

2022 Energy Transition Industry Outlook



Uday Turaga

2022 Energy Transition Outlook: Messiness as a Measure of Progress?

January 2022

Capital investment in low-carbon fuels, renewable power, and nuclear energy totaled ~\$425 billion in 2020, while fossil fuel-based projects attracted ~\$815 billion

Energy transition advanced rapidly through the collective public consciousness in the past two years although starting this past summer, it has run into significant challenges. To a large extent though, both energy transition's progress in 2020 and the challenges of 2021 were more conceptual than rooted in concrete form.

Investor-led demand for a greater focus on environmental, social, and governance (ESG) issues in public companies' strategies and plans accelerated through COVID-19 culminating in growing momentum for energy transition. While capital investments in low- and zero-carbon energy projects have grown quickly, they are still lower than the collective investments in the fossil fuel-based infrastructure.

For example, capital investment in low-carbon fuels, renewable power, and nuclear energy totaled ~\$425 billion in 2020, while fossil fuel-based projects attracted ~\$815 billion. This is significant because capital investment in fossil fuel-based energy was 10% to 25% lower in 2021 than in a business-as-usual 2019 while renewable power investments had grown over the same timeframe.

Given this background, what should we expect in 2022 for energy transition? The team at ADI Analytics got together to brainstorm and pull this outlook together.

There is now a broad consensus around the need for Energy Transition i.e. to move our global energy mix towards low-/zero-carbon resources although companies, investors, and policymakers are debating on the best way to get there.

Nothing illustrates the growing consensus around the need for Energy Transition more than ExxonMobil's commitment to cut emissions at all of its operations to net zero by 2050. The announcement came in mid-January 2022 and a couple years after the company had suggested that it would focus on its core competencies rather than pursue low-/zero-carbon investments.

FlexPO + 2022 Agenda

Thursday, February 17, 2022, Houston, TX

<https://flexpo.adi-cmr.com/>

7:30 am Registration and Breakfast

8:15 am Keynote Presentation



Scott Wright, Huntsman,
Division President

9:00 am Chemicals Outlook in 2022



Dr. Uday Turaga, ADI
Chemical Market Resources,
CEO

Break

10:05 am Feedstocks Review



Dhaval Shah, SABIC, GM
Corporate Technology &
Innovation



Macgill James, Borealis,
Manager, Feedstocks Supply
& Business Development

11:05 am Polyethylene and polypropylene markets



Richard Thomas, TotalEnergies US, Sr. Manager, Strategy and
Business Development

12:05 pm Lunch

01:05 pm Specialty polymers and performance materials



Jose Mendez
SK Geo Centric, Global
Business Director



Juan Gaytan
Kaneka North America, VP,
MS Polymers

02:05 pm Engineered polymer markets



Dr. Vijay Mhetar, Kraton,
SVP and CTO



Dr. Hartmut Siebert, Sulzer,
Head of Polymers Business

Break

03:30 pm Investor panel



Meghan Leggett
White Deer, Principal



Brian Orkin
Arsenal Capital Partners,
Investment Partner

04:15 pm Innovation, recycling and sustainability



Raj Krishnaswamy
CJ Bio, VP, Polymers R&D



Roman Wolff
Origin Materials, VP,
Engineering

Adjourn and Cocktails

FlexPO+ Partner



SULZER



ExxonMobil's commitments are short of what BP and Shell have announced but reflect the broad consensus around energy transition that will only deepen in 2022 and beyond.

Investors continue to lead the charge on energy transition supported to a large extent by the focus on environmental, social, and governance issues.

We see some risk to capital spending growth for energy transition in 2022 from rising interest rates globally due to inflation.

While ExxonMobil's recent commitment reflects the growing consensus around energy transition, it is the handiwork of activist investors who forced the company to add new board directors in the summer of 2021. Such investor pressure will only grow in 2022 and is capable of creating significant change and quickly so. Continuing with ExxonMobil for another example, the company's low-carbon business unit has rapidly identified sites around the world where it can effectively deploy carbon capture and storage projects.

Capital has started flowing in energy transition projects.

Capital spending on energy transition projects and infrastructure amounted to ~\$750 billion in 2021. Although most of this is dominated by renewable power, diversity and complexity of new energy transition projects, their scale and size, variety of technologies deployed, regional coverage, and range of business models are all growing. Public capital is also mobilizing itself rapidly. For example, the U.S. Department of Energy recently committed to guarantee a loan for up to \$1.04 billion to Monolith's new methane pyrolysis project to manufacture turquoise hydrogen. We see some risk to capital spending growth for energy transition in 2022 from rising interest rates globally due to inflation. Tighter financing will impact the competitiveness of several energy transition projects.

Access ADI's multi-client study on [the Jet Fuel](#) outlook

Even so, current capital flows will be insufficient to finance the Energy Transition, which is going to be very expensive.

In recent work, ADI has estimated that the energy transition, depending on its pace and level of policy support, will need capital investments that will total \$30 to \$45 trillion over the next 30 years. While the first world will have multiple routes to financing the energy

transition, emerging economies will struggle and most likely require support from the largest of the developed economies.

Energy transition should not be seen as a battle against oil & gas.

ADI's modeling has shown that ... oil and gas will contribute to as much as 15% to 20% of the global energy mix in 2050.

ADI's modeling has shown that even in the most aggressive and rapid energy transition scenarios, oil and gas will contribute to as much as 15% to 20% of the global energy mix in 2050. However, the last residual units of oil and gas that the world will consume post-2050 will, most likely, be the cleanest of all fossil fuel production. As a result, we anticipate oil & gas operators will in 2022 and beyond accelerate investments to eliminate fugitive emissions, cut flaring, develop circular operations, and invest in carbon capture and storage.

On the flip side, oil & gas supply constraints cannot be blamed on the energy transition.

As natural gas prices came to a boil in Asia and Europe through the fall of 2021, a blame game got underway in newspapers, magazines, and social media. The underlying theme was how the energy transition had led to the current energy crisis. Another version of this silly game was played during the winter storm Uri that left vast parts of Texas without power for several days in February 2021. The energy transition is going to take decades and cannot be reasonably held accountable for dramatic spikes in commodity prices that respond more to near-term events. Similarly, it was insufficient investments in winterizing natural gas infrastructure that was the prime factor behind the blackouts during Uri. Policymakers and the global energy industry should pursue a mature "all of the above approach" to energy supply, and we suspect limited progress will occur towards this goal in 2022.

start-ups will likely struggle to raise capital in 2022.

Energy transition innovation has truly taken off both in terms of the number of early-stage companies as well as the breadth of technologies being pursued.

In client work that ADI has completed, we identified over 300 start-ups that are focused exclusively on low- and zero-carbon technologies across a number of energy industry segments.

2022 ADI Forum, Thursday, February 24, 2022, Houston, TX
www.adi-forum.com

7:30 am	Registration and Breakfast		8:15 am	Welcome		
8:30 am	Keynote Presentation		9:15 am	Energy Outlook in 2022		
		Chris Smith Cheniere Energy, SVP Policy, Govt & Public Affairs		Uday Turaga ADI, CEO		
10:00 am	Panel 1: Upstream Oil & Gas					
		Kirsty McCormack BP, VP, Special Projects		Linhua Guan Surge Energy, CEO		Aaron Ketter Devon Energy, VP Mid-Cont. & S. TX
				Natalya Brooks Moderator		
11:00 am	Break					
11:20 am	Panel 2: Midstream and Natural Gas Liquids					
		Paul Bienawski Enstor Gas, CEO		John Staebel LyondellBasell, Dir, NA Feedstocks		David Paradis Trillium Flow, CEO
				Joseph Gentry GTC Vorro, VP, Licensing		
12:15 pm	Lunch					
01:15 pm	Panel 3: Natural Gas & LNG					
		Michael Mott NextDecade, SVP Strategy		Matt Jackson Crowley, VP BD, Ship. New Energy		Dena Wiggins Natural Gas Supply Assoc., CEO
2:15 pm	Panel 4: Refining and Downstream					
		Heath DePriest Phillips 66, VP Emerging Energy		Brandon Schwertner Priority Power Management, CEO		
3:15 pm	Break					
3:35 pm	Panel 5: Hydrogen					
		David Hatrick Huntsman, VP Innovation		Trevor Best Syzygy Plasmonics, CEO		Muhammad Islam IHI E&C, SVP BD and Technology
4:35 pm	Panel 6: Energy Transition					
		Eric Bradley Taurus Invest. Holdings, MD New Energies & Sustainability		Leslie Beyer Energy Workforce & Technology Council, CEO		Alex Robart Microsoft, Energy & Sustainability Leader
5:30 pm	Adjourn and Cocktails					

Collectively, over \$150 billion of capital has flowed into energy transition innovation including rounds of financing completed by early-stage companies. Since a significant chunk of this capital was raised through special purpose acquisition companies (SPACs), which have now cooled off, start-ups will likely struggle to raise capital in 2022.

While 2022 will see a surge of investments in these areas, returns will be lower and take longer akin to large infrastructure investments.

Energy transition technologies will have to start demonstrating their promise in 2022.

In the name of energy transition, and fueled by free flowing capital over the past few years, a number of energy transition technologies have been floated by early-stage companies. Investors will likely want to see demonstrations of these technologies at a faster pace and that process will screen several options and technologies out in 2022 and beyond.

Investors are now turning their attention to the broader infrastructure and ecosystem needs for the energy transition.

Investments in new battery technology, more efficient solar panels, and faster wind turbines are giving way to opportunities in battery recycling, installation of electric vehicles chargers, transforming port operations to use low-carbon fuels, and, carbon dioxide capture, storage, and utilization. While 2022 will see a surge of investments in these areas, returns will be lower and take longer akin to large infrastructure investments.

Understand global small-scale LNG markets with ADI's new research study

Business model innovation is scaling up as fast as energy transition technologies.

A number of oil & gas companies have now embraced the energy transition by creating business units that are focused on identifying opportunities that will directly contribute revenue and margin to the bottomline. In 2022, these efforts will continue to bring new energy and creativity to structuring business models that is necessary for a nascent, emerging market as the energy transition.

Uday Turaga

ADI will continue to track energy transition markets globally through [research](#), consulting, and analytics. Please [contact us](#) to learn more and discuss how we can be of help.