figures 7 & 8).

The Russian invasion of Ukraine has not accelerated the energy transition, but instead reinforced the importance of fossil fuels as an essential energy source. The potential for large supply losses of oil and natural gas from Russia, constraints to the rapid expansion of global oil and gas production, and related supply dislocations from the COVID-19 pandemic lockdowns all have accelerated incentives to expand the production capacity of conventional energy resources, especially oil and gas. Fundamental constraints for alternative fuels and cost advantages for fossil fuels remain. The financial requirements to fund a "whole-of-economy" approach to deep decarbonization and deployment of energy substitutes for fossil fuels will require the development of many new cost-effective technologies. Such a transformation effort will be subject to sustained cost escalation, technical risks, unexpected failure modes, and unprecedented scale challenges. Between $131 trillion to $278 trillion in the global investment will be required to meet net-zero emissions by 2050. Putting aside the requirements for "Net Zero," the International Energy Agency (IEA) has concluded that worldwide primary energy supply in 2050 will have to expand by the current supply now available to the entire OECD (Figure 9).

Regions with high economic and population growth prospects— ASEAN, South Asia, Middle East, other developing Asia, and Africa—will require massive new supplies at an affordable price. Electrification, energy efficiency, and technological advances may alleviate some of their demand growth bottlenecks, but their large consumption requirements driven by economic expansion and population growth, are likely to offset those improvements (Figure 10).

Finally, we have failed to fully understand the limitations of an OECD-centric perspective on carbon emissions. As shown in Figure 11, even if the entire OECD were to succeed in the highly unlikely case of achieving net zero carbon emissions by 2050, failure to bring along the developing world means that carbon emissions would likely only be 10 percent lower than in a business-as-usual case.

FIGURE 1

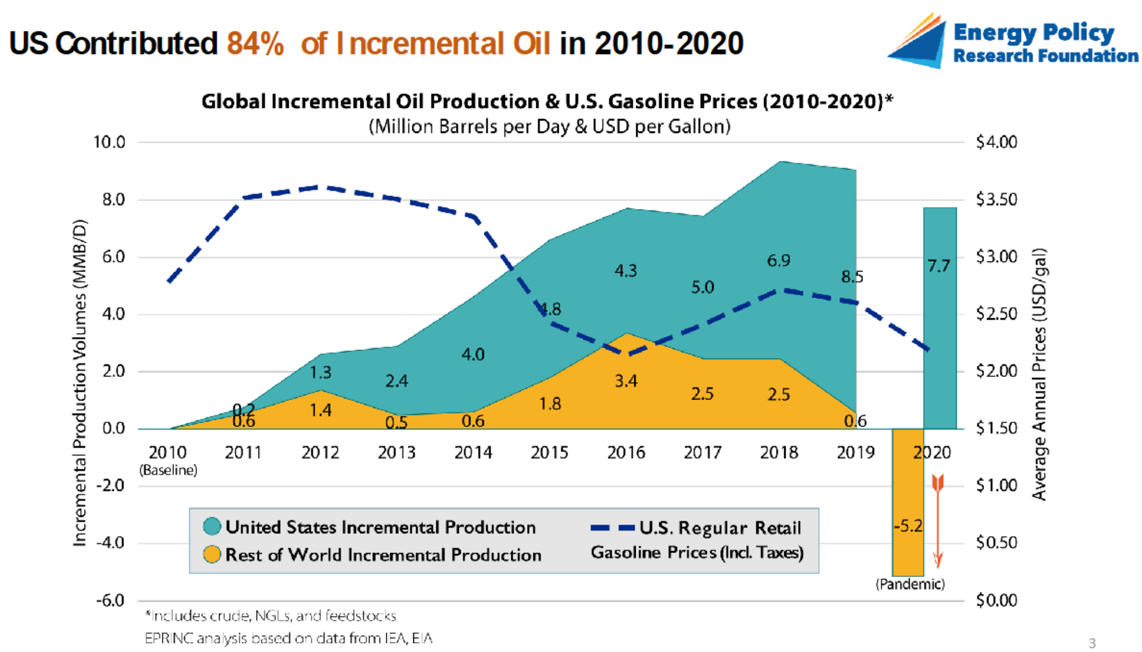


FIGURE 2

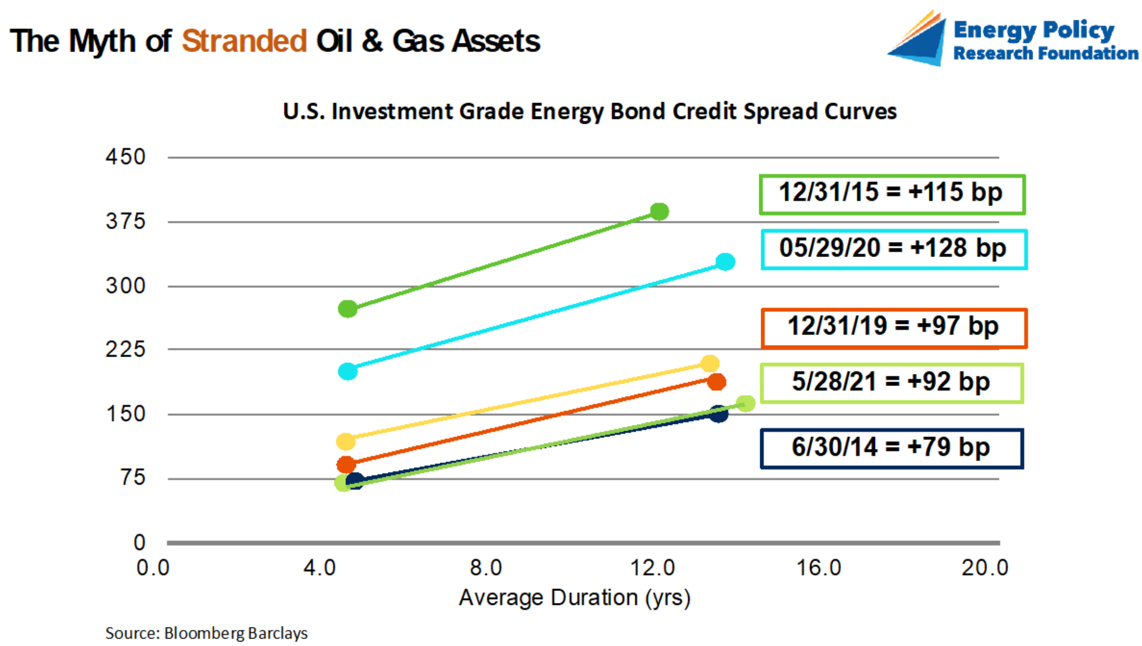


FIGURE 3

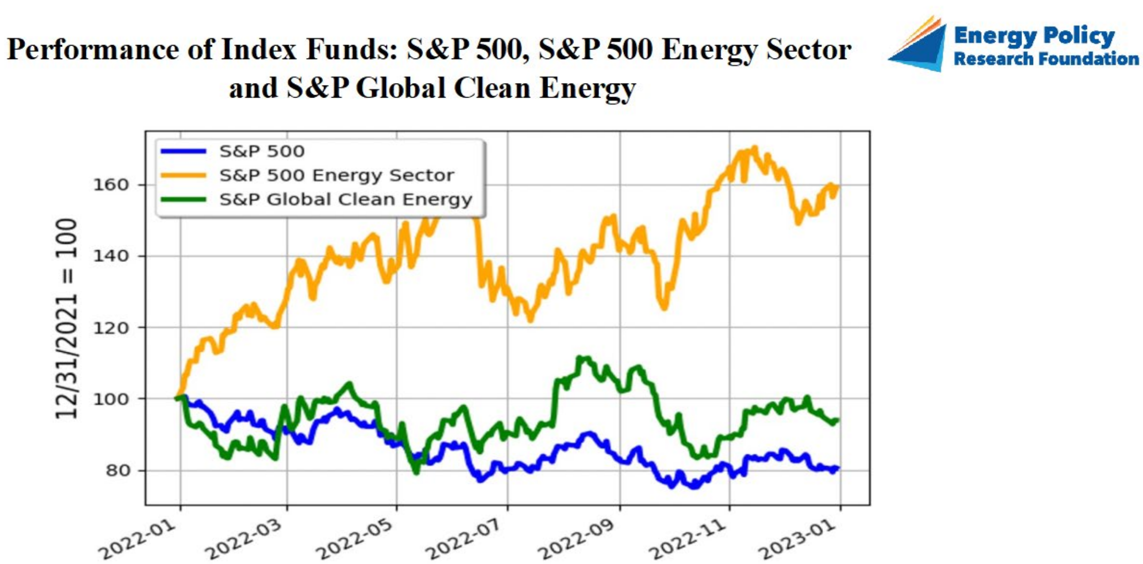


FIGURE 4

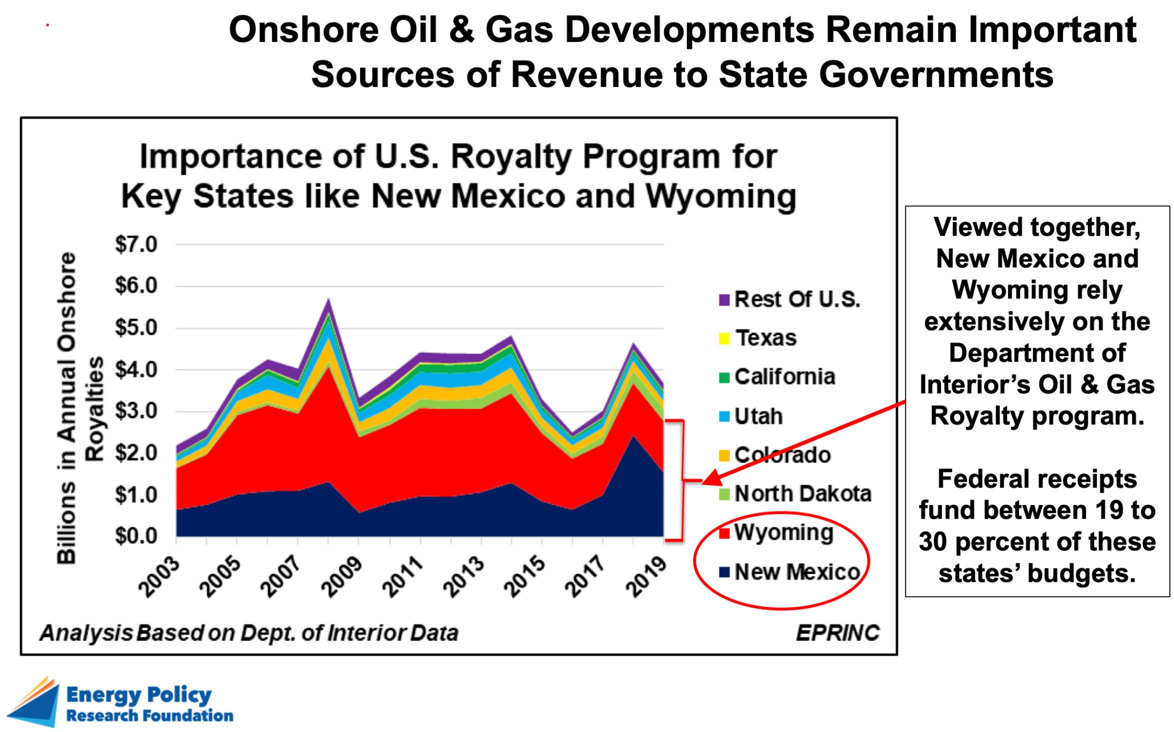


FIGURE 5

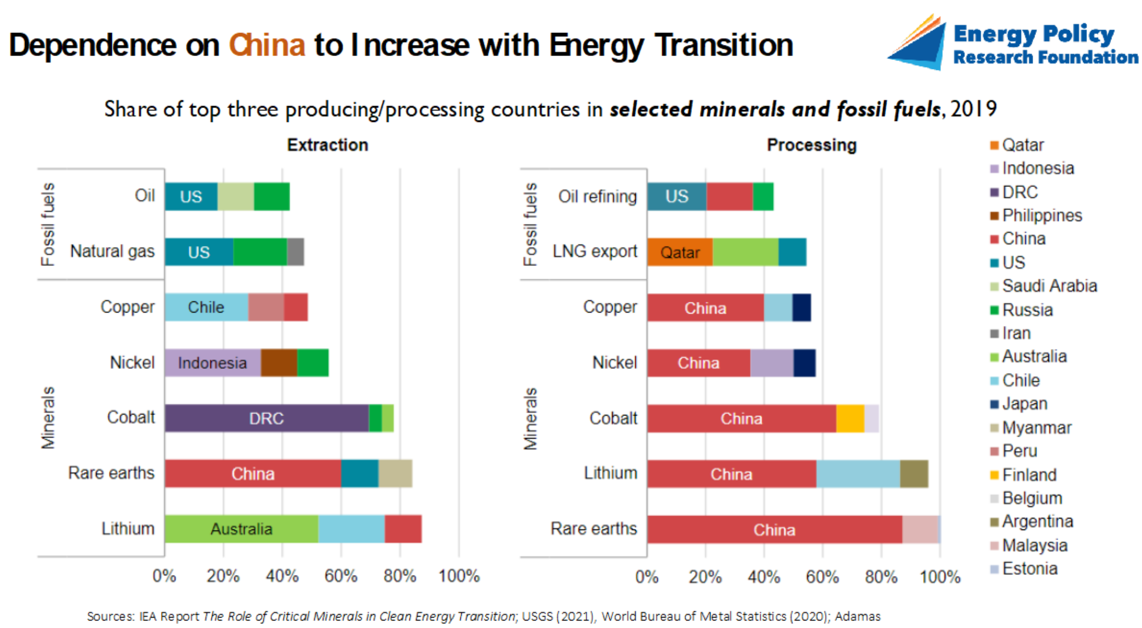


FIGURE 6

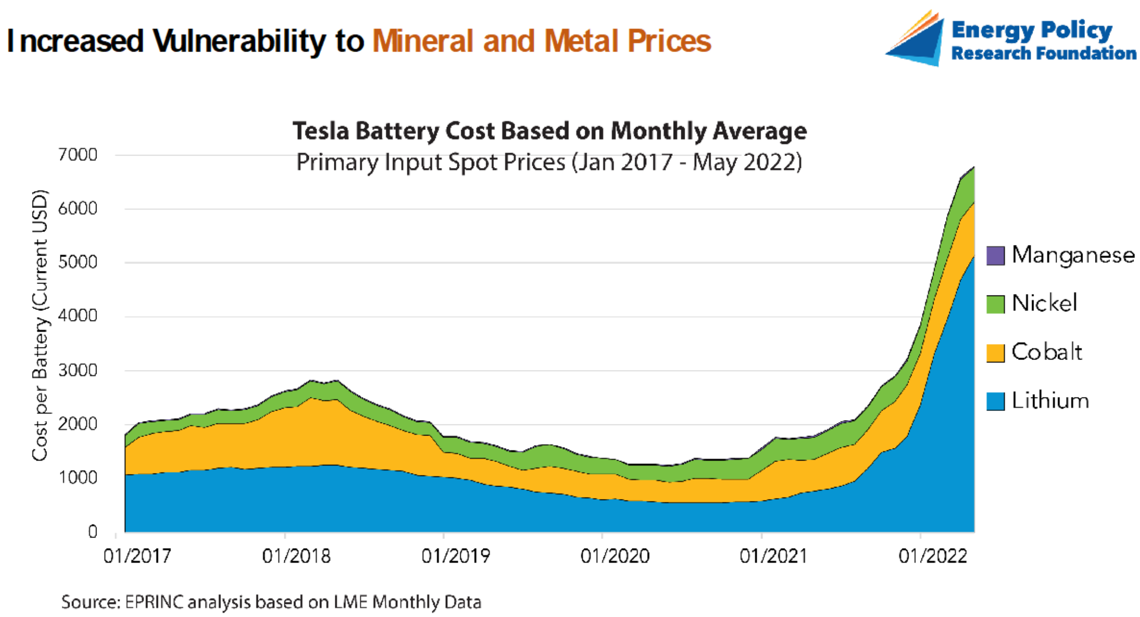
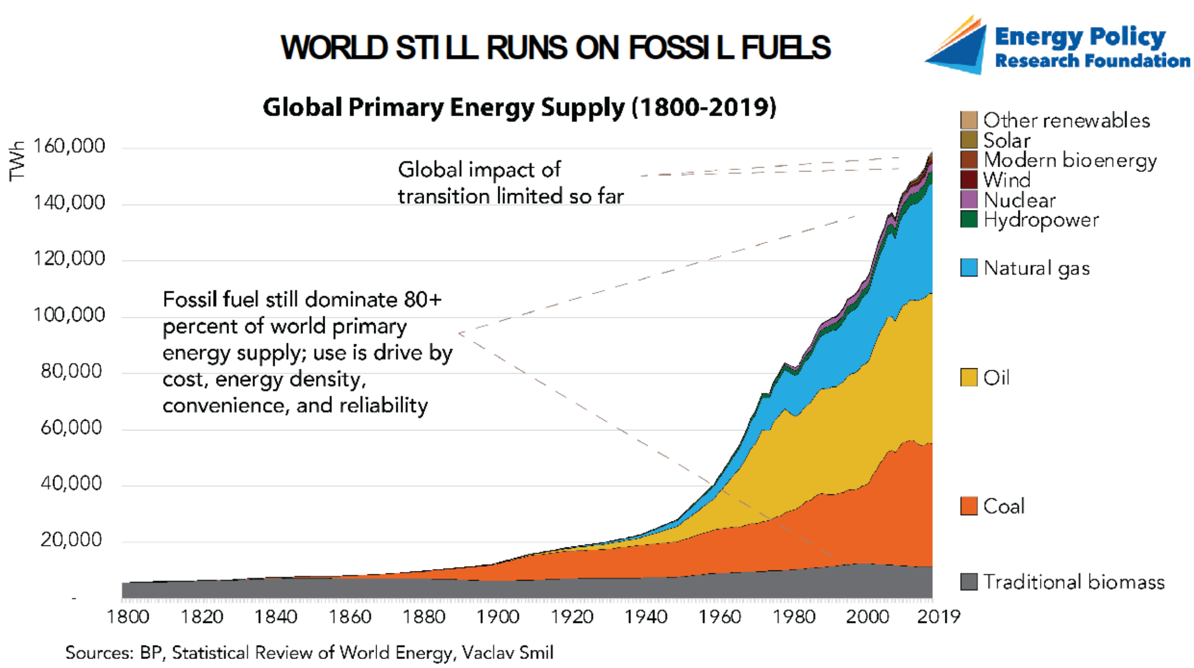
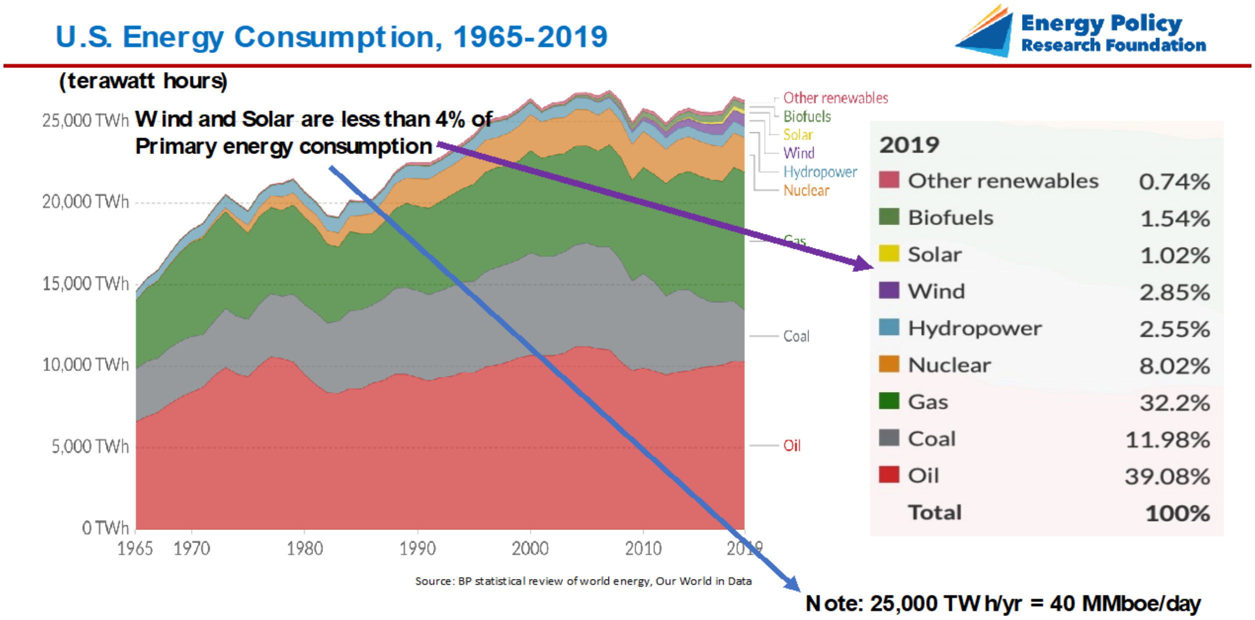


FIGURE 7



Note: Governments worldwide have spent $5 trillion over the last 20 years on wind, solar and other modern renewables. By 2021 these expenditures yielded only 5% of total worldwide primary energy demand. *(see BloombergNEF "Global Investment in Low-Carbon Energy Transition Hit $755 billion in 2021" Jan 27, 2022.*

FIGURE 8



Note: Using EIA data on total primary energy consumption, EPRINC estimates wind and solar likely account for 5% of total primary energy demand in 2022.

FIGURE 9

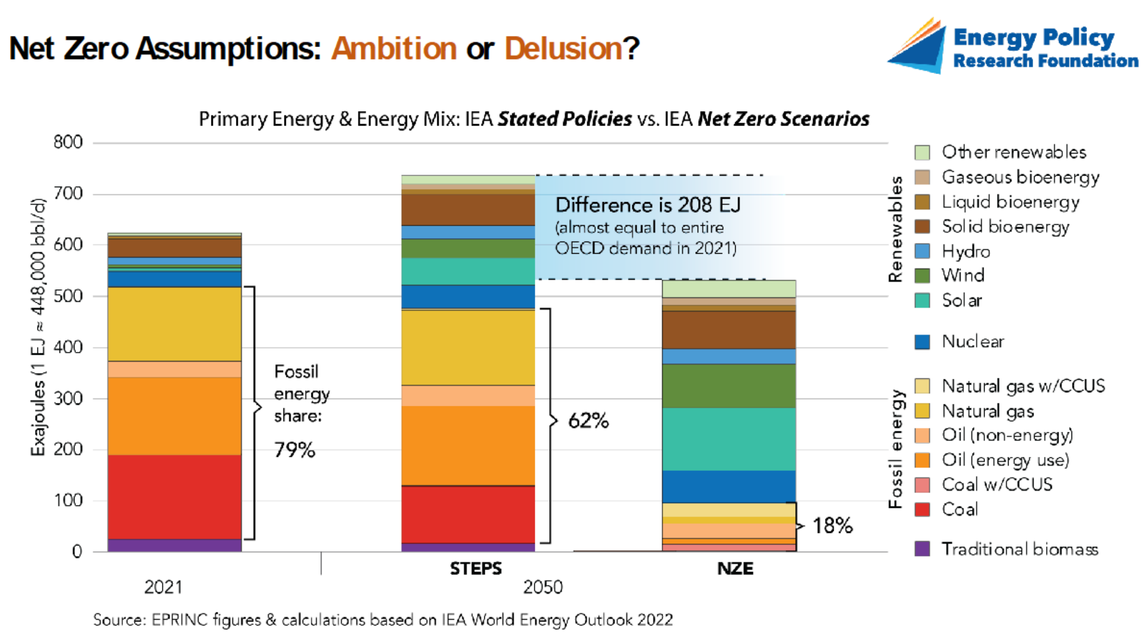
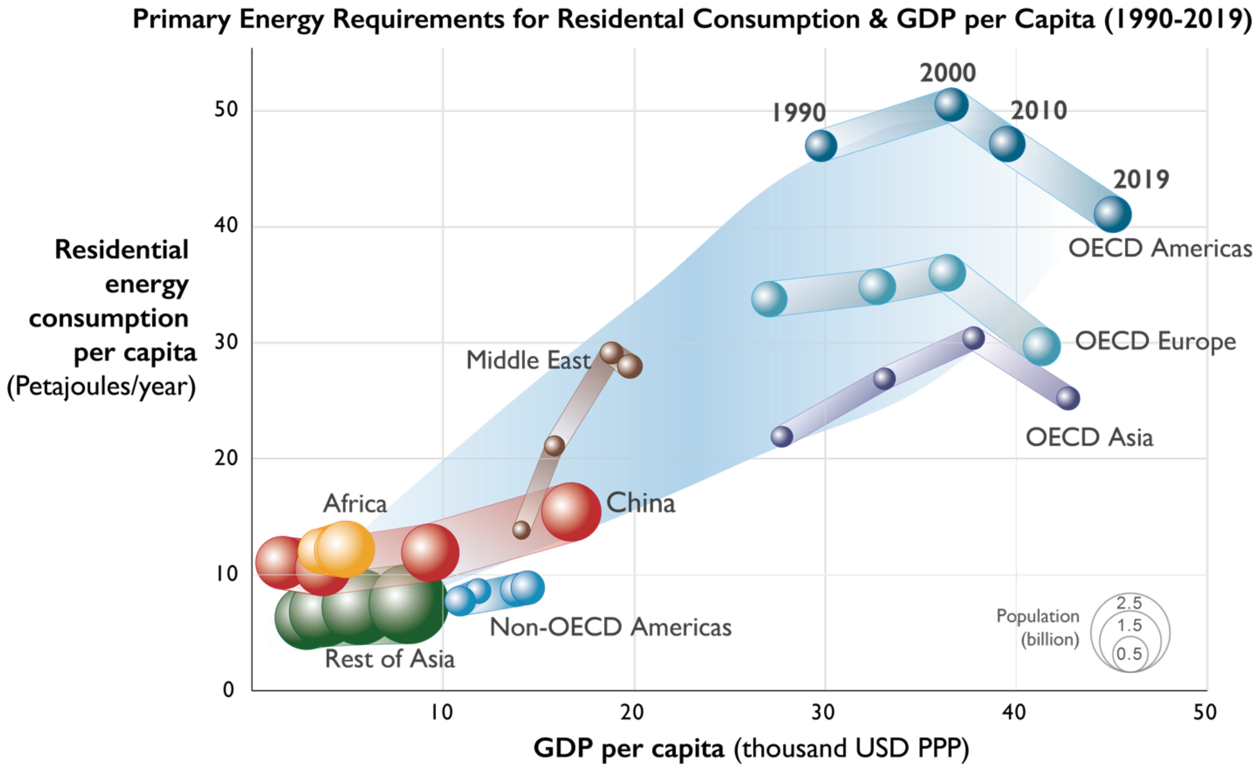
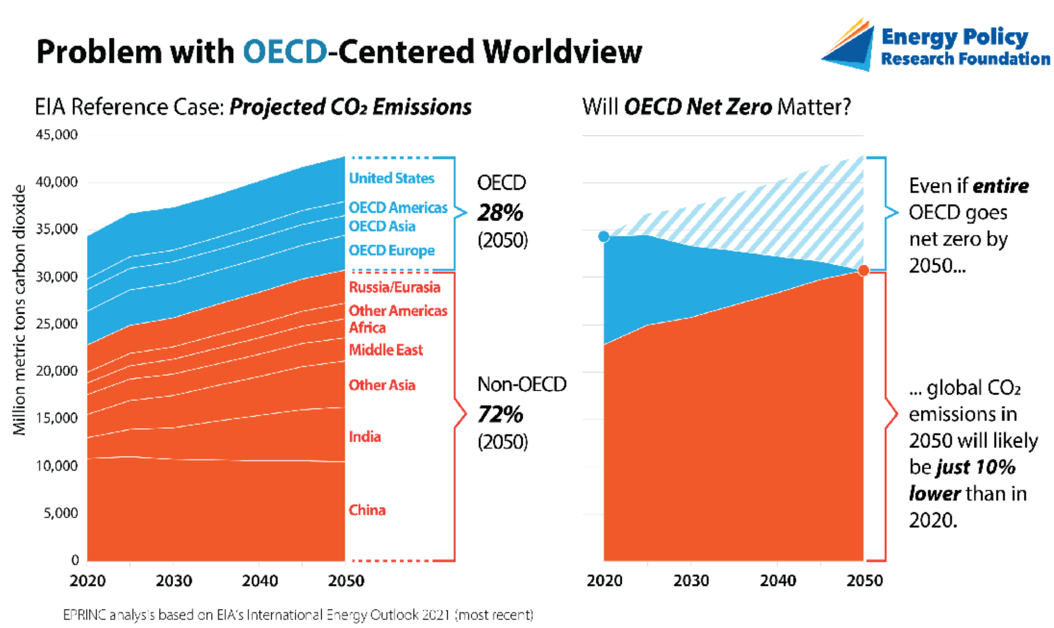


FIGURE 10



Source IEA

FIGURE 11



Authors note on the testimony

The topic of this hearing is complex. The author benefitted directly from advice and expertise from EPRINC research staff, including Max Pyziur, Batt Odgerel and Larry Goldstein. In addition, I would like to thank Paul Tice, Adjunct Professor of Finance at the Leonard N. Stern School of Business at New York University for sharing his extensive knowledge of the performance of financial markets. Any errors or omissions are solely the responsibility of the author.