HSBC Global Research

Energy Transition

9 June 2023

ESG – Under the hood

Electric utilities: Decarbonisation strategies solidifying, slowly

Free to View
ESG & Equities - Global

- From 20%, electricity is likely to double as a percentage of energy total final consumption (TFC) by 2050 …
- ... driving a surge in generation, grid and storage investment, and potentially elevating risks to shareholder value

This is the fourth in our series looking at a single-sector and related company-level ESG issues, detailing how we integrate these into our financials, valuations, and risks.

Increasingly, we will use electrons as a source of energy. The electrification of energy TFC is driving a surge in grid, generation and efficiency investment. Annual grid spend out to 2030e will double, facilitating a doubling of electricity generation by 2050e, compared with 2022. However, some investment in fossil-fired generation capacity, particularly in mainland China, persists, slowing progress on decarbonisation.

Despite definitive progress on transition strategies, three main factors have led to stagnating sector valuation multiples: exclusionary investment policies; uncertainty about future returns given the regulated nature of the business operations; and valuation discounts on legacy assets, due to concerns about stranding.

How does ESG impact our views? We generally value renewable assets at a premium to legacy assets and also incorporate investor malaise and the slow timeline to more renewable capacity. Our operating and valuation frameworks already reflect our view on sustainability efforts. Longer term, we think utilities that retain large carbon footprints will have growing long-term tail risks, while those adopting more aggressive decarbonisation strategies will ultimately be rewarded with higher valuations and a broader shareholder base, as investors understand the strategies and timelines to net zero emissions (NZE). Changing regulatory environments, uncertain margins, and potential for stranded assets all represent material operating risks.

This is an redacted version of a report with the same title published on 9-Jun-23. Please contact your HSBC representative or email AskResearch@hsbc.com for more information.

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Integrating ESG: Our analytical approach

Stages of ESG integration

1 Identify issues

Identify ESG issues relevant to a sector (locally, regionally, globally)

Understand how the issues affect / are affected by various sectors

2 Apply to company

Determine whether the ESG issue is a risk / opportunity for the company

Consider how well the company has addressed the issue over varying time horizons

3 Integrate into financials

Make adjustments to valuations, ratings, and target prices accordingly

Adjust cash flows (revenues, costs), weight average cost of capital or multiple

How is ESG "priced in" to stock valuation?

Corporate performance

Business perspective – over time, the operational performance of a business improves because it manages various ESG issues well

Stock valuation

Investor perspective – investors (and analysts) consider how well the business is dealing with ESG-related risks and opportunities and how this relates to the current market value

Reputation perception

General public perspective – a shock (usually negative) which may arise as a result of a publicly reported negative ESG-related incident such as an environmental violation or a major governance failing

How do ESG issues affect companies?

ESG matters can be morphed into business opportunities which generate new streams of income.

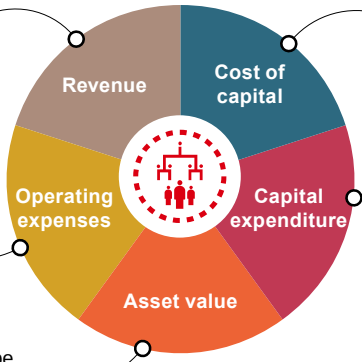
Example: Decarbonisation provides more business opportunities for the renewable energy value chain.

ESG issues can impact the operating cost of companies through efficiency enhancement and regulations.

Example: Increase in insurance costs for food delivery companies due to growing awareness of workers' rights and tightening regulations.

ESG factors may affect anticipated cash flows from company assets and thus the net present value.

Example: Fossil fuel assets of energy companies may be stranded or impaired long-term through energy transition.



Investors may require higher risk premiums for companies with poor ESG disclosures and practices. Green projects can enjoy more favourable rates in financing.

Example: Some central banks are providing lower-interest-rate loans to fund green projects.

The transition to a sustainable economy is likely to bring changes in capital expenditure for development and investment in more sustainable activities.

Example: Technology companies allocate capital, which enables them (and others) to be more sustainable.

Source: HSBC

Under the hood

- Decarbonisation of the electricity sector is the most important initiative to achieve a net zero emissions (NZE) world by 2050
- Though social equity priorities seek to provide affordable electricity to all global citizens, which is has a significant influence on policy
- While most operators have medium-term strategies to rebalance toward renewables, in most cases the transition pace is inadequate

How ESG issues affect electric utilities

To limit the global temperature increase to 1.5°C by the end of the current century, greenhouse gas (GHG) emissions would need to be reduced through the development of renewable energy, efficiency solutions, abatement, and capture technologies. We are far from an achievable path to 1.5°C. The pace of energy transition has been challenged by numerous factors, including the COVID-19 pandemic and the Ukraine crisis. To accelerate energy transition at the required pace, implementation of strong and transformative plans is required, in our view.

Decarbonisation solved through: adoption, cost curves, economies of scale and competitiveness

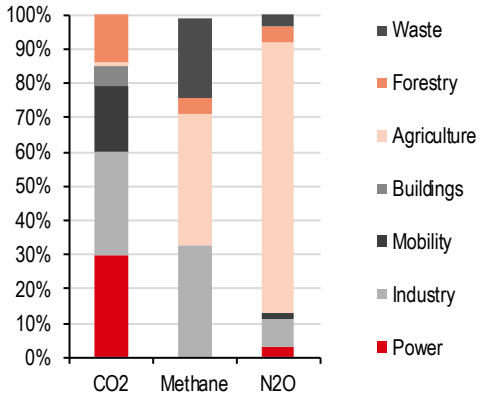
We view the decarbonisation of power generation as a 'solved' problem, with the answer being renewables – both solar and wind – supplemented with nuclear power and energy storage. There are questions around the acceleration of renewables deployment, the role of nuclear (feasibility and cost) and cost, plus choice of back-up and storage – so there is a spectrum within 'solved', but there's also a consensus that we know what the route to decarbonisation is. 'Solved' problems, are about adoption, cost curves, scale economics and competitiveness – and either commodity stories or about consolidated industry structures or significant returns to scale. The policy framework remains a key enabler of progress.

While power is viewed as a solved problem, the pace of change in cleaning generation is inadequate. The International Energy Agency (IEA) estimates that unabated fossil fuel generation totalled more than 61% of electricity generation in 2021[1], and that CO_2 emissions from electricity generation reached a record 14.8Gt in 2022, representing nearly one-third of estimated energy related CO_{2e} emissions of about 36.8Gt in 2022.[2] Energy systems account for the largest share of estimated total global greenhouse gas (GHG) emissions – at more than 58.3Gt in 2022 according to the World Emissions Clock.

1 IEA (2023), Electricity Market Report 2023, IEA, Paris https://www.iea.org/reports/electricity-market-report-2023, License: CC BY 4.0

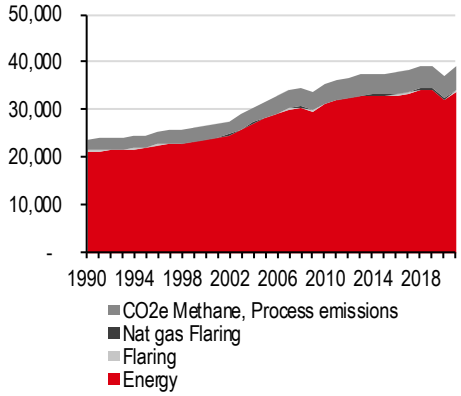
2 IEA (2023), CO_2 Emissions in 2022, IEA, Paris https://www.iea.org/reports/co2-emissions-in-2022, License: CC BY 4.0

Ex 1: **GHG emissions sources, 2019e (%)**



Source: McKinsey – Accelerating decarbonisation, the net zero challenge

Ex 2: **CO_2 equivalent emissions from energy, process emissions, methane, and flaring (mt CO_2e)**

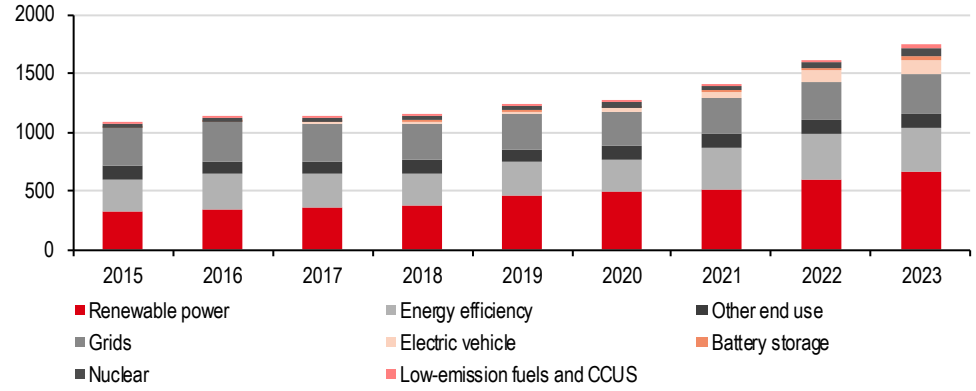


Source: bp Statistical Review of World Energy, 2022

Adoption of renewables is rising rapidly

Adoption – future electricity rising. As the world economy decarbonises, electricity consumption as a percentage of energy total final consumption (TFC) is forecast to rise sharply, especially in buildings and transport. This means electric utilities need to invest right across the value chain. Spending on clean electricity generation, grids and storage is expected to continue to rise near double digits.

Ex 3: Annual clean energy investment, 2015-23 (USDbn)

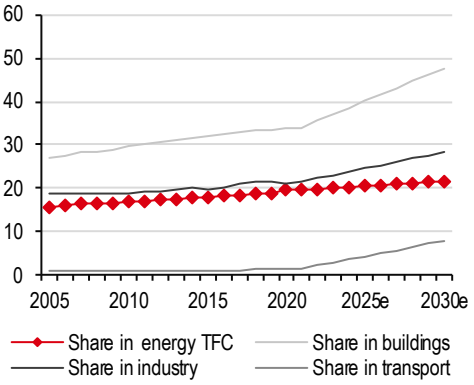


Note: CCUS = carbon capture utilisation and storage
Source: IEA, Annual clean energy investment, 2015-2023, IEA, Paris https://www.iea.org/data-and-statistics/charts/annual-clean-energy-investment-2015-2023, IEA. Licence: CC BY 4.0

Annual grid investment is expected to double over the next eight years compared with the last six years

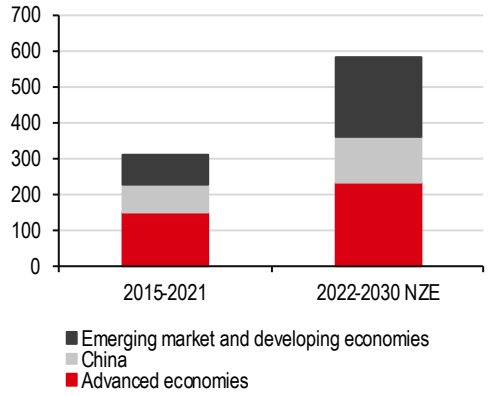
As an example, annual spending on global electricity grids from 2022 to 2030e is expected to run at US600bn per year in the IEA's net zero emissions (NZE) scenario. This compares with about USD300bn over 2015-21. About half the incremental spend will be directed to emerging markets, ex-mainland China. This is likely to lift the proportion of spending in networks from 30% of the USD1.2trn annual global power-related spend in 2023, to about half. Spending on renewable generating assets is expected to total over USD650bn in 2023e, which will supersede investment in oil and gas for the first time.

Ex 4: **Share of electricity in total final energy consumption, 2005-30e (%)**



Source: IEA, Share of electricity in total final energy consumption, 2005-2030, IEA, Paris https://www.iea.org/data-and-statistics/charts/share-of-electricity-in-total-final-energy-consumption-2005-2030, IEA. Licence: CC BY 4.0

Ex 5: **Average annual investment spending on electricity grids in the Net Zero Scenario, 2015-30e (USDbn)**



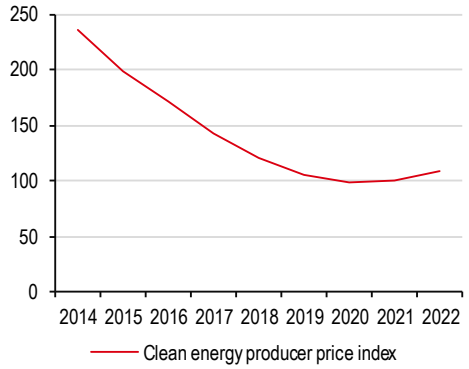
Source: IEA, Average annual investment spending on electricity grids in the Net Zero Scenario, 2015-2030, IEA, Paris https://www.iea.org/data-and-statistics/charts/average-annual-investment-spending-on-electricity-grids-in-the-net-zero-scenario-2015-2030, IEA. Licence: CC BY 4.0

Solar cost curve has dropped and has become extremely cost competitive

Cost curves – the trend is your friend. Significant reductions in the cost curve for renewables deployment and other lower carbon solutions have supported the incremental investment in renewables. Solar panels now provide the most completive per MW installation and this has driven doubling of annual spend over the last.

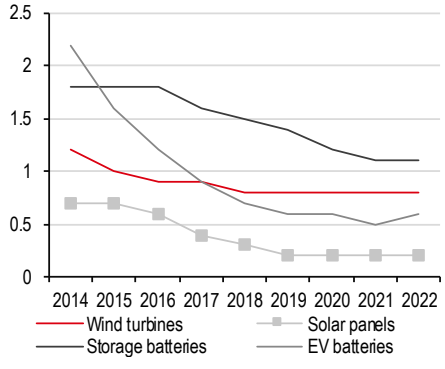
Recent trends – show coal still features. Over the ten years to 2021 total electricity generation grew c30% or at a compound rate of 2.5%, boosted by rapid growth in renewable capacity and generation. However, despite an expanded footprint of renewable energy, coal- and gas-fired generation supplied about half of the incremental generation growth, contributing to significant increases in related emissions. This is creating a situation requiring urgent attention in our view.

Ex 6: **Clean energy equipment price index, 2014-22**



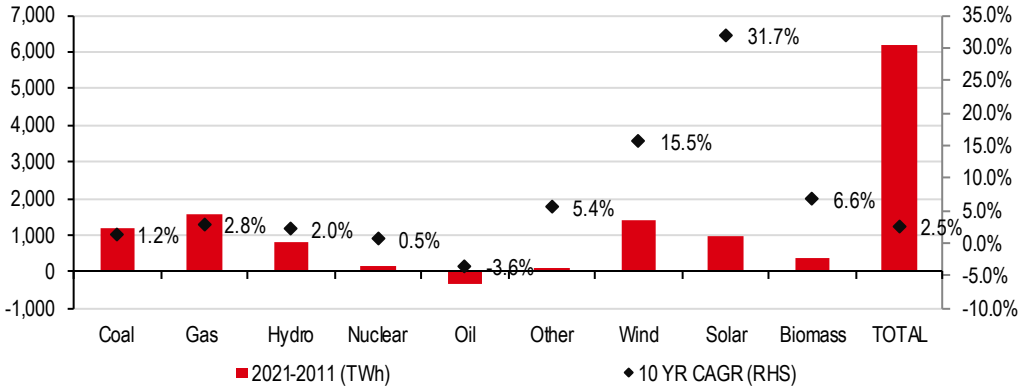
Source: IEA, IEA clean energy equipment price index, 2014-2022, IEA, Paris https://www.iea.org/data-and-statistics/charts/iea-clean-energy-equipment-price-index-2014-2022, IEA. Licence: CC BY 4.0

Ex 7: **Average prices for selected technologies, 2014-22 (USD/MW, nominal)**



Source: IEA, Average prices for selected technologies, 2014-2022, IEA, Paris https://www.iea.org/data-and-statistics/charts/average-prices-for-selected-technologies-2014-2022, IEA. Licence: CC BY 4.0

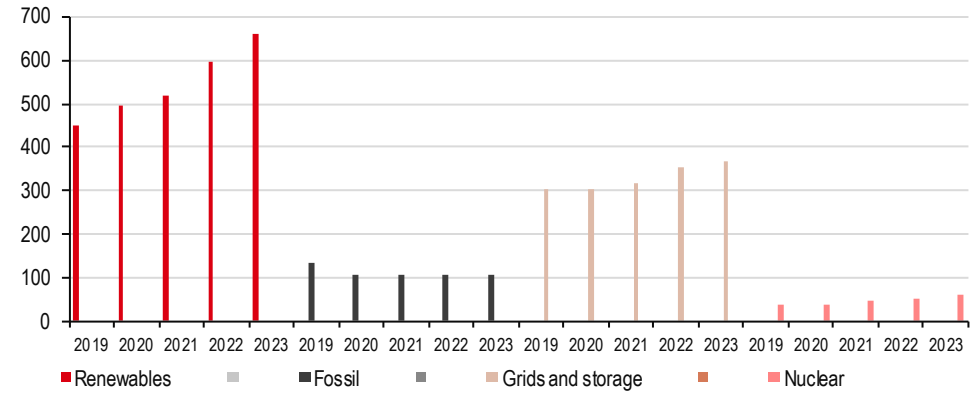
Ex 8: **Increases in electricity generation, 2011-21 (TWh and %, RHS)**



Source: bp Statistical Review of World Energy 2022

By 2050, the proportion of electricity consumption in TFC could rise to over 40%, driven by four key increases in TFC: (1) rapid growth in emerging markets; (2) electrification of transport in developed markets; (3) electrification of buildings globally; and (4) increased use of electricity as a pathway to hydrogen. The absolute increase in electricity demand is likely rise from about 28,500 TWh in 2021 to between 50,000-60,000 TWh by 2050, based on an expected annual growth rate of 2.0-2.5%[3]. To manage this increased need for power requires a more rapid decarbonisation of electricity generation, more energy storage and progress in fossil fuel abatement. These are trends which are already in place.

Ex 9: **Power Investment, 2019-23 (USDbn)**



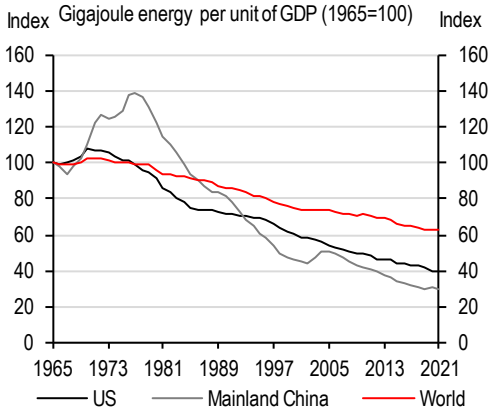
Source: IEA, Power investment, 2019-2023, IEA, Paris https://www.iea.org/data-and-statistics/charts/power-investment-2019-2023, IEA. Licence: CC BY 4.0

Solar wind and biomass were c15% of generation in 2021, and as the renewable grid footprint expands, scale efficiencies improve

Energy efficiency is improving, which helps drive economies of scale. The energy intensity of the global economy has improved, and more GDP value is being extracted from each gigajoule of energy. While the generation mix has become greener and efficiency greater, the base load energy requirements continue to grow, which create related concerns about carbon emissions and rising temperatures. Every rise in global average temperature can significantly and extensively impact natural systems, human societies and countries. Total solar, wind and biomass generation now represents about 3600TWh or 13% of generation in 2021, up from 4% in 2010.

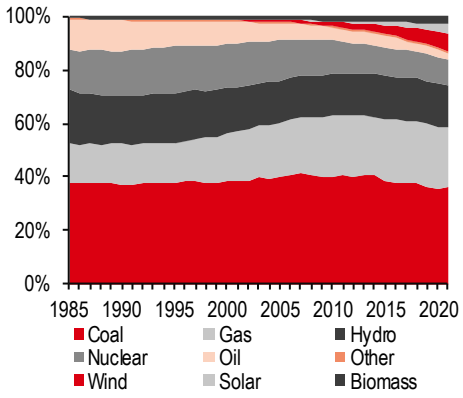
3 IEA (2022), World Energy Outlook 2022, IEA, Paris https://www.iea.org/reports/world-energy-outlook-2022, License: CC BY 4.0 (report); CC BY NC SA 4.0 (Annex A)

Ex 10: **Economies are becoming more energy efficient …**



Note: Shows energy usage (gigajoules) per capita divided by real GDP per capita
Source: bp Statistical Review of World Energy 2022; World Bank; HSBC

Ex 11: **… and, slowly, more of that energy is coming from renewable sources**



Source: bp Statistical Review of World Energy, 2022

Energy security vs. energy transition. We think energy security will remain a key focus area through the decade, and this may slow the pace of decarbonisation for some regions. In recent years, fossil fuels have been required as a bridge to cope with insufficient supply of cleaner energy sources. The recent energy crisis in Europe has reinforced the need for security of supply, but over the medium-term it may have may have accelerated the energy transition, based on the investment flows.

At the macro level during the period 2019-23, investment in renewables outsized all other investment and represented over 50% of the USD5.2trn of investment, with grid and storage the next largest category of investment accounting for over 30%. Going forward, ongoing investment in the grid and storage is estimated 5trn out to 2050e.

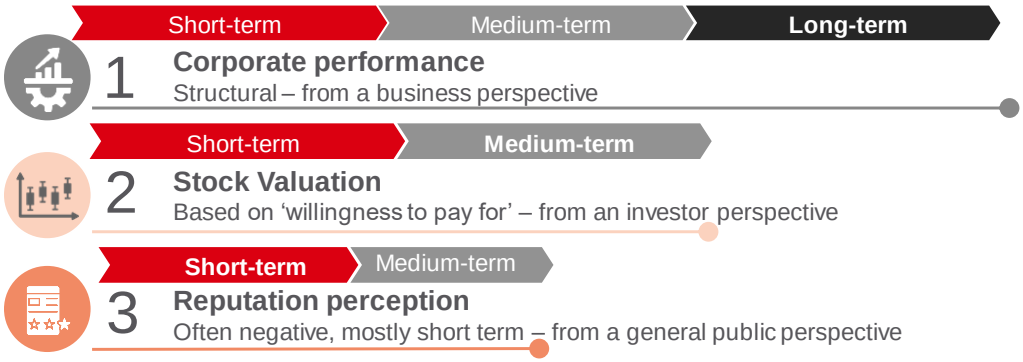
Over the next decade, the social mission is for all global citizens to have access to electricity. But almost 800m people, or 10% of the world's population, do not have access, creating significant inequity of opportunity. Given the expected investment flows this may improve. But **governance** decisions will also play a factor in determining penetration, given that industry returns have been under pressure.

Corporate strategies will produce significant changes in generation profiles. This expansion of the renewables investment envelope is also evident in the strategies of the electric utilities in this note, both in terms of the evolution of their recent generation profiles, the long-term strategies and the direction and amount of capital deployment.

Time horizon for the ESG impact on share price and valuation

In our evaluations of risk and opportunity transmission, we consider the impact of ESG/sustainability issues on three key areas: corporate performance, stock valuations and reputation perception. In this note, we are particularly focused on factors influencing corporate performance over the medium and long term.

Ex 12: **ESG and sustainability risk and opportunity transmission**



Source: HSBC

Medium- and long-term corporate performance risks are high – environmental, regulatory, asset stranding, technology risks. Every thermal power plant company in the sector faces higher risks to corporate performance owing to the size of its environmental footprint and related impacts on climate change. We attempt to quantify the potential range of outcomes for both the GHG footprints as well as the usage of industrial water.

The war in Ukraine followed by spike in energy prices reinforced the need for energy security. A key focus for the coal power companies is to enable faster growth of renewable power generation due to its increasingly competitive levelized cost of electricity (LCOE) versus alternatives, lower emissions footprint and local generation. However, the transition to green energy could be inflationary in the short-term as demand for scarce commodities increases.

Reputation perception. Electric utilities using fossil fuel generation have negative reputational risks in the short and medium term. These companies are the among largest CO_2 emitters in the energy system. While resource consumption, emissions, water consumption and waste (including ash) are always in focus, there have also been other major reputational issues, which can be affecting share prices including the impact of construction and operation of power plants on the environment. In our experience when industrial accidents or other corporate reputational issues do emerge, they are generally negative in context and often have immediate knock-on effect on share prices.

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The full note covers sections including environmental factors – emission causes/scope and water use; scope 1 and 2 emissions; carbon offsets; China – economic growth and electricity demand; emissions trading schemes; social and governance considerations; capital investment decisions; corporate materiality; and company updates on China Resources Power, Kepco, NTPC and RWE.

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