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Q&A-Annual capex in clean energy needs to rise considerably, including power, infra, grids, storage; Hydrogen part of transition plans: Tim Gould, IEA



Annual capital expenditure in the energy sector will need to rise considerably, with most estimates averaging in the \$4-\$5 trillion range up to 2050, from around \$1.6 trillion in 2020, **Tim Gould, head of division for energy supply outlooks and investment at International Energy Agency (IEA)**, told the Reuters Global Markets Forum on Monday, May 3.

Of that, around \$600 billion went into clean energy capex, and that was "clearly the most resilient aspect of investment in 2020 as fuel-related investments fell sharply," Gould said.

"In a concerted drive for net zero (emissions), you'd need a lot more going into clean power – obviously – but also a step-change in investment in infrastructure, grids, storage, recharging infrastructure, as well as efficiency and more sustainable fuels."

Following are edited excerpts from the conversation:

Q: What is the progress on green-energy transition targets, and if they are going in line with formal commitments?

A: Formal commitments are in the process of being strengthened, in some cases quite considerably. We now have more than 40 countries, including many of the major global players, committed to net zero emissions by mid-century or soon after. That's more than 70% of today's global GDP (gross domestic product) and emissions, So the pledges are certainly moving.

But what about the emissions? Not changing as quickly. In 2020 there was a major dip in energy-related emissions during the first parts of the pandemic, -15% y-o-y in April, but by the end of the year we were already back above 2019 levels.

Q: Could you give us a ballpark number on what the investments/capex involved would be to meet these mid-century zero-emission targets? And what part did clean energy make of that?

A: There are all sorts of numbers out there, depending on your definitions of investment. But a few things are clear -- in 2020, capex in energy was around \$1.6 trillion. This will need to rise considerably; most estimates an average from here to 2050 are in the \$4-\$5 trillion range -- average annual capex.

Clean was around \$600 billion and that was clearly the most resilient aspect of investment in 2020 as fuel-related investments fell sharply. But there's still a very long way to go.

Let's be clear, the amount of money going into energy would need to increase in the future, whichever scenario we're in. But in a concerted drive for net zero, you'd need a lot more going into clean power – obviously – but also a step-change in investment in infrastructure, grids, storage, recharging infrastructure, as well as efficiency and more sustainable fuels. And one feature of the transition is that you're moving towards more of a capex-dominated system where fuel costs are lower, much lower in many cases.

Q: Can nuclear power be inside the green-energy plan? And will it carry the bulk of the clean energy ambition?

A: Nuclear obviously depends on country choices, but at IEA, we feel that it has a role to play - especially lifetime extensions for existing capacity. There's a lot of interest in small modular reactors too, to match the needs of a changing electricity system, but these are for slightly further down the road.

It's not going to be leading the charge in the near term. Investment in advanced economies has really fallen back, the only major growth area is China. So, it will be renewables, particularly solar and wind, that lead capacity additions in the power sector.

Q: In stock returns, have renewable companies actually outperformed their fossil peers?

A: We did some joint work with Imperial College in the UK to look at returns over the last ten years, and renewables have indeed outperformed their fossil peers. But these opportunities still lack the market size and liquidity that will be needed.

Q: How green can hydrogen be in the next five years?

A: Among all the fuels, expectations for the near-term expansion of low-carbon hydrogen production are higher than ever. Hydrogen features in quite a few of the recovery spending plans, notably in Europe. Still relatively small in the system, but the 2020s have to be a decade of innovation and early deployment to get costs down.

Q: The Australian government continues to choose of renewables as just a top-up to the fossil fuels baseload. Do you agree with their argument that current renewables tech can't completely replace fossil fuels, and this will inhibit economic growth as factories have to be cut due to lack of power?

A: There are systems around the world that are already operating with very high levels of renewables, I think the notion that they are an add-on doesn't hold. That said, it's clear that - as you add solar and wind in particular - the rest of the system cannot stand still. Policy makers and system planners have to look carefully at variability in demand and supply to make sure that it can be managed. But the means to manage it are well-known; flexible generation, robust grids, storage, demand-size response.

Q: What about the fact that a major portion of Australia's revenue comes from exports of oil and gas and coal?

A: In our view, the pandemic has already reduced the present value of future oil and gas production by around a quarter, mainly due to lower near-term prices. If you had a significant acceleration in policy action and clean energy deployment in line with the Paris Agreement, that amount would come down further still. This is not about Australia, but a more general point - especially for economies that depend heavily on hydrocarbon revenue in the Middle East, etc.

Q: Does the quality of coal being used matter in the larger picture? Or to transition to renewables the way to move forward?

A: You can see some countries where coal quality is an issue, India's a very good example. But unabated combustion of high-quality coal in highly efficient power plants is still associated with much higher emissions than anything compatible with energy transitions.

Q: Dow Chemical former CEO Andrew Liveris, who is board member of Saudi Aramco, said fossil feedstock should be part of the equation. What is your view on fossil feedstock?

A: If you look at all of the uses of hydrocarbons, then their use as feedstock is the most durable in most energy transition scenarios. It stands to reason; this is a non-combustion use of oil and gas in an area where substitutes are not competitive or widely available. So, yes, I'd agree with that.

Q: How can developed economies aid -- both financially and otherwise -- emerging ones to make the transition faster, alongside themselves? Are financial sops the way to go, especially to developing countries?

A: In particular for developing economies - in our view that's one of the big potential fault lines in transitions. There's a lot to be done to get policies and regulatory frameworks in place to support clean energy investment in the developing world, but it can't be true that all the homework goes to developing economies. There's much more for advanced economies to do to support that process and help to get fast-growing developing economies onto a lower-emissions track.

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