



## *The two major threats to a 'net zero' world*

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**Highlight:** *Shell's* head of strategy says the chances of meeting the global carbon emissions targets depend on two crucial factors.

### **Body**

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To meet global carbon emissions goals, domestic and geopolitical policies have to align to create a pathway to [net-zero emissions](#) by 2050. In the world in which we currently live, that looks unlikely.

Global emissions targets are already being missed, the mix of geopolitical tensions and domestic policies is muffling the impact that China's dominant clean energy technologies could have, and in the wake of the pandemic and Russia's invasion of Ukraine, energy security has been prioritised over emissions, particularly in Europe.

It's not all doom and gloom though. *Shell's* international vice president for strategy, insights and scenarios, Laszlo Varro, says the transition to net zero will succeed or fail depending on how well two "global cleavage points" are managed.

One is the financial gap between the Western world, which is investing heavily in clean energy technologies - about 90 per cent of the global investment in those technologies is being made by the West and China - and the developing world.

The other is what Varro refers to as the "technology interface," or being able to leverage China's "unique capabilities" within a "challenging" geopolitical context.

Varro, who's in Australia to speak at an Australian Energy Producers conference in Perth this week, says there has been a surge in clean energy investment in China and a remarkable inflow of investment in the sustainable finance sector in the Western world. About 85 per cent of that money, however, stays in the Western world.

Canadian pension fund buying a Swedish wind farm, " he said. "Whereas last year, green bonds in Africa were 0.1 per cent of the total green bond deployment."

The developing world, where populations are growing even as those in developed economies and China are flatlining or shrinking, doesn't have the funds to finance a transition to clean energy and, Varro says, there is no time and no carbon budget (if net zero is to be achieved as targeted) for it to have a conventional industrialisation and then make that transition.

The good news, he said, is that the technology that makes a transition plausible is solar and most developing countries are close to the equator. Scale "leapfrogging" - largely bypassing fossil ***fuel***-based energy systems and

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jumping straight to solar or hydro while using natural gas as the reserve - is already occurring in Africa and elsewhere.

A two-thirds renewables, one-third natural gas combination produces roughly 100 kg of carbon dioxide per megawatt of power, or less than half the current European or US average, Varro said.

(Varro and his team at Shell, a major gas producer, see the impact of electric cars resulting in peak oil demand somewhere between 2025 and 2035, but see a significant future for natural gas - for use in heavy industry or as reserve power for renewable systems that are weather dependent - even in a net-zero environment, with carbon capture and storage or removal playing a role).

### 'A London every quarter'

Unfortunately, while the developing world might be leapfrogging its way towards cleaner energy, it is also rapidly urbanising and building the infrastructure to accommodate the large shifts in populations towards urban centres.

"Urbanisation is currently running at the speed of a London every quarter," Varro said.

"This is the people who live in their villages and move to Cairo, or Nairobi or Jakarta or Karachi. That's a London every quarter and that is concrete and steel and glass and plastics and aluminium. All these are very energy-intensive commodities; altogether representing around 10 billion tonnes of carbon dioxide emissions."

There's also that paucity of investment for clean energy in the developing world. Varro says Shell's best estimate is that the developing world needs about seven times the level of clean energy investment that is occurring within the developed world.

And that is difficult to imagine, he said, given the segmentation of the global financial system - which makes it a factor that could cause the transition to net-zero emissions to fail.

The maths of net zero are quite daunting. In 2021, the Intergovernmental Panel on Climate Change said that to achieve the goal of limiting global warming to 1.5 degrees by 2050 the carbon budget - the cumulative emissions - would be 500 gigatonnes (Gt).

From the starting point of January 1, 2020 to the end of 2022, however, there has already been about 120 Gt of emissions. With annual global emissions of more than 40 Gt in 2023, you don't have to be Einstein to see how challenging keeping within, or anywhere close to, that emissions budget will be and how significant a role developing economies - and China - will have in the success or failure of the transition.

Geopolitics, therefore, represents the other major threat.

China leads the world in the mass production of clean-energy technologies, whether it's EVs, batteries, solar panels, wind turbines or the processing of the critical minerals required.

Its economy is also still heavily dependent on coal, despite a massive state-directed and subsidised deployment of clean-power technologies. Varro said China's domestic coal-mining output last year increased by more than Australia's entire exports of LNG.

China is, however, the largest EV manufacturer in the world and the EV market share in its domestic market is approaching 50 per cent. That will affect its own emissions and, to the extent that it is able to export its EVs, those of third countries.

This month's announcement of new punitive tariffs on Chinese electric vehicles, batteries, solar cells and critical miners by the Biden administration - made to protect the massive investments in green technologies sparked by America's Inflation Reduction Act and also influenced by the domestic political sensitivity of the US auto industry in an election year - is being criticised outside America because of the impact it will have on the take-up of EVs and other clean energy technologies, and therefore on the rate at which carbon emissions are reduced.

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The higher prices for electric cars built in the US or Europe (which is close to imposing its own tariffs on Chinese EVs) and the need to develop their own critical minerals and battery supply chains will slow the takeup of EVs in the US and Europe.

### 'Predictable surprise'

The "next predictable surprise" is a flood of cheap Chinese EVs into developing economies, says Varro.

China's clean energy "cluster" has, he said, genuinely unique capabilities and, given the challenging geopolitical context, how the tensions are resolved is one of the key uncertainties, with the potential to facilitate or slow down the global energy transition.

How the financial gap between the Western world and the developing world, and China's unique capabilities are managed can therefore "make a difference between success or failure," says Varro.

While he thinks there are plausible routes to net zero, they will involve massive and disruptive government interventions in energy systems, economies and societies and a reduction in geopolitical tensions that have been intensifying rather than waning.

Today, those outcomes do seem unlikely.

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