Hydrogen and critical minerals: Ukraine's strategic role for net-zero future in Europe and beyond

15 November 2025

CLIMATE CHANGE AUTHORITY

The Hon Matt Kean

Chair - Climate Change Authority

Keynote speech – Ukraine Pavilion, COP30.

Check against delivery.

May I begin by paying my respects to the traditional owners of the Belem area of Brazil, the Tupinambá and Pacajás indigenous peoples.

It's an honour to attend this COP30 event in my capacity as Chair of Australia's Climate Change Authority. I'd like to pay particular thanks to my friend Yehor, whom I note has a similar role to myself at Ukraine's ministry of Economy, Agriculture and Environment... and to my other fellow panelists.

The theme of my short speech today is mostly a reflection on Australia's energy experience since Russia's illegal invasion of Ukraine – a gross violation of international law.

In summary, we already knew we had to wean ourselves off fossil fuels in order to avoid dangerous climate change.

Russia's atrocious actions taught the world we also had to sever reliance on that country's energy exports – and fast.

In effect, we now have an even greater incentive – and impetus – to decarbonise our economies.

When we do, the prospects for green hydrogen will brighten, and for the critical minerals needed to build such industries.

Fortunately, the alternative energy sources are not just emerging. Increasingly, they are the economic way to power our nations.

Ukraine and Australia have abundant resources to meet this moment – and the deep reservoirs of common goodwill to do so – together.

Of course, the market mayhem Australia's energy grid endured in the wake of Russia's war pales in comparison with the ongoing assault on Ukraine's energy system.

The brave and unstinting defence of your freedoms provides a daily inspiration around the globe.

Still, how Australia has progressed over the past 3 years may provide some useful insights for this audience. And perhaps there may be a few people back in Australia who aren't so familiar with how our power market fared at the time, and since.

The Russian invasion, as you may recall, provoked a scramble for non-Russian energy assets.

Australia benefitted by getting higher export prices for our coal and gas prices – without having to do much at all.

However, because our National Electricity Market – or NEM, for short – sets spot wholesale power prices based on a so-called "merit order", our consumers were suddenly exposed to sharply higher electricity prices too – without much change in behaviour, either.

To illustrate how our NEM works ... let's say there is market demand for 10 gigawatts of power, with solar, wind, hydro and coal bidding in at various prices for 9 of those gigawatts.

Suppliers of gas-fired power offer the final gigawatt to fill demand – and the price they get sets the price for all suppliers during that period.

That's how the "merit order" plays out. And as gas is typically the most expensive fuel, whenever that sets the price, it's likely to be a high one.

To be clear, there were other things going on in that June quarter of 2022, too.

These included an unusually large amount of our aging coal-fired power plants going offline for scheduled – and unexpected – maintenance.

Winter also got off to an unusually cold start in eastern parts of Australia where about half the population live. Hence, we saw a demand jump for energy in that June.

Again, a caveat: our winters are mild by comparison with Ukraine's... My home city of Sydney has never posted a reading below 2.1 °C at its main observatory – and that happened almost a century ago. That's plus 2.1 °C, I should emphasise.

So, what happened to our electricity market in the wake of Russia's war?

Well, our east coast gas prices rocketed almost threefold from the previous quarter, rising from about AUD10 per gigajoule – that's about USD6.60 or BRL35 – to AUD28.40 per gigajoule.

Export thermal coal prices also soared – but the 40% rise versus the first quarter was far eclipsed by the leap in gas prices.

The result was an unprecedented spike in wholesale power prices, reaching a record average of AUD264 per megawatt-hour (that's USD173 per megawatt-hour, or BRL916). The price was 3 times as much as the previous quarter's average.

And it was double the previous record for wholesale prices. To underscore the disruption, we also endured the first prolonged, NEM-wide suspension of the spot market for power since its inception in 1998. That hiatus in trading lasted 9 days.

The state of New South Wales – which accounts for about a third of the Australian economy – was at the centre of this market turmoil.

As the state's energy minister at the time, I can confirm that period had its stressful moments – although these were mild compared to what some of our Ukrainian friends here have had to endure for much longer.

In any case, I can't help but wince when I hear some in Australia calling for a return to so-called "reliable" coal as the answer to our energy needs.

In the lead-up to the market suspension, we had as much as 4.6 gigawatts of unplanned coal outages – a level probably unmatched in the market's history.

High coal prices and reduced coal generation capacity were a bad combination.

That experience reinforced my conviction that we had to reduce our dependence on the aging coal-fired power plants – they have a typical retirement age of just over 40 years, and the present average age is 38 years.

Back in that June quarter of 2022, fossil-fuel plants – which are mostly coal – supplied about 68% of the electricity in the National Electricity Market.

The NEM, by the way, covers the eastern states, or about 80% of Australia's population.

I'm pleased to say that renewables' share jumped from 32% a bit over 3 years ago to almost 43% in the September quarter.

Remember, too, that as an island nation, we don't have the luxury of some European nations of tapping into neighbours' high renewable or nuclear supplies.

New Zealand gets most of its power from hydro, geothermal or other renewable sources... but you might have noticed it would need a long cable to span what we call "the Ditch" and others call the Tasman Sea.

Anyway, in September 2025 alone, renewables overtook coal for the first time in our National Electricity Market.

And last month, renewables eclipsed coal and gas for the first time... supplying effectively half the demand.

During the spring and autumn periods when it's often windy and sunny, it's not uncommon to see renewables exceeding 75% of the market... one state even hit 150% or more, so it's regularly charging batteries or exporting to its neigbours.

If we can resolve more of the curtailment issues – when the grid struggles to carry all the solar and wind energy being generated – we should expect renewables' advance to quicken even further.

Just to bookend this issue on power prices... you'll remember a few minutes ago that I noted how wholesale prices had soared in the quarter after Russia's attacks began on Ukraine, to an average of $264 per megawatt-hour, in my country's currency.

In the 3 months to the end of September this year, those spot prices had sunk about two-thirds, with the average price dipping to $A87 per megawatt-hour.

That was a drop of more than a quarter (27%) from the same quarter last year, and a full 38% dive from the June quarter of 2025.

That retreat in power prices was welcomed. The wholesale component is about one third of the electricity bill most consumers pay. Distribution and retailing costs make up the bulk of the remainder.

But the price drop came even as underlying electricity demand in the NEM increased, rising 3.2% from a year ago.

And gas prices have remained high compared with pre-2022 levels, with the average east coast gas price more than 25% higher than for the March quarter of 2022 ($A12.62/gigajoule vs $A9.93/gigajoule).

How did this price decline come about, and how can it be sustained?

One factor was the 11% drop in gas-fired power generation versus a year earlier.

The scale of that retreat contrasted neatly with an 11% rise in rooftop solar generation.

More than a third of Australian homes boast PV on our roofs, and the average output regularly breaks quarterly records, as it just did in the July-September quarter, according to the Australian Energy Market Operator.

Wind energy chimed in, too. Output of wind farms was about one-sixth higher than a year earlier, setting – you guessed it – a record for any quarter.

Batteries, meanwhile, have been growing like topsy, as we say in Australia. Think of mushrooms, perhaps, popping up everywhere.

Battery discharge into the grid jumped 150% on average compared with the September quarter of a year ago.

Now, I know the panel has a primary focus on the development of hydrogen economies and the securing of critical-minerals supply chains.

But I hope you can take a few pointers from this tour of Australia's energy landscape.

- For our economies to diminish our dependence on fossil fuels – including the ones not facing trade sanctions – we must add renewable energy.

- For our economies to foster hydrogen, we're going to need some technical breakthroughs...but the path will be smoother, the more we have access to low-cost renewables backed up by storage. There's a reason no developed economy ordered a single new coal-fired steam turbine in 2024, after all.

- And for our economies to decarbonise so that we give the Paris Agreement a chance of success, we're going to need to add renewables and fast. It's certainly quicker than trying to build nuclear energy, whether modular or the more traditional kit.

In summary, when we ramp up renewables, the critical minerals Ukraine holds – and Australia, too – will be in ever greater demand.

Not everybody here is Ukrainian or Australian, I think, but you're all welcome on this road, too!

The energy transition, after all, doesn't just require a society-wide approach – we really are all in this together.

I look forward to the day when Ukraine can turn its attention to this other crisis. May that day come soon because I'm confident your nation knows something about seeing off an existential crisis.

We could all do with some of that unflinching determination and devotion to a great cause!

Thanks for listening, and I'll be happy to field any questions you may have later on.