

Energy Source **International Energy Agency**

6 takeaways from the IEA's net-zero scenario

Plus, what a renewed Iran deal would mean for oil markets and uranium supply depresses prices



A stark report from the IEA lays bare the challenge to achieving net zero emissions by 2050 © Andrey Rudakov/Bloomberg

Derek Brower, Justin Jacobs, and Myles McCormick YESTERDAY

This article is an on-site version of our Energy Source newsletter. [Sign up here](#) to get the newsletter sent straight to your inbox every Tuesday and Thursday

Welcome back to another Energy Source.

The International Energy Agency's [net-zero road map](#) this week made waves. We offer our take in our first note.

Our second is about what a breakthrough in the Iran nuclear deal negotiations could do to oil prices.

There won't be a newsletter on Tuesday because we will be on virtual stage for our Energy Source Live event, featuring guests ranging from Senator Joe Manchin to BP's US boss, David Lawler. You can [sign up](#) here. Please join us!

Thanks for reading — and I hope to see you next week. Please get in touch at energy.source@ft.com. — Derek

What we learnt from the IEA's 2050 road map

To keep the world from catastrophic overheating, a new clean energy revolution must take place — at breakneck speed, involving unprecedented co-operation. That's the conclusion of the International Energy Agency's new net-zero emissions "road map" (NZE) to 2050.

Fossil fuel investors' cover to keep investing in more supply has been blown, noted campaigners who welcomed the IEA's "[change of heart](#)".

But another gloomier conclusion is inescapable: the world is in trouble, because the NZE scenario looks a tall order on every front: political, technical, financial, and behavioural. The scale of the changes envisaged in the scenario — and their speed — are mind-boggling. No wonder some countries have already [pushed back](#).

Here are our takeaways from the [model](#):

1. Coal is finished and oil and gas outlook is almost as bleak

No longer can oil companies such as ExxonMobil [point to the IEA](#) in saying Paris-aligned decarbonisation will still allow for hefty oil production.

On the contrary, demand would collapse in the NZE scenario: down to 72m barrels a day by 2030 — well below the lows struck during the pandemic lockdowns last year. By 2050, demand would be just 24m b/d — less than Opec currently produces.

"No new oil and gasfields are required," says the NZE report. The Permian and other existing oil and gasfields would endure (they're not "new"). Even Exxon's Guyana and Brazil projects seem OK (they're "already approved", the report says). But new exploration and the upstream spending the [IEA used to badger the oil industry for](#)? Finito.

Many liquefied natural gas supply projects being built are "also not needed". The "[golden age of gas](#)" once predicted by the agency has ended before it began.

Refinery closures are inevitable in the NZE — an electrified fleet doesn't need gasoline. It's all a "clear threat to company earnings", the document says, in one of several such understatements. And a threat also to the pension funds still addicted to these oil producers' dividends.

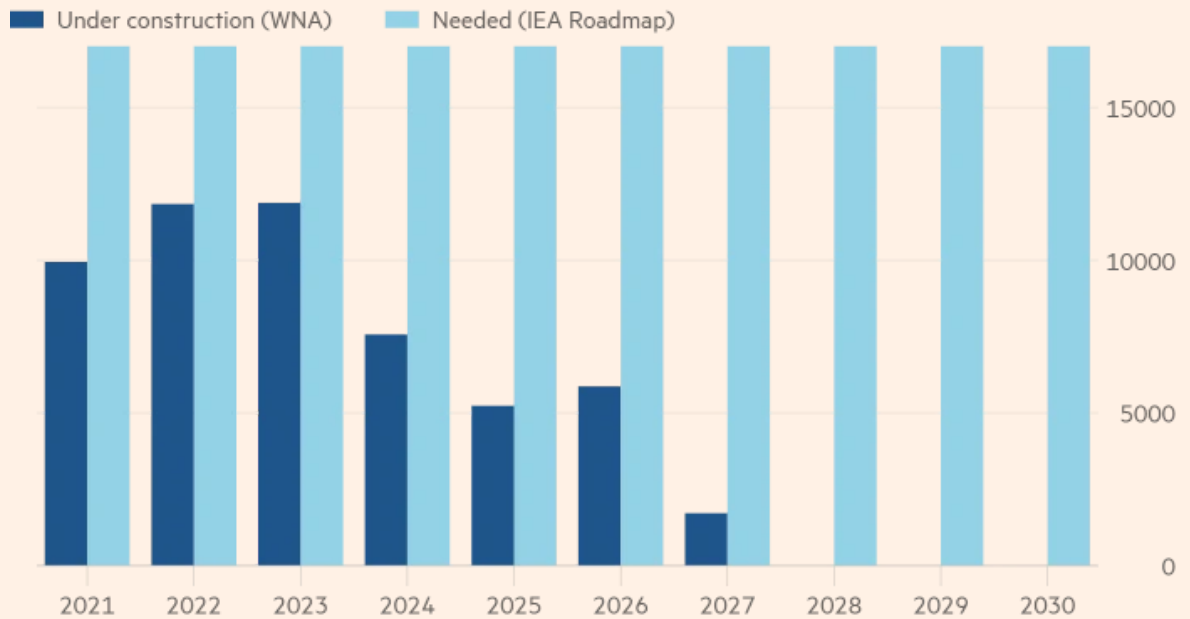
2. The NZE's numbers are jaw-dropping

The road map calls for:

- Solar and wind power capacity additions of 1,020GW a year by 2030, or four times the record level struck last year (240GW, according to [Irena](#)).
- Electric vehicle sales accounting for 60 per cent of the total in 2030, versus 4.6 per cent now.
- Annual battery production for EVs, currently 160 gigawatt hours, would need to rise to 6,600 GWh in 2030. “The equivalent of adding almost 20 gigafactories each year for the next ten years.”
- “*Every month* [our italics] from 2030 onwards, ten heavy industrial plants are equipped with carbon capture technology, three new hydrogen-based industrial plants are built, and 2GW of electrolyser capacity are added at industrial sites.”
- “Global electricity networks that took over 130 years to build need to more than double in total length by 2040 and increase by another 25% by 2050.”
- Nuclear capacity additions between now and 2030 must hit 17GW a year; and afterwards 24GW a year — far more than the World Nuclear Association [expects](#).

Nuclear reactors aren't sprouting fast enough

Capacity additions per year (GW)



Source: World Nuclear Association
© FT

And the investment needed to reach these targets is colossal.

Annual energy sector spending averaged \$2.3tn globally in recent years, the IEA says, but will have to more than double to \$5tn by 2030. On renewables alone, this would reach \$1.3tn or “slightly more than the highest level ever spent on fossil fuel supply” (\$1.2tn in 2014).

And another \$90bn of public money will be needed to “complete a portfolio of demonstration projects” by 2030. Currently, only \$25bn has been committed.

3. We don't have right tools to fight climate change

The US climate envoy was pilloried for saying the climate fight would rely on [tech that didn't yet exist](#). But the IEA sort of agrees.

In 2050, “almost half the [emissions] reductions come from technologies that are currently at the demonstration or prototype stage”, it says. It is banking a lot on hydrogen, but more than 75 per cent of its emissions reductions come from technologies that are “only at the demonstration or prototype stage”. The number is 55 per cent for the emission reductions from carbon capture and 45 per cent for bioenergy's reductions.

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“An acceleration of this magnitude is clearly ambitious. It requires technologies that are not yet available on the market to be demonstrated very quickly at scale in multiple configurations and in various regional contexts.”

Climate Capital



Where climate change meets business, markets and politics.

[Explore the FT's coverage here](#)

4. There is a lot of pressure on consumers

More than half of the NZE's reductions depend on “consumer choices”: buying EVs; installing heat pumps and solar panels; scrapping car trips and cycling more; taking trains, not planes; changing heating temperatures; and cancelling long-haul business air travel. Plus new car speed limits (100 kmh) and “rideshare all urban car trips”.

I have already installed solar panels at my house. But I also just flew across the Atlantic and drove across the US. (I saw more gas flares than EVs or charging points.) I'm curious to hear what ES readers think — any heat-pump owners out there?

5. Turmoil in producer countries seems inevitable

Opec countries that produce crude cheaply will dominate dwindling global supplies. But oil prices will fall steeply alongside volumes: \$35 a barrel in 2035 and \$24 in 2050. Per capita income in already volatile producer economies will plunge by 75 per cent.

The IEA says this “could have knock-on societal effects” — another understatement. Is Iraq robust enough to survive another budget collapse?

Meanwhile, tax revenue from oil and gas retail sales falls by close to 90 per cent between 2020 and 2050, in the NZE. So consumer country governments “are likely to need to rely on some combination of other tax revenues and public spending reforms to compensate”.

6. Co-operation is key

The NZE “hinges on a singular, unwavering focus” as “all countries co-operate towards achieving net-zero emissions worldwide”.

In a world riven by trade conflicts where nations fighting a pandemic can't even unite behind the World Health Organization, this seems the tallest of many extremely tall orders.

“Does the IEA really believe their scenario is achievable or are they just demonstrating the sheer impracticality of it?” [asked Gordon Ballard](#), an adviser to the oil and gas industry. (*Derek Brower*)

A renewed Iran deal's impact on oil markets

A revived nuclear deal between the US and Iran is hanging over an otherwise buoyant outlook for oil prices, which have rallied this year on hopes for a post-pandemic economic bonanza.

Yesterday, after the latest round of nuclear talks wrapped up in Vienna, the EU's top negotiator Enrique Mora [tweeted](#) that “an agreement is shaping up”. Russia's envoy Mikhail Ulyanov noted that a deal was “[within reach](#)”. Iran's deputy foreign minister Abbas Araghchi said there had been “good” progress.

Signs that a deal might be near likely contributed to a sharp drop in oil prices yesterday. Brent prices fell more than \$2 a barrel, a day after touching \$70/b, though markets were also shaken by the worsening Covid-19 outbreak in India.

The Biden administration is looking to restore the Obama-era deal, which dropped oil sanctions in exchange for Iran agreeing to limits on its nuclear programme.

What would it mean for oil markets?

Tehran never really left the market, despite the Trump administration's “maximum pressure” sanctions campaign. Iran has deployed a range of sanctions-busting tactics to hide shipments. This has kept as much as 1m barrels a day of exports flowing, mostly to China, according to firms that closely track the data.

Still, that's down from more than 2m b/d it was exporting before Trump reimposed sanctions.

Lifting sanctions in the coming weeks could bring as much as 1.5m b/d of additional crude back to the market by the end of 2022, says IHS Markit, a consultancy.

But that's probably not enough to spoil the price recovery, argues IHS Markit vice-president Roger Diwan, as long as the post-Covid-19 oil demand recovery continues apace. “If there's any time you want to bring 1.5m b/d back on the market, you want to bring it when demand is growing” fast, he says.

“I think it's a blip for prices, it doesn't depress prices,” Diwan added.

However, it will put pressure on Iran’s Opec rivals, especially Saudi Arabia, to maintain output cuts through next year, perhaps longer than they would have wanted. A deal would “require additional production cuts in 2022 in order to offset the additional Iranian barrels and avoid another price collapse,” Enverus, a consultancy, warned in a recent report. *(Justin Jacobs)*

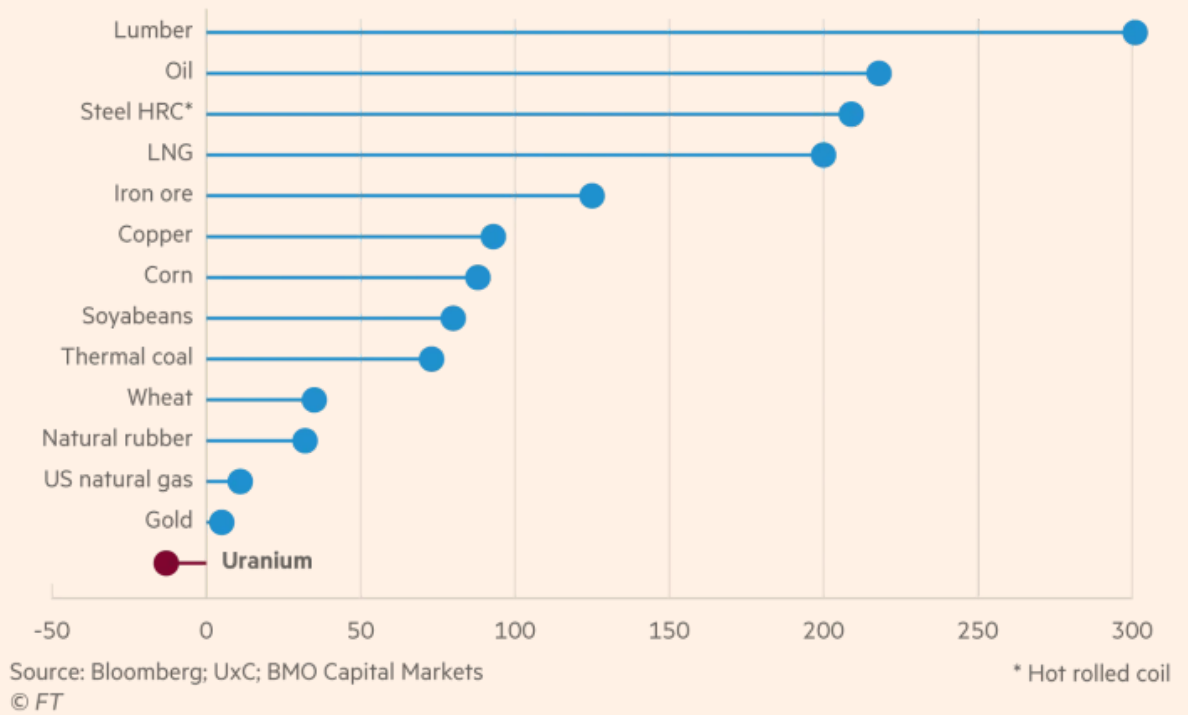
Data Drill

Uranium, a key input for nuclear reactors, has been boosted lately as a low-carbon energy source, [note our Lex colleagues](#).

But a large overhang of inventory has kept a lid on prices. Uranium has failed to keep pace with iron ore and copper prices, which have roughly doubled over the past year.

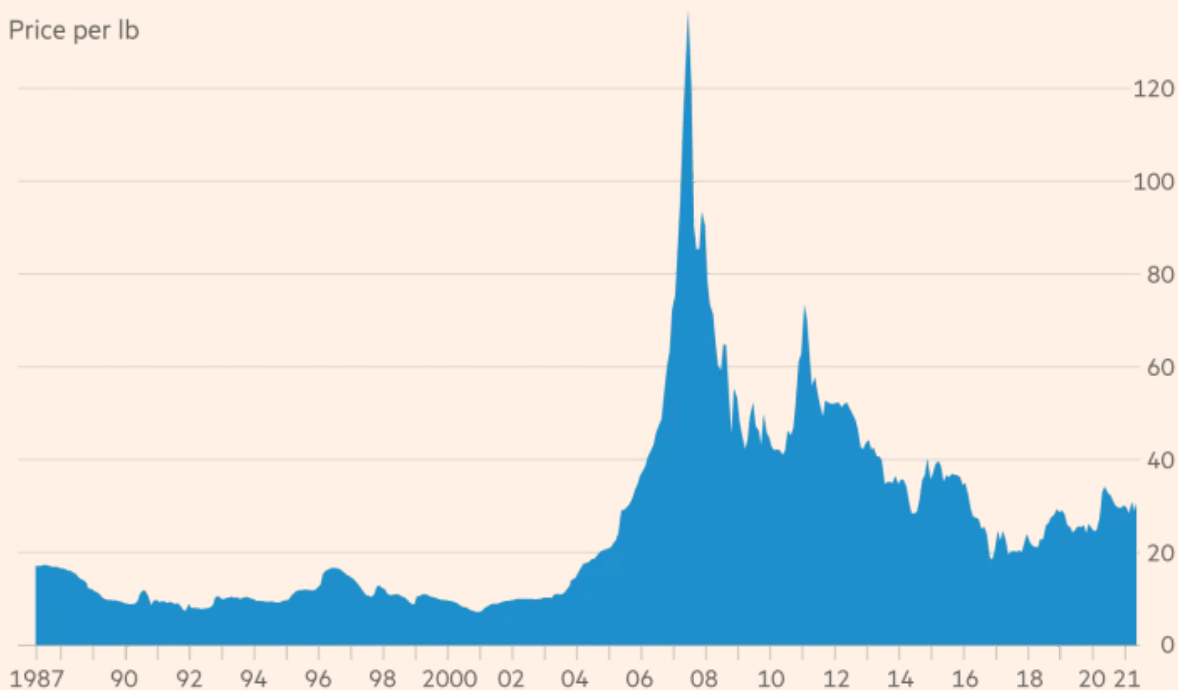
Uranium trails most commodities

One-year price change, Apr 30 2021 (%)



Then again, uranium is well below its peak

Price per lb



Source: UxC, BMO Capital Markets
© FT

Power Points

- The solar industry in Xinjiang has [launched a charm offensive](#) in a bid to head off US sanctions that threaten the dominance in polysilicon manufacture.
- SoftBank marks [retreat from global solar ambitions](#) with Adani deal.
- The Biden administration is set to [waive sanctions](#) on the company building the Nord Stream 2 pipeline into Germany.

Energy Source is a twice-weekly energy newsletter from the Financial Times. It is written and edited by Derek Brower, Myles McCormick, Justin Jacobs and Emily Goldberg.

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