The evolution of the energy transition

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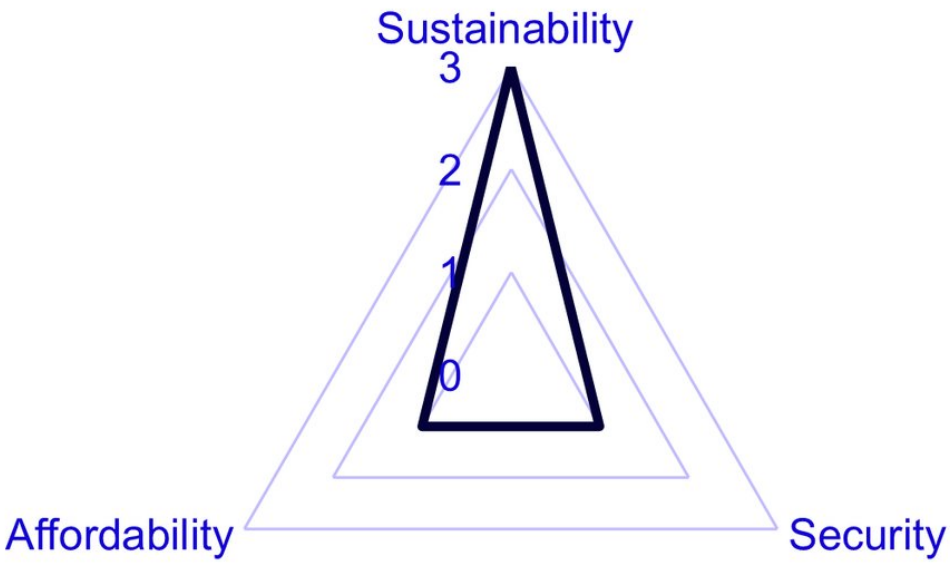
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Key Takeaways

- The energy transition is constantly shifting, moving through three distinct phases since the signing of the Paris Agreement in 2015.
- In the first phase, between 2015 and 2019, most emphasis was placed on climate sustainability.
- In its second phase, between 2020 and 2022, amid the COVID-19 pandemic and sharp cost escalation, an increasing focus was placed on energy affordability.
- In its third phase, commencing after the Ukraine war in 2022, greater attention has been placed on energy security.
- Rather than being weakened through such changes, assessments of the energy transition and related demand and supply for strategic metals will be increasingly viable by a broader focus on security, affordability, and sustainability.

It is now safe to say that the energy transition – the movement towards a lower carbon economy backed by government targets, shifts in market pricing and new technologies for energy production and consumption – has reached a new phase. Where the transition was previously defined by climate goals and the race to net zero, now a more nuanced reorientation, which includes the broader consideration of cost and security, is underway. One can see this evolution sequentially, focusing on the transition changing phase by phase. One can also see it in the changes Wood Mackenzie and WisdomTree have made to the assessment criteria, which anchor our portfolio of indices and Exchange-Traded Products (ETPs). This blog will assert that, rather than being weakened through such changes, assessments of the energy transition and related demand and supply for strategic metals will be increasingly viable by a broader focus on security and affordability as well as sustainability.

Figure 1: Energy transition policy focus: phase one (2015-19)



Source: Wood Mackenzie. Conceptual scale with three defined as a policy priority.

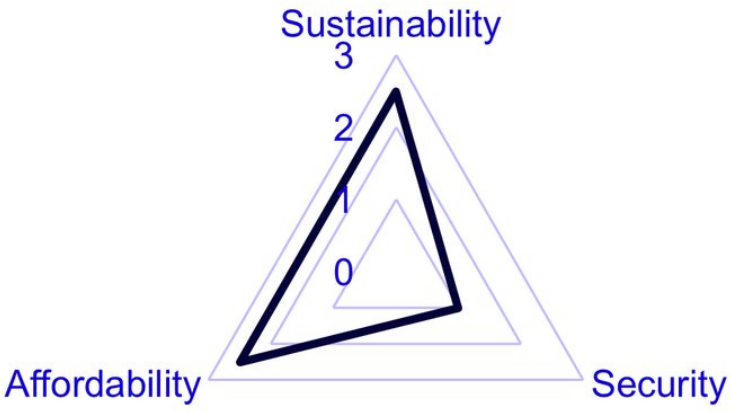
Phase one: From Paris to Wuhan (2015-19)

The energy transition, or transitions, has broad connotations around the world. That makes establishing just what it means a challenge. A timeframe helps, and there is general agreement that the Paris Agreement of 2015 was a breakthrough in the fight against climate change, one which ushered in a proliferation of private and public sector environmental action we associate with a transition from high to low carbon energy systems[1].

One can see consistent intensification of support for greenhouse gas emissions reductions in the following years, culminating in the wave of benchmark 2050 net zero targets adopted in 2019. The rapid expansion of policy coverage of this period, driven by the improvements in the science of climate change, gave rise to a focus on temperature-defined planning pathways, consistent with optimism about the feasibility of avoiding dangerous climate change by following a path to the ambitious 1.5ÚC goal set at Paris[2].

The demand for commodities consistent with a 1.5ÚC pathway shaped the initial Wood Mackenzie and WisdomTree strategy, which was developed then. The broader considerations which have traditionally shaped the formulation of energy policy strategies, known as the energy trilemma and encompassing affordability or equity and security of supply, did not go away but were superseded in the short term by the focus on the climate emergency, growth in low carbon markets and demand from regulators, shareholders and stakeholder for the related environment, social and governance (ESG) assessments[3]. The period's overt policy focus, represented simply on a numeric scale in Figure 1, in which a score of three represents a policy priority, ended with the first reported human case of COVID-19 in Wuhan, China, in November 2019.

Figure 2: Energy transition policy focus: Phase two (2020-22)



Source: Wood Mackenzie. Conceptual scale with 3 defined as a policy priority.

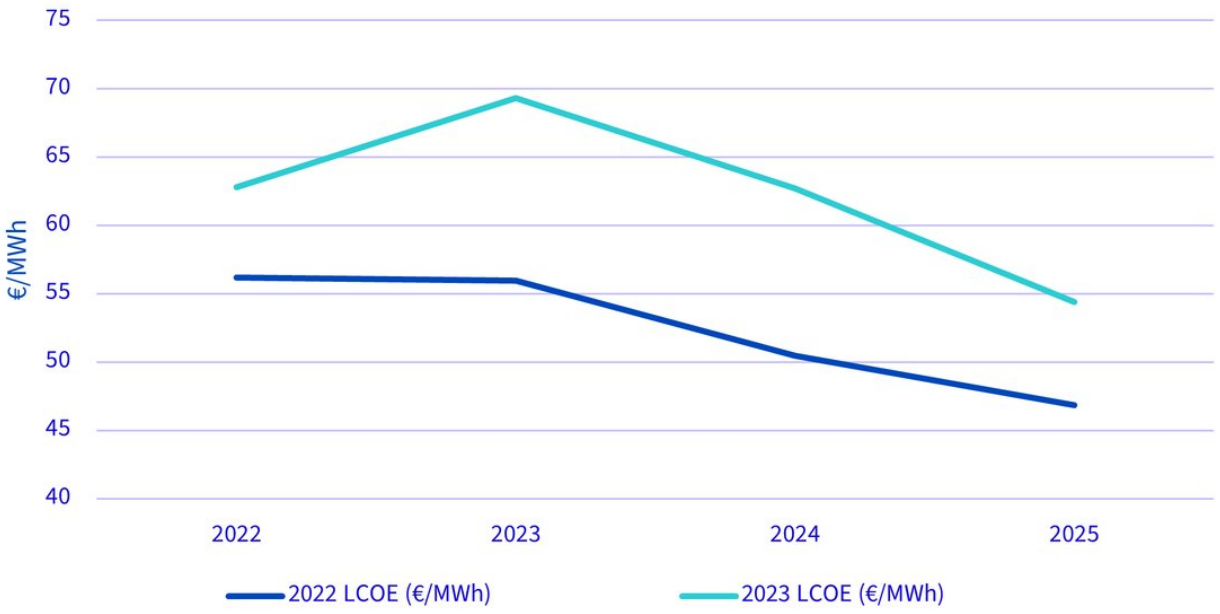
Phase two: From Wuhan to Ukraine (2020-22)

The energy transition entered a new phase from the onset of the COVID-19 pandemic. To be sure, the sustainability ambitions of the former phase of the transition carried over through the lockdowns adopted to combat the pandemic. It is worth recalling that it was in the autumn of 2020 that China, the world's largest greenhouse gas (GHG) emitter, announced that it would cut emissions to close to zero by 2060 and rapidly adopted policy support to ramp up capacity from the transition further[4].

What is notable about these years is how affordability became more prominent, and expectations of the energy transition were tempered. The global economic shutdown reduced GHG emissions rates, but they quickly bounced back. Consumer price inflation rates began rising in early 2021 around the world as a combination of factors linked to government stimulus packages, and increased demand for goods and services stretched the capacity of global supply chains to breaking point and tightened commodity and labour markets alike. In the UK, for example, these trends saw inflation rise from under 1% at the beginning of 2021 to over 11% by the autumn of 2022[5].

Wood Mackenzie data attests to the rising costs of renewable technologies. Solar PV levelised electricity costs in Europe rose 23% year-on-year in 2023 (see Figure 3). Even the cheapest low-carbon technology to deploy in Europe, onshore wind, saw an increase of more than 25% between 2020 and 2023 due to COVID-related supply chain disruptions and broader supply chain capacity limitations, as well as the multifaceted impact of higher interest rates on renewables[6].

Figure 3: Solar photovoltaic cost outlooks



Source: Wood Mackenzie. LCOE = levelised cost of electricity for European average cost for single axis tracker. **Forecasts are not an indicator of future performance, and any investments are subject to risks and uncertainties.**

This relatively higher price environment brought several changes to expectations of the energy transition. Three can be highlighted here:

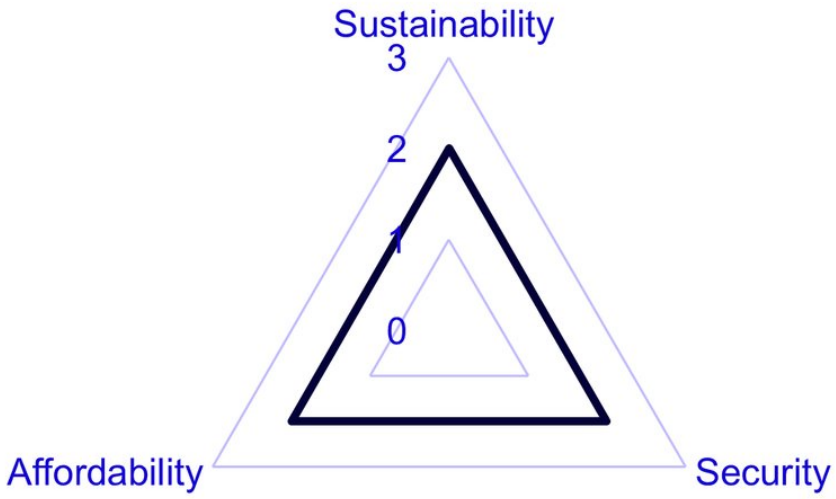
- A greater sensitivity to the costs of rapid economy-wide decarbonisation associated with a 1.5ÚC case became less likely, and our view of short-term energy transition commodity demand was trimmed as sustainability goals needed to be increasingly adjudicated alongside affordability concerns (see Figure 2).

- The transition began to slow down still further as it became evident higher costs were not adequately captured in the levels of state support set in phase one of the energy transition to 2019, hence the poor conversion of potential value into economic performance of renewable projects and low carbon equities in the renewables space. The composition of our indices has evolved as a result.

- At the same time, the relatively higher prices for the commodities holding strategic value for the goal of a sustainable, affordable and secure energy system prompted investments in supply-side capacity for commodities like lithium. Rapid supply expansion outstripped demand, leading to softer price formation for some commodities and base metals.

Cost sensitivity spiked in 2022 as Russia's invasion of Ukraine in February of that year unleashed a wave of price inflation.

Figure 4: Energy transition policy focus: Phase three (2022-24)



Source: Wood Mackenzie. Conceptual scale with 3 defined as a policy priority.

Phase three: From Ukraine to the present day (2022-24)

The largest war in Europe since the Second World War began with Russia's invasion of Ukraine on 24 February 2022. With this, one can argue that the energy transition has entered a new, third phase. There is a much greater balance between three elements of the trilemma – sustainability, affordability, and security – than has been seen over the last decade (see Figure 4).

The security of supply imperatives was sparked by the sharp rise in energy and non-energy commodity prices in the wake of the largely unified Organisation for Economic Co-operation and Development (OECD) countries' response to Russia's invasion. It was agreed that cutting off Russian markets would help the war effort, but there were unintended consequences as markets struggled to adapt without Russian supplies and or where key raw material suppliers, like the DRC with cobalt, have not been able to match the scale of demand. Higher prices for goods and services in many European and non-European markets already experiencing post-COVID inflation led to increased affordability concerns and weaker energy transition commodity demand.

A comparable situation is now playing out as many OECD countries attempt to decouple from China

on geopolitical, security-based calculations. The onshoring and friendshoring policies and low carbon industrial policies like the 2022 Inflation Reduction Act are very much consistent with the logic of supply security for the energy transition and the desire to reinforce access to the key raw materials the low carbon economy rests on. They also promise a more costly, slower energy transition[7]. We note these developments, but given China's centrality to strategic commodity value chains, Wood Mackenzie and WisdomTree have retained Chinese equities in our full value chain assessment strategies.

Conclusions

Policies, regulations and strategies that reflect the goals of sustainability, affordability and security have a broad base and mutually reinforce policy goals. Pursuing an interest in national security through low carbon supply can boost longer-term expectations of commodity demand. In practice, the trilemma is dynamic, a flux of policy priorities which are themselves shaped by the short-term vagaries of politics and the electoral cycles which punctuate them, as well as markets capacity for correction, as we have seen in some commodities (cobalt, lithium and nickel for example) where price declines have followed strong supply responses.

Appreciation of this flux and the reinforcement different policy goals accomplish gives rise to a more prudent expectation of the lasting impact which may be expected from the energy transition. Although sustainability is less an exclusive focus, and there is clear evidence of ESG fatigue, that does not mean the prevailing focus on energy security and cost can't advance the cause of sustainability[8]. But it does check the expected pace of change. In response, we at Wood Mackenzie and WisdomTree now calibrate our indices and ETPs to our base case demand for strategic commodities and low-carbon value chain equities. The more moderate projection with around 2.5ÚC base case is consistent with the difficulties reconciling three policy imperatives in the current geopolitical climate.

1. The number of national climate policies more than doubled between 2014 and 2016, source Climate Action Tracker; Home | Climate Action Tracker

2. The 2014 Synthesis Report (SYR) of the IPCC Fifth Assessment Report (AR5), https://www.ipcc.ch/report/ar5/syr/,Energy Transitions Commission, Energy Transitions Commission | Achieving net-zero emissions by 2050 (energy-transitions.org)

3. World Energy Council World Energy Trilemma Index | World Energy Council)

4. FT China pledges to be 'carbon-neutral' by 2060 (ft.com)

5. Source: House of Commons Library Rising cost of living in the UK for details, Rising cost of living in the UK - House of Commons Library (parliament.uk)

6. Reuters, Higher interest rates pose risk to renewable sector, hurting energy transition, say analysts | Reuters; and Wood Mackenzie Europe levelised cost of electricity 2023 (LCOE)

7. Wood Mackenzie, Not Made in China; Not made in China: the US$6 trillion cost of shifting the world’s clean-tech manufacturing hub | | Wood Mackenzie) Harvard Law School.

8. Navigating ESG Fatigue in Shareholder Voting (harvard.edu)

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