

OPPORTUNITIES AND CHALLENGES IN A NET-ZERO CARBON WORLD—ONE YEAR ON

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The world runs on energy. Unfortunately for the future of the climate, the current energy system relies heavily on fossil fuels—the primary source of greenhouse gas emissions. Enabled by emerging technologies and rapidly declining costs, the transition from traditional fossil-based to zero-carbon energy is transforming the global energy sector and presenting interesting opportunities for investors. Over six installments, we explored key themes and technologies related to the [energy transition](#), [energy efficiency](#), [renewables](#), [energy storage](#) and [low carbon fuels](#) and [carbon capture](#).

However, much has changed since the series started in early 2020. Despite the Covid-19 pandemic, global appetite to accelerate the energy transition has increased. Key technologies continue to decline in price and an increasing number of countries and investors alike have been setting net zero emission targets. As a result, we will end this series with one more entry, looking back at the themes, changes and considerations for the future.

Summary and re-cap

Energy plays a vital role in our society and economy. In the face of a global climate crisis, economies are increasingly looking to a net zero future. Indeed, eight of the world’s largest economies now have net zero ambitions and at least one-fifth of the world’s 2,000 largest companies have made net zero commitments.^{1,2}

The energy transition is expected to be driven by an array of existing and emerging technologies; from energy efficiency and renewables to storage, low-carbon fuels and carbon capture. The current combination of ambition, technology innovation and climate change effects are disrupting long-held ideas of energy. Each new technology cost reduction or extreme weather event works to accelerate the transition to a net-zero carbon energy system. This conversion is poised to revolutionize the way we source, store and consume energy—reshaping the global economy in the process. Exhibit 1 summarizes seven key themes of potential importance to investors, providing both opportunities and challenges to align with and benefit from the shift to a zero-carbon future.

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Exhibit 1: Key themes

Theme	Description	Challenges	Opportunities
Energy transition	Opportunities and challenges in a net-zero carbon world	Wholesale rapid shift in the way we source and use energy	Growth in deployment of existing technologies and innovation
Energy efficiency	Doing the same with less	Split incentives and behavior	Immediate cost savings from existing technology
Renewables	Generating energy without carbon emissions	Market access and integration	Large scale infrastructure-style deployment
Storage	Decoupling energy demand from generation	Technology immaturity	Growth of innovation and sourcing of raw materials
Low-carbon fuels	Using alternatives to common fossil fuels	Cost vs fossil fuels and supply chain concerns	Immediate, lifecycle emission reductions from drop-in alternatives
Carbon capture	Capturing, storing and using carbon	Economics and infrastructure	Transition of carbon intensive, hard to abate sectors

Source: Aegon AM

So much has changed in a year

The last year has demonstrated that the energy transition shows no signs of abating. If anything, the trends are accelerating.

Take the power sector. In the last year, Bloomberg New Energy Finance raised their long-term forecasts for the cumulative installed capacity of zero carbon energy sources by 5% - including a 20% jump in wind.³ Even the notoriously conservative International Energy Agency (IEA) has identified solar as the cheapest source of electricity in history.⁴

The automotive sector is also seeing a rapid evolution. Where Tesla was seemingly once a lone leader in electric vehicles (EVs), an explosion of new electrified models from mainstream original equipment manufacturers (OEMs) has led to an overall 43% increase in sales, almost doubling their share of global new car sales, and essentially matching diesel vehicles for new registrations in Europe.^{5,6} At the same time, EVs are increasingly cost competitive with their fossil

fuel counterparts; a recent study of 13 European markets by Leaseplan found the total cost of ownership to already be equal to or lower than that of internal combustion engine equivalents.⁷

Another big mover in the energy transition has been hydrogen. Interest is increasing globally on understanding the role hydrogen can play in a net-zero energy systems. Markets as diverse as the European Union and the Canadian province of Ontario are consulting on hydrogen strategies, while billions in incentives have been announced to support the development green, carbon-free hydrogen sources.⁸

Investors are taking notice of all these changes. 2020 saw not only record flows into sustainable funds but also record levels of ESG-labelled debt, reaching almost USD 500 billion of new issues – an 80% year-on-year acceleration.^{9,10}

Looking forward

With the world slowly coming back to life following the roll-out of Covid-19 vaccination programs, it is more important than ever to use this opportunity to re-direct capital in support of the net-zero transition. Despite an estimated 7% drop in global greenhouse gas emissions as a result of measures targeted to control the spread of the coronavirus early in 2020 and continued lip service to building back better, policy and incentives are falling back into old patterns.¹¹ Analysis from the Rhodium Group illustrates that despite over USD 5 billion in US stimulus spending, a mere 1.3% was aligned with green objectives.¹² Similar analysis from Vivid Economics has concluded that announced stimulus policies will have a net negative environmental impact in 15 of the G20 countries and economies.¹³ But with the world's attention looking to the delayed COP26 climate conference in Glasgow later this year, this could all change.

So what does it mean for investors? This shift toward a net-zero carbon economy highlights the need to insulate their portfolios from transition risk and align with the energy transition. However, the climate crisis also presents opportunities to pursue alpha by capturing growth trends. But to position themselves to capitalize on these changes, investors will increasingly be forced to ask themselves some tough questions about the role of ESG factors in their investment decisions; whether or not the market is sufficiently transparent in the pricing of climate risk; and whether or not they are following a structured process to uncover risk and growth opportunities.

The decade to 2030 is expected to play an outsized role in determining the future of our climate. Keeping the world on track to achieve the goals of the Paris Agreement will require a massive change in the way we think about energy, from how it is sourced to how it is used. Fortunately, investors are able to play a pivotal role in proactively and positively supporting this shift as the energy transition continues to accelerate through 2021 and beyond.

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