Deloitte



Overview of the Inflation Reduction Act and its Impacts on Australia's Green Production Aspirations

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The Inflation Reduction Act (IRA) is the most significant and ambitious climate legislation passed by the United States Congress in August 2022. The legislation contains over \$369 billion USD (\$520 billion AUD) worth of programs and funding to accelerate the transition to net zero in the US.

The collective investment represented in the IRA will have three broad effects. **First**, it incentivises deployment of clean energy and will transform energy demand in the US. This means a step change



in renewable energy and industrial decarbonisation. **Second**, it creates a system of cascading incentives that transform the economics of clean energy manufacturing in the US. This means the US is likely to become a major player across key clean energy value chains from solar and wind to batteries and hydrogen. **Finally**, scaled investment into technologies will dramatically reduce the costs of clean energy and the cost of green finance. This means the US has an easier path to scale climate impact and that other countries can benefit from US-led green innovation.

Why does it matter?

The IRA has rewritten the rules of industrial policy among developed countries. The explicit US-first approach to incentives is out of step with World Trade Organisation rules and has already triggered complaints from several countries.

The complaints are to be expected – national governments recognise the IRA will have a profound impact on relative competitiveness of clean manufacturing. Put simply, the IRA makes investing in clean technologies in the US a preferential opportunity compared to almost anywhere else in the world. For example, the IRA will make US-produced clean hydrogen the cheapest hydrogen in the world.

This means that capital, talent, firms, and technologies will all bend towards the US. At least 20 new or expanded clean energy manufacturing plants were announced in the US between the introduction of the IRA in August 2022 and the end of 2022. In this way, the IRA will magnify strategic advantages the US already holds in the energy transition and will enable the country to establish and defend a dominant position in clean energy value chains.



What makes the IRA significant?

At the core of the IRA is a series of uncapped, stackable production-linked incentives for clean energy manufacturing. For example, an appropriately specified clean hydrogen project could receive a \$USD 3/kg hydrogen production credit; a \$USD 15/MWh renewable electricity production credit, and benefit from a series of production-linked measures attached to renewable energy components (e.g. solar panels) made in the US.

Where exactly is the money going?

A summary of the measures and incentives included in the IRA is provided in Table 1 below.

Table 0.1 Policy measures in the IRA

	Magnitude	Ар
Tax Credits		Pro po
Administered through the Department of Treasury, which	Uncapped- estimated at ~62% of the IRA's stated budget	Inv inv
through the existing tax system	budget	Tax bio
		Gra
		• F
Grants, funds, and Loans		•
Administered through various	Approx. \$140 billion, or	þ
line agencies, including the Environmental Protection Agency, Department of Energy, and the	~38% of the IRA's stated budget	• (f(
Department of Agriculture		• [
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	Tax Credits Administered through the Department of Treasury, which allows beneficiaries to claim directly through the existing tax system Grants, funds, and Loans Administered through various line agencies, including the Environmental Protection Agency, Department of Energy, and the Department of Agriculture	MagnitudeTax CreditsAdministered through the Department of Treasury, which allows beneficiaries to claim directly through the existing tax systemUncapped- estimated at ~62% of the IRA's stated budgetGrants, funds, and LoansAdministered through various line agencies, including the Environmental Protection Agency, Department of Energy, and the Department of AgricultureApprox. \$140 billion, or ~38% of the IRA's stated budget



By offering the majority of support via the tax system the IRA overcomes incentive issues and administrative costs associated with grant based systems (e.g. Australia's ARENA model). Crucially, the scale and breadth of the IRA sends a significant and unambiguous market signal to spur investment.

It is also important to recognise that almost two-thirds of the stated budget for the IRA consists of uncapped incentives. This means that uptake will be driven by deployment of clean manufacturing, with payment contingent on results. But this also suggests that the total investment by the US government may be higher than expected.

plications

oduction tax credits for renewable electricity, clean fuels, nuclear ower, advanced manufacturing, and hydrogen

vestment tax credits for developing energy property, or vestments in clean electricity assets

x credits for use of low-emission fuels and vehicles, including odiesel and sustainable aviation fuels

ants and funds for:

Reducing greenhouse gas emissions, including methane, or from diesel use

Infrastructure like advanced industrial facilities or for biofuel production

Climate justice and resilience, including within agriculture and forestry

Data and monitoring services, and improving enforcement capabilities in government

an guarantees for tribes and benefits from establishing perations in low-income areas

Chart 0.1 Distribution of the 21 tax credit programs in the IRA by application

There are 21 tax credit programs in the IRA, split across 8 different

given its critical role in upstream value chains for industries relying

applications. Out of these, subsidies for renewable electricity

generation are expected to be the most significant driver of the

US's competitive advantage in the green manufacturing sector,

on deep electrification, and green hydrogen.



Spending on grants and loans mirrors priorities identified in the system of IRA tax credits, with the expedited deployment of clean energies budgeted to receive \$30 billion (USD). However, this bucket of funding within the IRA also provides support for other areas influencing the US climate transition. For example, the distributional impacts of the climate transition on agriculture, forestry, and First Nations, and climate resilience are key focus areas for grants and loans spending in the IRA.

Chart 0.2 Grants and loans spending in the IRA by theme (\$m US)



- Financing and expediting deployment of clean energy technologies
- Investing in America's Electricity Grid
- Incentivizing and supporting deployment of clean vehicles
- Expanding America's leadership in industrial decarbonisation and carbon management
- Protecting communities from harmful air pollution
- Making homes and buildings cleaner and more efficient
- Investing in a sustainable lower-carbon Federal government
- Preserving and protecting the Nation's lands and waters for climate mitigation and resilience
- Improving climate science and weather forecasting



\$12,853	\$9,000		\$8,950	
	\$7,339	\$4,8	63	\$2,860
\$9,325	\$5,000	\$2,000	\$1,940	\$806 \$514 \$253

Revitalizing American manufacturing to build the Clean Energy Economy

Investing in affordable and reliable Clean Energy in Rural America and on Tribal Lands

Incentivizing and supporting development and use of cleaner transportation fuels

Investing in science and the Department of Energy's Core Research Mission

Improving pollution monitoring and tracking

Supporting investment in energy efficient and low carbon buildings

Harnessing nature based solutions and climate smart agriculture to deliver economic, climate, and resilience benefits

Increasing the resilience of our communities in a changing climate

Are there conditions to access funding?



Uncapped forms of IRA support are explicitly linked to local content, wages, place, and carbon intensity. This has the effect of aligning IRA-induced development and production with regional economic diversification. There are four core conditionalities in the IRA.

Stepped local content requirements:

Some IRA manufacturing credits (e.g. Clean Vehicle Credit, Clean energy investment tax credit) are restricted to products where a significant share of the value added of components were made in America. These thresholds escalate over time to provide industries with time to reorient supply chains and local manufacturers time to scale production. It appears that some of these thresholds may be aggressive, with push back from manufactures unable to alter supply chains within existing timeframes.

Support linked to prevailing wages & apprenticeships:

Many IRA credits (hydrogen, renewable energy, carbon capture, manufacturing) are linked to firms that pay a 'prevailing wage' defined in the US as the average wage paid to similarly employed workers in a specific occupation in the area of intended

employment. This effectively cuts the magnitude of support for firms that do not meet this criteria. Because the credits are production based and paid regularly, it eliminates incentives for firms to promise prevailing wages and then underdeliver, or substitute for lower cost contractors. Full credit value will also be linked to hiring of qualified apprentices in registered programs.

Place-based development via energy communities:

Additional tax credit value is made available to developments in 'energy communities' which are defined as brownfield sites, areas with significant employment in coal, oil, natural gas and an unemployment rate above the national average, or a region in which a coal mine or coal-fired power station has closed or retired within a timeframe. For example, solar and wind developers who meet all criteria could receive as much as 70% of their capital expenditure in tax credits.

Carbon intensity:

Some forms of IRA support-notably the hydrogen credit-link the credit value to lifecycle emission intensity. Projects with higher lifecycle emissions receive less support

The IRA can be expected to have four broad impacts on Australia's clean energy manufacturing aspirations:

Less bandwidth

Project developers will prioritise jurisdictions with more beneficial policy settings, which could result in a loss of board and investment committee attention.

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Shrinking first mover advantages

The combined effect of the IRA and persistently high renewable prices are foreclosing potential first mover advantages.



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Mixed critical mineral outlook

IRA credits will significantly stimulate demand for Australian minerals and metals. However, IRA credits will also deprioritise Australian metals processing efforts (e.g. green steel) potentially locking Australia into a lowcomplexity equilibrium.



Disintermediation in export markets

Analysis undertaken by Deloitte suggests that while the IRA is in effect, Australian renewable hydrogen will only be exported to Japan and Korea in very limited quantities (assuming US production is exported).

Won't there be challenges that mitigate impacts on Australia?



While the IRA has changed global investment conditions for clean energy and manufacturing, there are a number of challenges forming which could slow the rate at which clean technologies are deployed in the US:



Supply constraints

While the IRA offers significant and uncapped supply-side incentives for hydrogen and clean energy component manufacturing, constraints in inputs (e.g. graphite, lithium) will restrict uptake in the medium term.



Public value & cost

The IRA was announced at a cost of US \$369bn. However, market analysts have estimated total costs at 2-3 times this amount. It is likely that some uneconomic processes will be incentivised by the IRA in the short run which may then turn out to be uneconomic when subsidies end.

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for the retrofitting of industrial facilities, it transmission network.

The IRA is a fundamental shift in industrial policy and a systemic attempt to build out clean manufacturing value chains in the US. It does this by providing cascading incentives at each step in key supply chains - from extraction of raw materials, material processing, subcomponent manufacturing, to assembly of end products, energy conversion, and end of life considerations such as recycling.



The size of Australia's economy and budgetary constraints will make it difficult for Australia to mirror and breadth of the IRA. But we must acknowledge that it risks foreclosing on areas where we have existing comparative advantages and aspirations – such as renewable energy, clean hydrogen, and minerals processing. Decisive and targeted investment across Australia's clean manufacturing supply chain could restore these comparative advantages and level the playing field.

What are some examples of IRA support?



Advanced Manufacturing

The advanced manufacturing production credit is set at a different rate depending on the component but is broadly available across key supply chain steps for the production of solar, wind, and battery technologies. For example, USD \$3/ kg is made available for the production of solar grade polysilicon; \$12/m2 for photovoltaic wafers, 4c/W of solar cells, and 7c/W for solar modules. This is expected to materially change the economics of US clean energy manufacturing.

Manufacturers can also apply for an advanced energy project investment credit – a \$10bn funding pot to support capital investment into clean energy, manufacturing, and critical minerals processing facilities.



Critical Minerals

Half of the USD \$7500 clean vehicle credit will attach to critical minerals sourced in the US or from a country with a free trade agreement with the US, which includes Australia. This will mean that US-based manufacturers of EV batteries will be seeking to secure critical minerals from Australia. However, this credit can also be used to source critical minerals recycled in the US. There is already evidence that US battery manufactures are opting to do this for some minerals – e.g., Panasonic intend to source their materials from Redwood Materials - a battery recycler - for a new battery gigafactory in Kansas.

US critical mineral processers can also benefit from a 10% incentive under the advanced manufacturing production credit.



Hydrogen

A hydrogen producer can receive up to USD \$3/kg for hydrogen produced with an emissions intensity below 0.45kg CO2e per kg of hydrogen produced. Combined with falling renewable prices, this could see US renewable hydrogen break through the commercialisation gap with grey hydrogen. Some market projections suggest US renewable hydrogen is already likely to be the cheapest form of hydrogen available globally while the IRA is in effect.



Energy Production

An energy production credit of \$15/MWh will make already cheap US renewables even more competitive. Market estimates show the levelised cost of energy for solar projects falling below USD \$20/MWh and onshore wind below USD \$15/MWh as a result of the incentives.



Industrial Decarbonisation

The Advanced Industrial Facilities Deployment program makes \$5.8bn available to the US Department of Energy to provide grants of up to 50% for decarbonisation projects at energy intensive industrial facilities (e.g., iron, steel, aluminium, cement, glass, pulp, and chemicals).



Green Metals

The clean electricity investment tax credit and production credit have a 10% bonus if all steel, iron and at least 40% of the value of manufactured products derives from components made in the US. Metal processers will also be beneficiaries of lower renewable energy prices -a key cost input - courtesy of the clean energy production credit.



What does it look like across the solar PV value chain?



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