

AUSTRALIAN INDUSTRY GROUP

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ADDRESS TO THE HYDROGEN CONNECT SUMMIT 2023: “ADVANTAGE ISN’T ENOUGH: HOW CAN AUSTRALIA TURN ENERGY SUPERPOWER DREAMS INTO REALITY?”

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This is a contradictory time for clean economy visions in Australia.

Our opportunities are becoming tangible. Major economies are making huge investments. Markets for minerals, energy and products are shifting. Governments are backing targets with the money and the nitty gritty needed to deliver them.

At the same time Australians feel intense doubts about our own ability to deliver. Supply chains are stretched. Project delivery costs surged for all forms of energy in 2022. Slow approvals and NIMBY grumpiness risk throttling transition. Mega-subsidies by the largest economies will make our underlying advantages irrelevant.

Against that contradictory background the Federal Government is considering how to respond to the US Inflation Reduction Act. Big decisions are needed soon.

Today I’ll sketch our situation, our choices, and a vision to guide action that is driven by realistic hopes and tempered by plausible fears.

Hype and hydrogen

We can put Australia’s clean economy opportunities in four buckets with different prospects and needs: transition minerals, clean energy components, clean energy exports, and clean energy-intensive products.

I’ll start with hydrogen as export and as input to products. We now have the prospect of a much more realistic and grounded hydrogen strategy as we pass through the hype cycle.

Some past hopes look shaky:

- Seaborne hydrogen entails huge energy losses for liquefaction or conversion that will make shipping it much more costly than shipping fossils. Trade patterns will be different.
- Hydrogen is inescapable for chemistry, but otherwise it competes with other solutions. Steelmaking, heavy long distance transport and high-grade heat are likely uses. Niches in power are plausible. Elsewhere the momentum is mostly with electrification.
- Hydrogen costs will only fall by deploying production capacity even while it is expensive, so that learning and scale drive down future costs.
- Australia is not unique. Would-be hydrogen superpowers are everywhere. Investment is following immediate subsidies, not our hoped-for long term advantage.

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Don't be too disillusioned. Hydrogen is not the be-all end-all, but it can still be a very big deal. And a narrower hydrogen vision may actually put much larger potential benefits on the table.

The same physics problems that make seaborne hydrogen trade unattractive for cost-sensitive industrial customers could make it much more attractive for those industries to relocate to where the hydrogen they need is made.

Shipping iron ore and coking coal to China for processing is cheap today. When China wants green steel – as their emissions commitments eventually require – it may make more economic sense for both nations to process the ore to iron here, rather than bearing the much higher costs and investments needed to ship the hydrogen for processing there.

Similar energy arbitrage opportunities exist in ammonia for fertilizer and explosives; alumina; and aluminium.

Other opportunities

What about other opportunities?

Transition minerals like lithium, nickel and rare earths face a tangible megatrend of soaring demand, driven by everything to do with batteries, electric motors, wiring and other inputs to a clean economy. Resources markets will stay cyclical and innovators will substitute troublesome materials, but the minerals future is bright.

Australia is a great place to extract critical minerals. Can we be a good-enough place to process them too? Diversification drives are a strong tailwind. The Australian Treasury suggests these gains could be bigger than our expected losses from coal and gas as the world decarbonizes.

Clean energy components like batteries, wind towers and electrolyzers are in hot demand too. Could we export them? Do we have to make them here to get what we ourselves need?

Many people are excited about the potential manufacturing jobs involved. I'm a believer in Australia as a vibrant place to make things. Take care though; every product requires a different calculation:

- Do we have a relevant competitive advantage? We hope for cheap scalable energy, but most products are not energy-intensive.
- Do we have needs large enough to support local supply? High exports of hydrogen or green iron would make Australia a globally significant demand centre for many energy components. Local production of those might make a lot of sense for security and even efficiency. By contrast we'll never be a major market for electric cars.
- Are world supplies so tight that local production only has to be good-enough? Heat pump makers are struggling to keep up. By contrast global solar cell production capacity is very strong, and diversification pushes in India and the United States will boost it further.

Keep your eyes on the prize: the point of clean energy components is not to generate busywork but to support an affordable transition and an advantage in generating clean energy. Strong sunshine won't help us much unless the kit we use to exploit it is available and cheap. We have full

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employment. Our problem is not ‘finding things for people to do’ – it is ‘achieving huge transition tasks with the people we can bring to bear’.

Cautions

I’ll offer three words of caution before I get to the biggest barrier to our clean economy hopes.

Delivery, dysergy and domestic.

First: Delivery. We have to deliver major projects fast and reasonably cheaply. The cost of renewables is in building and financing, not operations. Exporting hydrogen doesn’t pay unless electricity *here* costs half what it does *there*. We’ll fail that test without social license, timely planning, supply chains and skills.

Second: Dysergy, the opposite of synergy, when two great tastes go much worse together. The last mining boom squeezed the rest of the economy through labour costs, construction costs and exchange rates.

There are limits to doing everything everywhere all at once. Exports are just how we pay for imports. Imports are not a failure; they are a way of getting more or better goods and services than we could deliver alone.

Third: Domestic. Missing out on new export visions would be a huge shame, but life would go on. Life would not go on, at least as we know it, if we don’t deliver the reliable, affordable, sustainable energy our existing domestic economy requires.

Despite these cautions, Australia has plausible hopes of a clean energy advantage that will propel us to long term success.

Here’s the biggest immediate problem: advantage isn’t enough.

Advantage and its limits

The United States can be a difficult place to build. But they are seeing a clean investment frenzy because their Inflation Reduction Act (“Ira”) offers generous tax credits, such as up to USD\$3 per kilo of hydrogen – that’s about AUD\$35 per gigajoule.

Europe has caught clean hydrogen fever too, pledging to consume 20 million tonnes of it per year by 2030, half of it made at home. Europe is a mediocre place to make hydrogen, but they have big grants, cheap loans, favourable regulations, a big carbon price and a carbon border adjustment.

Other major economies like Canada, Japan and Korea tell a similar story. For the next decade, vigorous policy support will determine where global clean investment flows. Advantage will be secondary at best. We can get in the game or sit on the sidelines.

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The choice is real. We could judge the contest too rich for our blood, sit back, and wait for others to make the mistakes and pay for the big early pushes on expensive technologies that will become cheaper as a result. If green iron for example pans out, we could be a fast follower.

Wait-and-see is worth considering. Historically, aggressive industrial policies have produced some big successes, but also plenty of mediocrity and the occasional epic disaster. If you're going to pick winners, you'd better be good at it – or have the capacity to absorb a few losses while you wait for a jackpot.

Three big reasons suggest Australia should be bolder.

First, the urgency of advancing our domestic energy transition, meeting emissions commitments and keeping the lights on. We need investment and expanded supply chains in globally scarce products. Keeping crumbling coal generators open because replacement projects are lagging would mean rolling the dice on whether these antiques will still work when we need them to.

Second, the path to cheaper cleantechs lies through deployment. Hydrogen will get cheaper through learning-by doing, just like wind, solar and batteries have. Industry makes a thousand little improvements as it gains experience. Lower costs open more niches, driving more deployment and hence more cost reductions.

That's powerful dynamic gets going by paying to deploy expensive young technologies. Australia hopes to benefit greatly from future green industries. Our interest lies in accelerating that future, not reclining in a hammock while others build it.

Third is the risk that others do build the future and leave no place in it for Australia. Late entrants to green metals production may struggle without the experience, supply chains or customer relationships that early movers have built up.

Doing something – but what, how, how big?

So if we're going to Do Something:

- How big do we need to go?
- What policy tools should we use?
- Which opportunities should we focus on?
- And what industry and policy capabilities do we need to make it work?

Don't just photocopy the US IRA. That law reflects a more inwardly-oriented economy with different opportunities; a Treasury with more capacity for unlimited commitments; and the unique partisan dynamics and arcane rules of the Congress.

What the major economy packages do imply is: go big or go home.

Scaling those packages to Australia's economy, we'd spend AUD\$25 billion over ten years if we matched Korea, or more than AUD\$100 billion if we matched updated estimates of US spending. And that's actual spending, not mildly concessional finance.

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Big numbers, even if Australia has a \$2.5 trillion dollar economy. There are a lot of calls on the Budget. Borrowing has become more costly. New revenue options, like a higher GST, all come with tradeoffs and pain for someone.

So any Australian clean economy package big enough to matter will need very careful design and management to deliver what is needed without excessive pressures on debt or inflation.

One promising policy option that can greatly limit Budget risks is 'Contracts For Difference' or CFDs. Government pledges to cover the gap if the sales revenue from, say, a green steel facility, falls short of an agreed strike price per tonne of output. The guarantees go to the proponents who bid the lowest strike price.

This is more or less the model for the Government's proposed Hydrogen Headstart program, though at \$2 billion over 10 years 'Headstart' is more of a toe in the water. Compared to the potentially unlimited Budget cost of US-style tax credits, CFDs would allow Australia to limit the volume of clean production supported and hence limit public liabilities. And unlike grants, the public cost of a CFD can flex downward as product markets and climate policies evolve. The Federal Government's contractual liabilities would drop steeply as more buyers become willing to pay green premiums for fully clean products, and as carbon prices become embedded in selling prices in places like Europe with carbon border adjustments.

Delivery capability is central, both in supply chains and in government too. We are currently seeing how big a barrier overstretched supply chains are to the existing domestic-oriented energy transition. We don't have to make everything here, but we do need to make sure everything projects need can be sourced. And if governments are going to get more ambitious in industry policy, their own capacity to follow through needs to step up. Deep engagement with supply chains, investments in common-use infrastructure and timely decisionmaking don't come for free. Policy and regulatory wheels need to turn faster and more coherently if we're going to build what we need.

A vision

So, let's put this all together.

Decarbonising our economy is doable but not easy. Our opportunities in a net zero world are tantalising but we face intense competition.

Our interest lies in minimising our costs and maximising our benefits over the full sweep of the transitions before us. Abatement with higher unit costs in the near term can be worthwhile where it enables larger savings over the longer term.

Our peers are implementing ambitious energy and industrial policies to make their own transitions and to build positions in new industries. We should match this while catering to our own economic circumstances, policy options, anticipated advantages and trade relationships.

We'll need to be willing and able to build. If we can't manage the social license and logistics to build transmission lines fast enough just for our domestic transition, we can certainly kiss export visions goodbye. Facilitative reforms and capacity-building in private supply chains and public agencies can speed industrial development, boost productivity, and ensure access to skills.

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We'll also need large policy signals, amounting to tens of billions of dollars in incentive-equivalent, to promote investment in both domestic decarbonisation and initial partnerships for clean exports. Contracts for difference can offer investable certainty while phasing Budget support down and out over time.

And we'll need to focus our financial efforts. Clean energy intensive products for the domestic market are the place to start. Green metals and chemical facilities would pull through large consequential investments in hydrogen production and renewable energy generation. That offers a large and certain market for component suppliers, locally and overseas, to scale up their own production. Maintaining our domestic industrial capacity is essential in its own right, and a stepping stone to the experience, scale and price point needed for clean export markets.

Challenging minimum goals for 2035 will help. So here are some starters for consideration.

We should maintain our share of world production of critical minerals as world demand steeply increases, and substantially increase processing in line with our trade and security partners' need for trusted supply chains.

We should establish near-zero emissions production capacity for aluminium, ammonia and steel with output equivalent to at least half of Australia's current primary production of those products.

That requires large-scale near-zero emissions hydrogen production capacity at least equal to what's needed for those clean products – roughly 300,000 tonnes per annum.

All that requires deployment of electricity assets sufficient to meet the needs of the above activities at the necessary pace, with globally competitive end-user costs. That's likely at least 6 Gigawatts of renewable generation just for the hydrogen, and much more for aluminium and alumina.

In the process we need to ensure we lay the foundations for export expansion through international customer and supply chain partnerships; local infrastructure, experience and planning; and the resolution of technical challenges including the direct reduction of hematite with hydrogen.

All that is a tall order at a time when we are full of angst about whether Australia can build anything at all. But as Bill Gates says, most people overestimate what they can do in a year and underestimate what they can do in ten years.

If we can be farsighted without tripping over our own feet, Australia has huge opportunities.

If we can combine realism and aspiration, those opportunities can become reality.

Thank you.