A wake up call for the energy sector? The IEA's path to net zero

By Olivier Eugène, AXA IM ESG Research Head of Climate

The energy industry lies at the centre of any attempt to deliver on the goals of the Paris Agreement on climate change. Huge changes in production and consumption are required if the world is to reach net zero emissions and to minimise the global temperature increase to +1.5°C of pre-industrial times, so the International Energy Agency's (IEA) 18 May report setting out one potential pathway is of great interest. It is a complex, detailed assessment of how the world might press ahead – and it makes clear the immense challenge ahead for energy companies and their investors.

The report assumes that the desired outcomes of net zero and +1.5°C are indeed to be achieved by 2050 and then backtracks to 2020 to assess what should be done to succeed. **This touches on supply and demand of energy, technologies, carbon pricing, social justice, the role of governments, and the role of investors**. All the points are inter-related and interdependent. If some developments do not occur, more will have to be done elsewhere. Overall, the IEA has listed 400 milestones that underpin the trajectory to net zero.

A sample of key milestones

	2019	2020	2030	2040	2050
CO2 emissions (in Gigatons)	35.9	33.9	21.2	6.3	0.0
Energy supply (in exajoules)	612	587	547	535	543
Share of fossil fuels	80%	79%	62%	35%	22%
Share of renewables	15%	16%	31%	55%	67%
Share of nuclear	5%	5%	8%	10%	11%
Electrical Capacity (in gigawatt)	7 484	7 795	14 933	26 384	33 415
Share of renewables	36%	38%	69%	79%	80%
Share used for hydrogen electrolysis		0%	6%	8%	10%
Crude oil production (in mnb/d)	98	91	72	43	22
Market share of OPEC	36%	34%	39%	45%	52%
CO2 price in developped economies (in $/t)		75 (2025)	130	205	250
Capital investments - In USD trillions		2.3	5.0	4.8	4.5

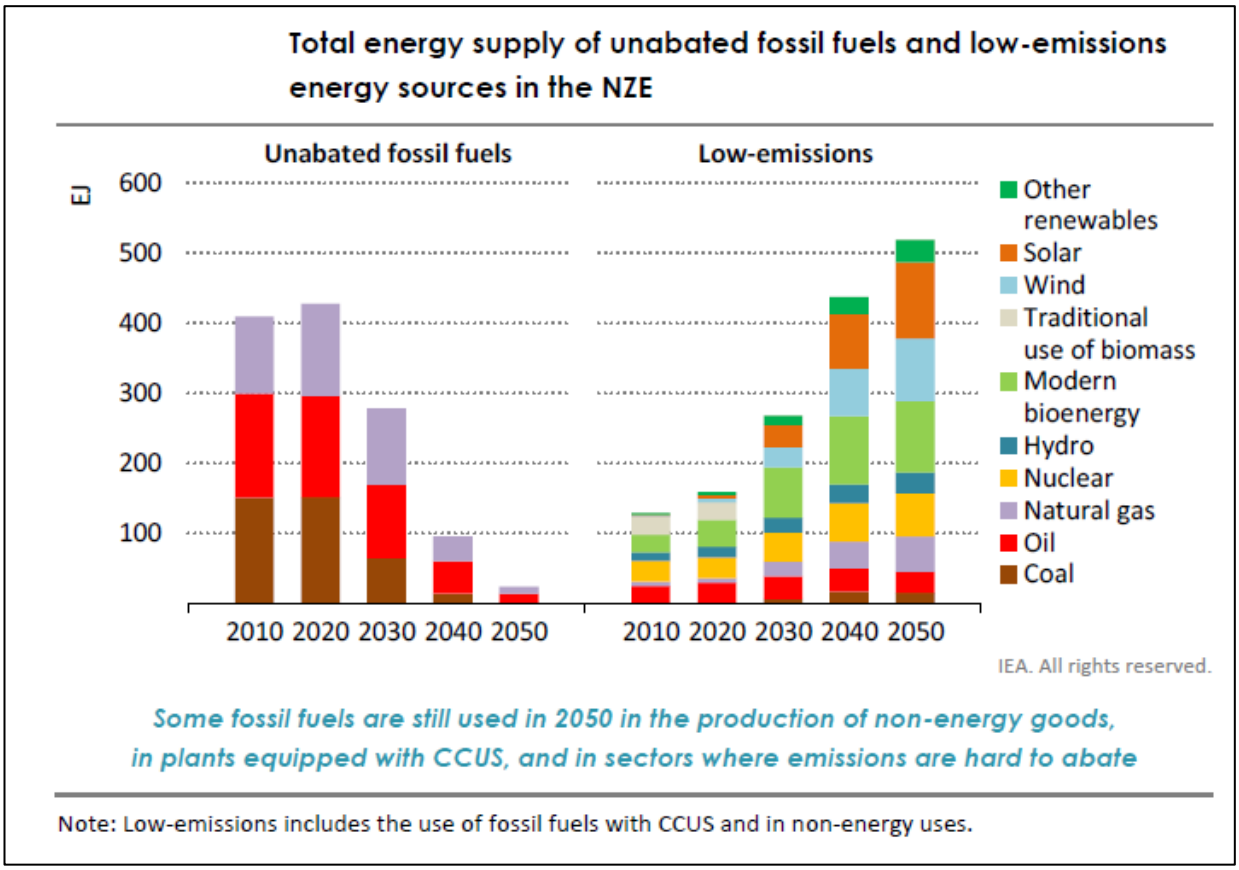
Source: IEA, AXA-IM

Dr Fatih Birol, Executive Director of the IEA, insists that this is *a* path, not *the* path. It joins other reports and assessments, such as that published by the Intergovernmental Panel on Climate Change in 2018 and **should be assessed as a whole package, with individual conclusions not taken out of the broader context**. It is not simply about oil and gas, but about the entire energy ecosystem.

In our view, the most salient and striking points are as follows:

- Speed is of the essence and **the transition needs to accelerate today**, with significant progress required by 2030 to achieve the temperature objective
- **It is as much about supply as it is about demand**, with the steep decline in fossil fuels over the next decades being matched by the deployment of substitutive technologies
- It is mostly about developing **more renewable energy** (largely electricity), the **electrification** of whatever can be electrified, creating a **hydrogen** economy, pushing **efficiencies** to the fore and **capturing emissions** that cannot be abated
- **It is global**. Governments need to be involved, everyone will have to change many habits, it will require trillions of dollars of investment
- One of the IEA's standout conclusions is that there should be **no new developments of oil and gas fields from now on.** This has generated perhaps the most heated debate, but curiously, an explicit call for a **doubling of nuclear electricity capacity** has gone down relatively smoothly

The IEA's Net Zero Emissions by 2050 (NZE) scenario



Source: IEA. Note: 'Low-emissions' includes the use of fossil fuels with carbon capture, utilisation and storage (CCUS) and in non-energy uses

If the IEA's scenario is to become a reality, we think it will first face many hurdles. As with every proposed pathway to net zero/+1.5°C it will require sustained, global political and societal support as well as the large-scale reallocation and deployment of capital. Beyond that, the IEA report makes clear how essential it is that everything is done in parallel, given multiple mutual dependencies.

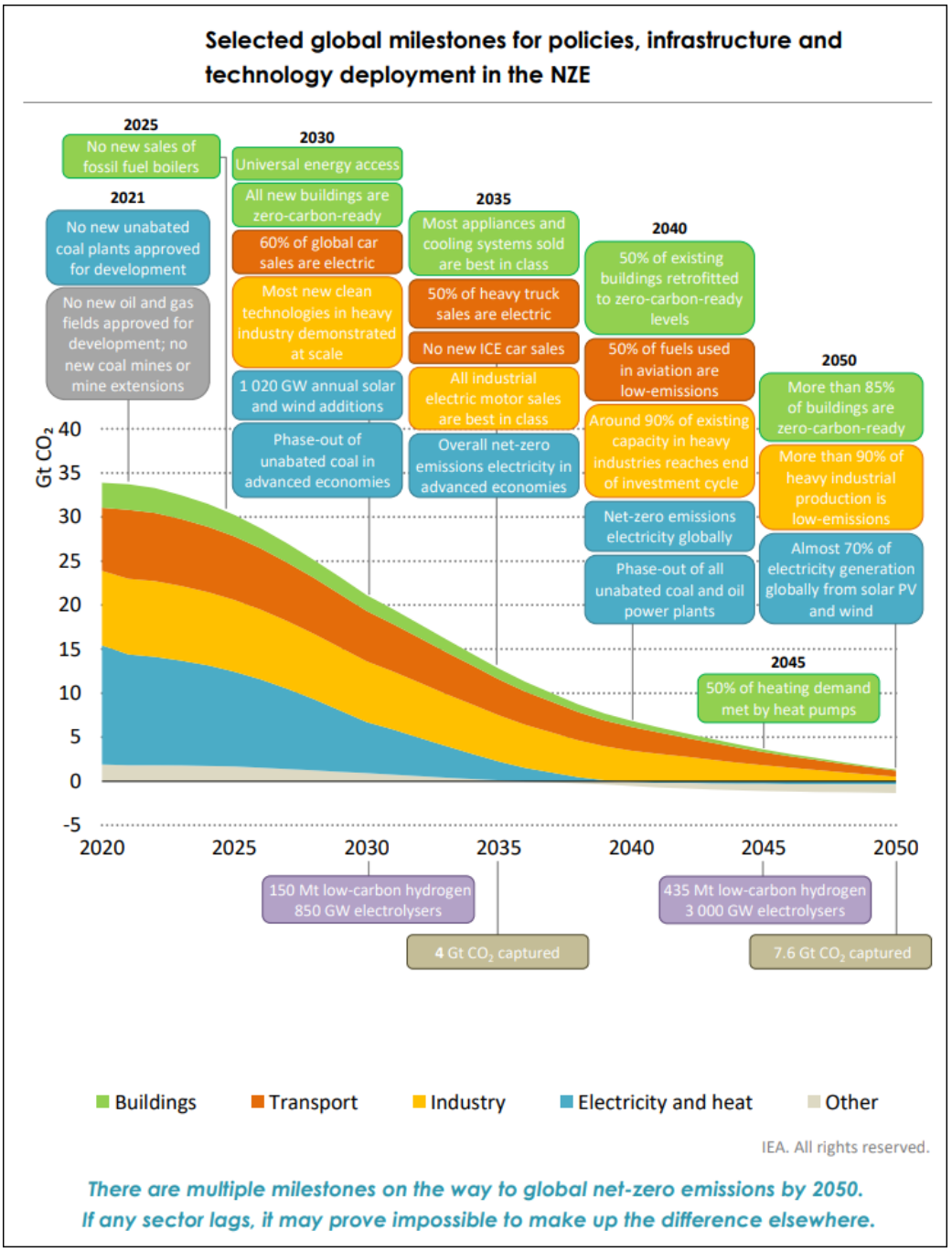
For instance, a high cost of carbon is an absolute necessity to deploy many technologies; the growth of hydrogen is connected to the growth and declining cost of renewable electricity; the decline in gasoline demand is linked to the penetration of electric vehicles that itself is linked to the development of a charging infrastructure and further improvement in battery technologies.

Indeed, one of the crucial findings from the IEA is that **some 46% of the technologies needed – in batteries and much else besides – are simply not yet ready** and must be matured, industrialised, or even invented.

And perhaps the ultimate hurdle to clear lies in the tremendous ubiquity of fossil fuels in our economies. In the spring of 2020, when the world economy stopped as the COVID-19 pandemic raged, oil demand fell by "only" 25%. Even at what felt like a standstill for so many of us, the turbines were still whirring, the boilers still running, the emissions still escaping.

For AXA IM, and for all investors, the IEA report spotlights both risks and opportunities. Many business models will be disrupted and may be rendered obsolete. Companies and even countries will have to rethink their role in the energy ecosystem, and not all will come out healthy and well. Rules and laws will combine with social pressure to influence and

oblige those entities to act. It is not, however, all doom and gloom. Opportunities abound already and more lie on the net zero pathway, be it in new clean technologies or new business models. Investors must carefully pick their way through this minefield if they are to deliver performance alongside sustainable climate solutions.



As investors wrestle with these era-defining issues, the IEA report has helped to illustrate the challenge of achieving this net zero/+1.5°C pathway. We can imagine the milestones as 400 walls, one laid out after the other and each one with a single door. We – investors, governments, and consumers – must line up those hundreds of doorways if we are to reach the prize on the other side.

In all likelihood, the IEA's precise scenario will not come to pass. There are so many variables, and some of the milestones are more challenging to achieve than others. In our view, the goal of reducing oil consumption by more than 20% by 2030 will be tough, and the suggestion of building more nuclear capacity in the Western world will likely meet significant resistance. Other milestones, such as the development of renewable electricity, will build on existing momentum and have an easier route.

AXA IM has committed to reduce the carbon profile of its investment portfolios to net zero by 2050 or earlier. Although the IEA report will not on its own define our policy, its conclusions and the path outlined will be integrated in our analyses and contribute to our thinking. We expect many others to do likewise.

The picture will change. New trends and imperatives will emerge, but the levers and tools – and the challenges – of what it will take to reach net zero and keep temperatures in check are all accounted for in the IEA report. It has been called unrealistic or provocative and even a fantasy by some, but ambitious and feasible by others. Either way, it feels like a watershed moment, when the industry at the heart of the problem snapped to attention – that alone should help build momentum towards net zero.

Ultimately, the IEA has set out a complex and demanding scenario, and highlights with great clarity how dramatic and disruptive the energy transition will be. It shows that social, financial, and political capital needs to be harnessed today and for decades to come. There is much to consider for investors here, perhaps most notably the call for an end to new oil and gas fields, but through every one of those 400 milestones lies a fresh challenge for all stakeholders – and for all our ways of life.