

## TEMP: The Macro Case

JP Morgan ETFs (Ireland) ICAV Climate Change Solutions UCITS ETF

# Massive infrastructure investment is required to shift the energy mix

The need to transition the energy landscape towards renewables gained greater urgency after Russia's invasion of Ukraine, with a new focus on energy security complementing existing decarbonisation efforts. To meet net zero targets, current estimates suggest the share of renewables in the energy mix needs to rise from around 5% today to nearly 60% by 2050. This will require massive infrastructure investment, not only to develop renewable generation capacity but also in storage capability, distribution networks, and industry electrification. We expect a huge number of investible opportunities to be created, particularly given the forecasted 50% rise in global energy demand by 2050. Indeed, the IEA predicts wind and solar will need to account for 40% of electricity generation by 2030 to meet net zero targets, up from 12% today.

Source: BP Energy Outlook 2020, BP Statistical Review of World Energy, J.P. Morgan Asset Management. Forecast is based on BP's scenario for global net zero emissions by 2050. Data as of 31 March 2023.

#### The transition is not just about renewables

Policy changes to achieve net zero targets will have a large but also broad impact on capital allocation and the economy more generally. While a major shift in the energy mix is needed, so is investment in other new infrastructure to support this change – for example, in stronger electricity grids and electric vehicle charging facilities. Alongside this, sectors beyond just energy generation and transport will need to decarbonise, with transport accounting for just 16% of global greenhouse gas emissions. Net zero policies will therefore change demand patterns and investment priorities across the whole economy, with the varied companies who drive and implement climate change solutions likely to be beneficiaries.

Source: Climate Watch, Our World in Data, World Resource Institute, J.P. Morgan Asset Management. Greenhouse gas emissions include CO2, methane, nitrous oxide and fluorinated greenhouse gases. CO2 equivalent tonnes standardise emissions to allow for comparison between gases. One equivalent tonne has the same warming effect as one tonne of CO2 over 100 years. Data as of 31 March 2023.

### Policymakers know private capital is critical

To transform the global energy mix and achieve net zero targets by 2050, the International Energy Agency estimates that investment in clean energy and energy efficiency will need to triple by 2030. Estimates vary, but the total investment required by 2050 is likely \$100-150trn or more. Clearly, then, governments alone cannot facilitate the transition, and recent policy innovation demonstrates that they are recognising this. Countries are competing for a place in the energy supply chains of the future, aiming to attract private capital rather than force change via regulation. The US's Inflation Reduction Act and EU's Green Deal Industrial Plan are clear examples. Beyond just governments, funds will be channeled towards firms aligned with or contributing toward net zero targets; see the ECB's decision in 2022 to tilt its corporate bond portfolio towards greener issuers.

Source: International Energy Agency, J.P. Morgan Asset Management. Figures include investment in clean energy and energy efficiency. Data is from the IEA's World Energy Investment 2022 report. 2030e is based on the IEA's net zero by 2050 scenario. For illustrative purposes only. Data as of 31 March 2023.

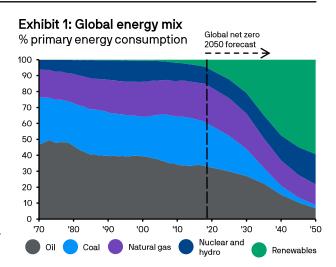


Exhibit 2: Global GHG emissions by sector % of global GHG emissions (2016), CO2e\* tonnes

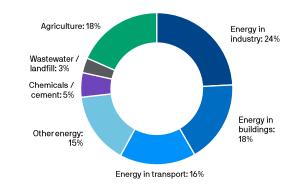
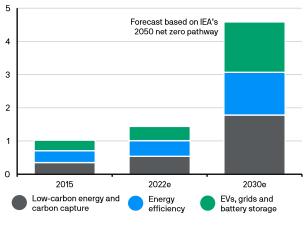


Exhibit 3: Global clean energy investment USD trillions



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