

Renewable energy industrial precincts:

Scaling up industrial decarbonisation
through a coordinated approach

A BRIEF FOR
POLICY-MAKERS

MAY 2023



ACKNOWLEDGEMENT OF COUNTRY

We acknowledge and pay respect to the Traditional Custodians and Elders – past and present – of the lands and waters of the people of the Kulin nation on which the Climateworks Centre office is located, and all of the Elders of lands across which Climateworks operates nationally.

We acknowledge that sovereignty was never ceded and that this was and always will be Aboriginal land.



ACKNOWLEDGMENT OF SUPPORT

With the support of our philanthropic partners and funders, Climateworks is accelerating the transition to net zero emissions. We thank the Lord Mayor's Charitable Foundation for their initial support in making this renewable energy industrial precincts policy brief possible.

ABOUT US

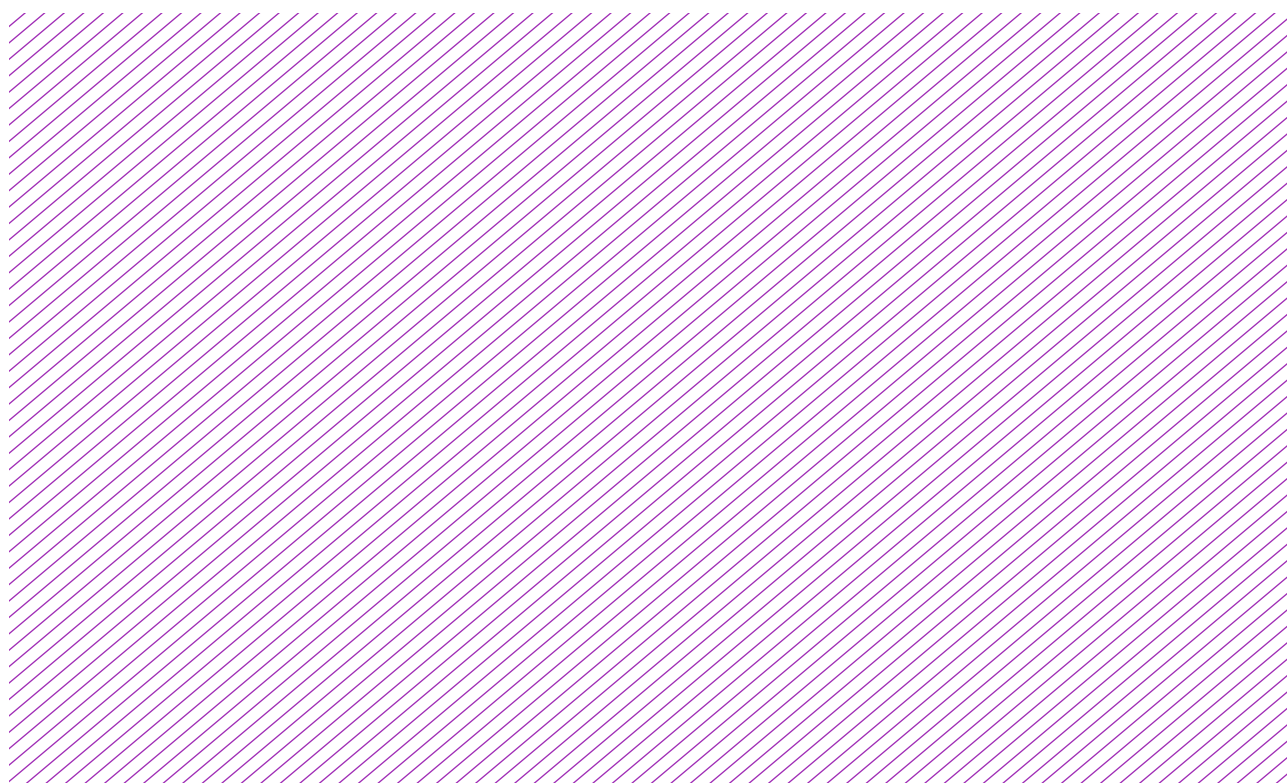
Climateworks Centre bridges the gap between research and climate action. We are climate transition specialists, working in Australia, Southeast Asia and the Pacific with decision-makers who have the power to reduce emissions at scale. Climateworks develops evidence-based solutions to accelerate emissions reduction in line with the global 1.5°C temperature goal and shared climate safety.

Co-founded by philanthropy and Monash University, Climateworks is an independent not-for-profit working within the Monash Sustainable Development Institute.

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Executive summary

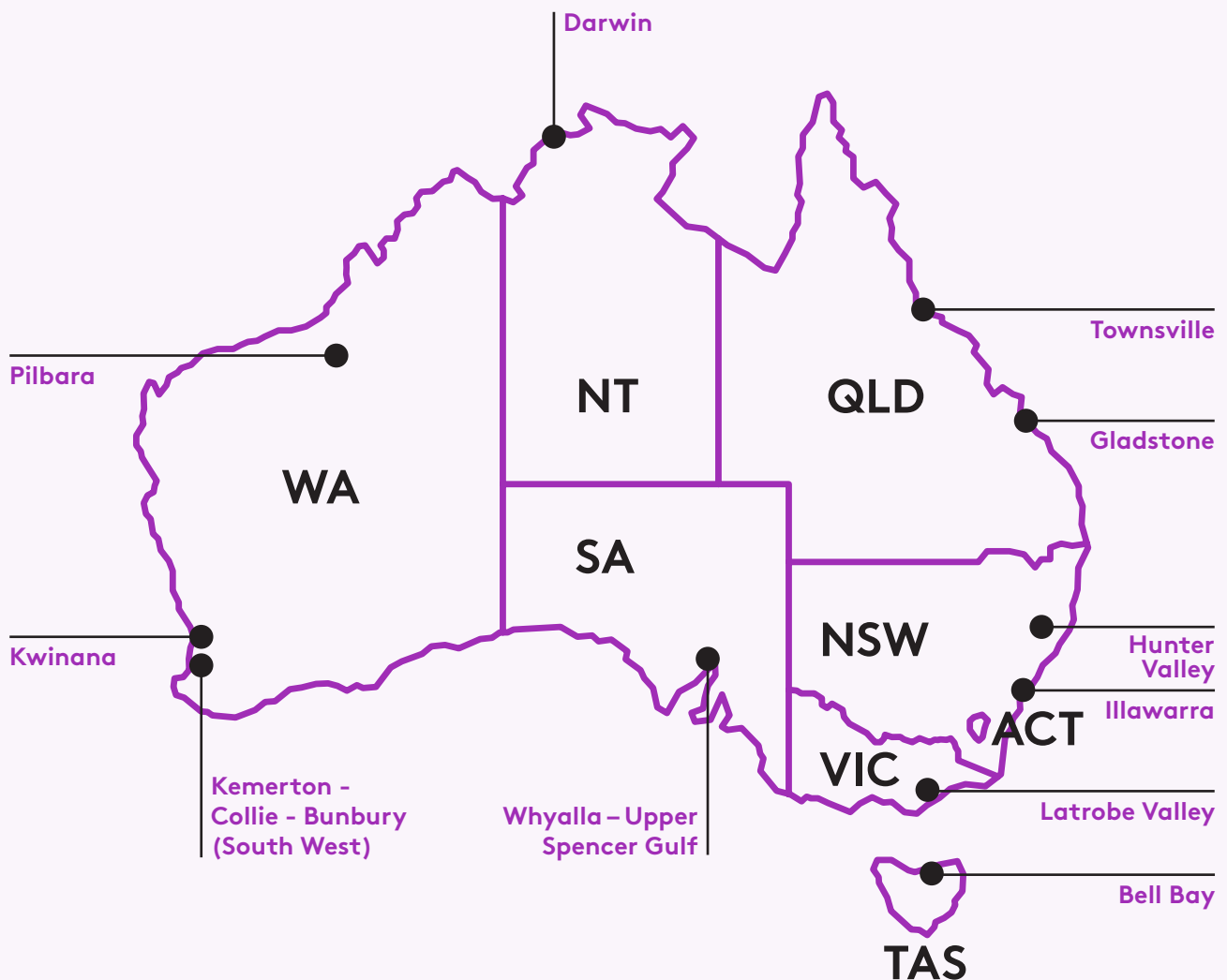
Australia's industrial regions play an essential role in the nation's economy. They also produce a significant proportion of Australia's emissions and contribute a considerable amount to the country's energy use. Five regions alone – Gladstone, Pilbara, Kwinana, Hunter, and Illawarra – supply a combined A\$166 billion to Australia's Gross Domestic Product and employ 2.9 per cent of Australia's workforce. They also account for more than 16 per cent of Australia's Greenhouse Gas emissions each year (Climateworks Centre and Climate-KIC Australia 2022).

Renewable energy industrial precincts (REIPs) are a practical solution to scale up and accelerate climate solutions in carbon-intensive industries. REIPs offer industry the chance to capitalise on Australia's abundant clean energy sources as global markets shift towards decarbonisation. Businesses in industrial precincts can benefit through access to low-cost renewable energy, shared user infrastructure, labour pooling, input sharing, knowledge spill overs and circular economy practices. While significant investment and additional renewable energy capacity are critical, ambitious policy action can unlock substantial economic opportunities.

Through a national place-based industrial decarbonisation program, delivered by the Australian Government in partnership with states and territories, REIPs can be rolled out in a coordinated way, building on existing initiatives to derive greater impact. National coordination can help send a clear signal to investors and attract greater levels of private funding.

This brief for policy-makers outlines what a REIP is and identifies four pillars that support the effective development and operation of a REIP. It identifies 11 possible REIP locations across Australia, in existing industrial regions where high levels of decarbonisation need to be achieved. It then assesses current government actions against the four pillars and highlights opportunities for further action in the 11 REIP locations.

POSSIBLE REIP LOCATIONS ACROSS AUSTRALIA



The brief then considers a range of factors to support a rollout of REIPs across Australia, irrespective of location, including: enabling policies and governance models; incentives to attract private investment; possible forms of collaboration to maximise impact; and incorporating perspectives of First Nations people in REIP design.

Through REIPs, governments can help industry unlock access to lower-cost renewable energy, increase the likelihood of manufacturers remaining in Australia, secure long-term jobs, and drive competitiveness in a rapidly decarbonising global economy. State and territory governments can support businesses in potential REIP locations to decarbonise through a range of mechanisms. These include: convening key stakeholders in REIP locations to develop ambitious decarbonisation roadmaps; co-investing in shared-use infrastructure; providing finance to promote emerging industries; building workforce and skills capacity; and reducing regulatory hurdles. The Australian Government can also play a critical role in enabling REIP development across the country through national coordination, planning and co-investment.

Recommendations

The timely rollout of REIPs across the country could play a significant role in helping the nation's governments achieve their net zero emissions goals. To do this Climateworks recommends:

1.

Australian governments establish REIPs through a national place-based industrial decarbonisation program (Program), planned and delivered by the Australian Government in partnership with state and territory governments. This will ensure the transition of industrial regions occurs in a coordinated and collaborative way.

2.

Australian governments co-design a 'co-investment partnership' through which Program funding will be administered, to send a clear signal to invest in industrial decarbonisation.

SUPPORTING RECOMMENDATIONS – AUSTRALIAN GOVERNMENT:

Establish governance mechanisms

- + Establish a national coordinating body to coordinate Program design, administered by an Australian Government secretariat with an advisory group comprising state and territory departmental officials.
- + Develop Program guidelines and objectives, including setting long-term goals and vision for REIPs.
- + Support state and territory governments in determining priority REIP locations to unlock regional economic opportunities (e.g. identified hydrogen hub locations).

Scale up ambition

- + Provide co-investment in line with all pillars, for example, through funding for:
 - > planning processes (including roadmaps)
 - > developing and upgrading transmission infrastructure needed to provide firm, lower-cost renewable energy into REIP locations
 - > decarbonising existing industries (such as through research and development and capital outlays); and
 - > attracting new industries.

- + Explore existing initiatives relevant to REIPs to identify how they can be coordinated and scaled to achieve greater impact.
- + Provide advice to states and territories on potential infrastructure reforms required to enable REIPs.
- + Coordinate workforce development in REIPs by monitoring and reporting on skills gaps relevant to REIPs (such as through Jobs and Skills Australia).
- + Provide support to businesses in REIP locations to access global markets through international linkages.

SUPPORTING RECOMMENDATIONS - STATE AND TERRITORY GOVERNMENTS:

Set clear policy signals

- + Set net zero goals for REIP locations.

Set up for success

- + Co-design decarbonisation roadmaps with key stakeholders, such as industry and local communities, for REIP locations.
- + Identify skills gaps and establish training programs targeting the skills needed within REIPs.
- + Undertake strategic land use and infrastructure planning and analysis

to identify priority infrastructure needed in REIP locations.

- + Incentivise demand for new zero carbon technology and accelerate deployment of commercial technologies needed for the development of REIPs, with Australian Government co-investment.

Establish governance mechanisms

- + Administer the deployment and ongoing activities of each REIP through a regional coordinating body (leveraging existing programs where possible).



REIP definition, pillars and scope

REIPs are clusters of industrial businesses (e.g. steel producers or minerals processors, along with supporting industries) powered by 100 per cent renewable energy (including both renewable energy and renewable heat). Businesses would have access to lower-cost renewable energy due to the precinct either being located in proximity to renewable energy zones (REZ), or equivalent, or connected to renewable energy generation through high-voltage transmission lines. Transmission lines would need the capacity to provide renewable energy at the scale required. They would also ideally have access to green hydrogen production and infrastructure for industries that require a decarbonised heat and feedstock source.¹

By sharing infrastructure, co-located businesses can benefit from reduced energy costs through access to critical energy and transport infrastructure, inputs and labour, cheaper green hydrogen, and circular economy practices.

Guiding REIP principles

REIPs are by definition powered by renewable energy. Their development should be guided by the following principles:

- + Ensure First Nations communities are genuinely involved in the planning and design of REIPs and projects on their Country, and have the ability and choice to participate in and benefit from REIPs. See 'Perspectives relating to First Nations culture and community' section for more detail.
- + Ensure local communities benefit from the rollout of nearby renewable energy projects, transmission and clean industry. This can be achieved by making sure the planning processes reflect leading practice community engagement, and consultative community benefit models are integrated into REIP planning and development.
- + Ensure precincts and their supply chains are committed to the protection and restoration of local biodiversity.

Adherence to United Nations Sustainable Development Goals (SDGs) and the incorporation of environment, social and governance principles into REIP design would be ideal and help to deliver long-term benefits to local communities. Local workforce retention, indigenous employment targets and procurement of goods and services from local manufacturers where possible could be factored into designs.

¹ While not ruling out alternative heat and feedstock options, this briefing note only examines green hydrogen.

Key REIP characteristics

REIPs are ideal for decarbonising heavy industries such as aluminium, iron ore, ammonia, mineral production, and manufacturing. They could also include other energy-intensive industrial activities such as data centres. By targeting clusters of industries, REIPs can reduce costs and leverage efficiencies that benefit all participants. REIPs can also attract new players in emerging industries (such as battery and green hydrogen production), potentially increasing the return on investments made in shared infrastructure.

While each location requires a place-based approach, the four pillars identified below can support the effective implementation of REIPs.

PILLAR

Coordination and skills

SUB-PILLARS AND WHY THEY MATTER

- + convening key stakeholders to co-design REIP roadmaps (forward-looking plans for how businesses within a precinct can operate in a cluster to decarbonise and diversify economically)
- + convening ongoing industry coordination in REIP
- + strategic land use and infrastructure planning
- + skills and training programs to support workers to transition to new clean industries

- + innovation and supply chain readiness support
- + international linkages and coordination support.

Coordination is helpful in supporting the key players within a REIP, from co-designing the REIP through to ongoing activities. Coordination will also be required to deliver the necessary strategic land use and infrastructure planning in the design stages of a REIP. Skilled labour and training programs will ensure availability of an appropriately skilled workforce for the region.

PILLAR

Building enabling infrastructure

SUB-PILLARS AND WHY THEY MATTER

Additional infrastructure needed for REIP, such as:

- + water infrastructure
- + renewable electricity transmission, network, storage and firming infrastructure
- + green hydrogen infrastructure
- + port infrastructure
- + transport infrastructure.

Enabling infrastructure, for example energy transmission and network infrastructure, will be required to supply renewable electricity generation to precincts. Infrastructure required for successful precincts may include pipelines to supply green hydrogen to industrial users, and port upgrades to ensure ports have sufficient capacity for export. Enabling infrastructure, ideally determined via a strategic land use and infrastructure planning process and considering future needs, would be additional to each region's existing infrastructure.

➔ CONT.

PILLAR

Decarbonising existing industry

SUB-PILLARS AND WHY THEY MATTER

- + R&D for technologies to support decarbonisation
- + renewable electricity generation, storage and firming to support industrial decarbonisation
- + renewable heat and feedstock supply
- + capital outlays for heavy industry upgrades (existing industry to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or for process design and engineering directly related to their capital investment)
- + industrial material and energy efficiency (incl. circular economy).

Governments can use a number of policy levers to help accelerate existing emissions-intensive industries to decarbonise. This may include setting clear signals (e.g. through emissions reduction targets or decarbonisation roadmaps) or providing grants and funding to industry to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or, for process design and engineering directly related to capital investments.

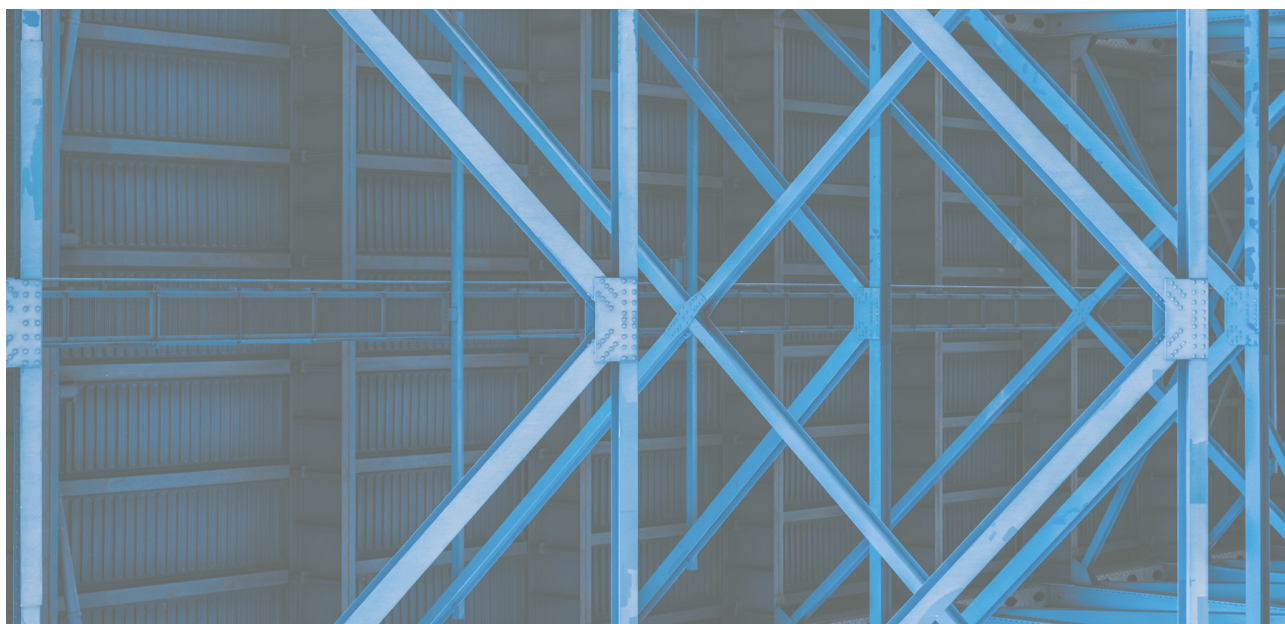
PILLAR

Attracting new industries

SUB-PILLARS AND WHY THEY MATTER

- + financial incentives to attract new businesses to REIP (hydrogen or other, non-hydrogen)
- + strategy/plan to attract new businesses to REIP (hydrogen or other, non-hydrogen).

Attracting new businesses to REIPs will be important for industrial regions to become centres for innovative zero emissions solutions (including but not limited to renewable hydrogen production) and opening up new export markets.



Perspectives relating to First Nations culture and community

Given that REIP locations are located on First Nations land and close to communities, it is important to ensure that Traditional Custodians are deeply consulted when designing and establishing REIPs. Each community is unique with its own culture, language, beliefs and practices (Australian Institute of Aboriginal and Torres Strait Islander Studies, n.d.). Developments either in REIP areas or connecting to REIPs may have impacts on the human rights, culture and self-determination of First Nations people (Accenture 2021b).

Consultation with and involvement of First Nations communities in the co-design of REIP roadmaps will help build social licence and promote self-determination of First Nations people. To this end, REIPs should ensure First Nations communities benefit from projects on their land. The First Nation Clean Energy Network's Aboriginal and Torres Strait Islander Best Practice Principles for Clean Energy Projects (First Nations Clean Energy Network, 2022)² includes the following principles in the planning and design of clean energy projects:

1. engage respectfully
2. prioritise clear, accessible and accurate information
3. ensure cultural heritage is preserved and protected
4. protect country and environment
5. be a good neighbour
6. ensure economic benefits are shared
7. provide social benefits for community
8. embed land stewardship
9. ensure cultural competency
10. implement, monitor and report back.

A critical element of engaging respectfully is that the standard of 'free, prior and informed consent' (FPIC) – as set out in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) – must apply when engaging with First Nations communities. Per UNDRIP, consent means the opportunity to approve or reject projects before commencement, or withdraw or reconsider consent if the proposed activities change.

REIPs can and should help to deliver beneficial outcomes for local Indigenous communities (National Indigenous Australians Agency, 2015). This could be through energy access agreements, financial compensation, equity in projects and employment opportunities (Accenture 2021b). Improved infrastructure, education and employment opportunities, and health and wellbeing initiatives may also be ways to provide benefits to Indigenous communities. Examples may be through workforce initiatives, with funding set aside for employment and training services for Aboriginal and Torres Strait Islander people. Another initiative may involve land use agreements, where benefits flow to local communities and Traditional Custodians (DIIS 2016).

2 The Aboriginal and Torres Strait Islander Best Practice Principles for Clean Energy Projects were developed for place-based clean energy projects whereas REIPs involve complex uses of industrial regions and land and waters. While the Principles for Clean Energy Projects will provide guidance, they cannot necessarily be directly translated. For REIPs, there will be additional layers of complexity and opportunity for inclusion and First Nations' voices and perspectives that must be addressed. For REIPs these may include transmission infrastructure, business service delivery, and participation in the workforce, as well as a range of opportunities to consider such as training and employment opportunities, and opportunities for Traditional Owners to partner in equity and investment.

Net zero aligned decarbonisation opportunities

The Paris Agreement 'aims to hold the increase in the global average temperature to well below 2°C and to pursue best efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change' (United Nations, 2015). States and territories, along with the Australian Government, have all committed to net zero targets (Climateworks Centre, 2022).

A recent report by the Australian Industry Energy Transitions Initiative (ETI) shows industry emissions could be reduced by 92 per cent by 2050, in line with limiting warming to 1.5°C, with strong, effective, coordinated action from government, industry and finance (Climateworks Centre and Climate-KIC Australia, 2023). Governments can make tangible headway towards their targets – and progress towards even more ambitious goals – by decarbonising industry through REIPs.

In 2022, the Australian Industry ETI profiled five regions – Kwinana and the Pilbara in Western Australia, Illawarra and Hunter in New South Wales, and Gladstone in Queensland – which account for about one-eighth of Australia's total emissions. These regions are also promising locations for REIPs and offer substantial opportunities for emissions reductions. Potential abatement opportunities identified across these regions represents the equivalent of removing all emissions from cars and light commercial vehicles across Australia. Key emitting industries in Kwinana, Western Australia, include alumina, ammonia, nickel refining, cement and mineral processing. The Pilbara's key industries are LNG, iron ore mining, ammonia and ammonium nitrate. Major abatement opportunities in Hunter are in the ammonia and ammonium nitrate and aluminium smelting industries. In Illawarra, which is dominated by the steel industry, there is an opportunity to build on strong networks and stakeholder support for decarbonisation as well as existing connections to domestic and international markets. Of the regions profiled by the ETI, the Pilbara contains the largest potential levels of abatement: 30.6 MtCO₂e, with 25.3 to 53.8 TWh of renewable energy required. The region with the second-largest potential level of abatement was Gladstone: 21.2 MtCO₂e, with 14.8 to 27.5 TWh of renewable energy required (Climateworks Centre and Climate-KIC Australia 2022). Other industrial regions, such as those highlighted in the 'tracking possible REIP locations' section below, can also benefit from decarbonisation opportunities presented by REIPs.

Actions of federal, state and territory, and local governments in supporting REIPs

All tiers of government play an important role in supporting the development of REIPs. Aligning activities across federal, state and territory, and local government can help to accelerate the creation of REIPs. By combining efforts, individual government programs can have greater impact than if they were developed and administered in isolation.

Maintaining regions as industrial powerhouses can make the most of Australia's renewable energy and mineral resources and enable Australia to thrive as the world moves to net zero, unlocking new and significant employment opportunities and private sector investment (Beyond Zero Emissions and WWF-Australia 2020). Achieving the scale required will require policy alignment across government on ambitious decarbonisation goal-setting, financial co-investment and regulation adjustments. Taking these actions simultaneously can help to build the confidence needed to attract investment.

Australian Government

The Australian Government can play a critical role in enabling REIP development across the country through national coordination, planning and co-investment. Actions at the federal level to support REIP development across Australia, include:

- + providing overarching coordination of REIP development through establishing and implementing a national place-based industrial decarbonisation program and governance body (see 'A proposed governance model for REIPs' section below)
- + working with states and territories to set a long-term vision for REIPs
- + facilitating ongoing activities of REIPs across jurisdictions (e.g. by providing an avenue for knowledge sharing and lessons learnt between states or connecting states to international knowledge-sharing opportunities)
- + providing co-investment in line with all pillars. For example, through funding for planning processes (including roadmaps), developing and upgrading transmission infrastructure needed to provide firmed, lower-cost renewable energy into REIP locations, decarbonising existing industries (such as through research and development and capital outlays); and attracting new industries (Beyond Zero Emissions 2022)
- + providing advice and coordination to states and territories on potential infrastructure reforms (for instance by Infrastructure Australia)
- + helping to coordinate skills development by monitoring and reporting on skills gaps relevant to REIPs (such as through Jobs and Skills Australia). Initiatives to incentivise training and apprenticeships could also be leveraged to upskill and attract workers (Clean Energy Council 2022)
- + encouraging private sector investment, in particular international investment, in assets associated with REIP pillars - the need to attract private sector investment is particularly timely in the context of accelerating international action
- + encourage and support international linkages for businesses in REIP locations to access global markets.

Current Australian Government initiatives with the potential to support REIPs

The Australian Government has already announced proposed regulatory changes and policies that can help accelerate REIPs. Some examples include:

- + **Safeguard Mechanism**
 - > Supports REIP pillars: Decarbonising existing industries and Attracting new industries
 - > The strengthening of the Safeguard Mechanism as part of the government's 'Powering Australia' plan could help to provide a 'push' towards clean energy in industries within REIPs and could enable responsible emitters to become anchor REIP proponents (consortiums or organisations initiating a key project, business or operation within the precinct's boundaries).

+ National Reconstruction Fund

- > Supports REIP pillars: All
- > The fund is aimed at driving investment and job growth in regions, with up to \$3 billion of the total \$15 billion fund earmarked for renewables and low-emissions technologies such as clean energy component manufacturing, hydrogen electrolyzers and fuel switching and \$1 billion for value-add in resources such as green metals. There is an opportunity for funding to support REIPs, specifically through these two priority areas.

+ National Energy Transformation Partnership and Rewiring the Nation Plan

- > Supports REIP pillar: Building enabling infrastructure
- > \$20 billion investment to modernise the transmission grid. Designed to supply low-interest loans to network companies and expected to produce up to \$40 billion in private co-investment.

+ New Energy Apprenticeships Program

- > Supports REIP pillar: Coordination and skills
- > \$95.6m over nine years to support 10,000 New Energy Apprenticeships aimed at directing prospective apprentices to roles in renewable energy.

+ Powering the Regions Fund

- > Supports REIP pillars: Decarbonising existing industries and Attracting new industries
- > \$1.9 billion of investment to support the decarbonisation of existing industries and creation of new clean energy industries and jobs.

Bodies such as the Clean Energy Finance Corporation (CEFC), Australian Renewable Energy Agency (ARENA), North Australian Infrastructure Facility (NAIF) and Export Finance Australia (EFA) could also be leveraged to co-invest in REIPs, with the Australian Government seeking to enshrine national emissions reduction targets into their objectives and functions (Bowen 2022).

SUPPORTING RECOMMENDATIONS - Australian Government

Scaling up ambition

- + Provide co-investment in line with all pillars, for example, through funding for:
 - > planning processes (including roadmaps)
 - > developing and upgrading transmission infrastructure needed to

provide firmed, lower-cost renewable energy into REIP locations

- > decarbonising existing industries (such as through research and development and capital outlays); and
- > attracting new industries
- + Explore existing initiatives relevant to REIPs to identify how they can be coordinated and scaled to achieve greater impact.

- + Provide advice to states and territories on potential infrastructure reforms required to enable REIPs.

- + Coordinate workforce development in REIPs by monitoring and reporting on skills gaps relevant to REIPs (such as through Jobs and Skills Australia).

- + Provide support to businesses in REIP locations to access global markets through international linkages.

State and territory governments

State and territory governments can take a leading role in developing REIPs in partnership with the Australian Government. They are well placed to lead REIP planning, regional coordination and rollout on the ground. With each region requiring a tailored, place-based approach to transformation, state and territory governments are best placed to tailor REIP design to specific locations. States and territories are also well suited to lead strategic land use planning, skills development, infrastructure investment, and developing regional decarbonisation roadmaps.

Actions state and territory governments can take to accelerate the creation of REIPs include:

- + setting ambitious emission reduction goals or decarbonisation strategies for REIP locations
- + convening regional stakeholders (including councils, unions, business groups, regional advocacy groups, energy councils, traditional custodians and industry) to co-design REIP roadmaps to ensure each design is fit for the respective regional context and to build community buy-in
- + streamlining planning laws and zoning schemes, in conjunction with councils where necessary, that are relevant to REIP infrastructure and developments
- + developing skills and training initiatives to reskill and attract workers to new and emerging industries as well as to regional areas
- + providing co-investment in line with all pillars, including in enabling infrastructure such as REZs, transmission lines, water infrastructure, port upgrades and transport upgrades
- + attracting innovation to support R&D of new technologies, and to attract new industries to REIP locations.

CASE STUDY:

NSW Net Zero Industry and Innovation Program

The Net Zero Industry and Innovation Program (NZIIP) is the NSW Government's plan to support and partner with industry to reduce emissions and help NSW businesses prosper in a low-carbon world as part of the NSW Net Zero Plan Stage 1: 2020-2030.

It includes three funding streams: High Emitting Industries (\$380m); Clean Technology Innovation (\$195m); and New Low Carbon Industry Foundations (\$300m). These streams collectively cover the technology lifecycle from research to deployment.

High Emitting Industries (\$380m) aligns with the REIP Decarbonising existing industry

pillar. This stream targets the deployment of low-emissions technologies and infrastructure to reduce the emissions associated with existing high emitting industrial facilities.

Clean Technology Innovation (\$195m) aligns with the REIP Building enabling infrastructure pillar. This stream supports continued innovation in the development of emerging clean technologies. It aims to create an environment where innovation is supported and to help low-emissions technologies overcome technical and commercial barriers to growth. It does this through research and development grants, grants for commercialisation

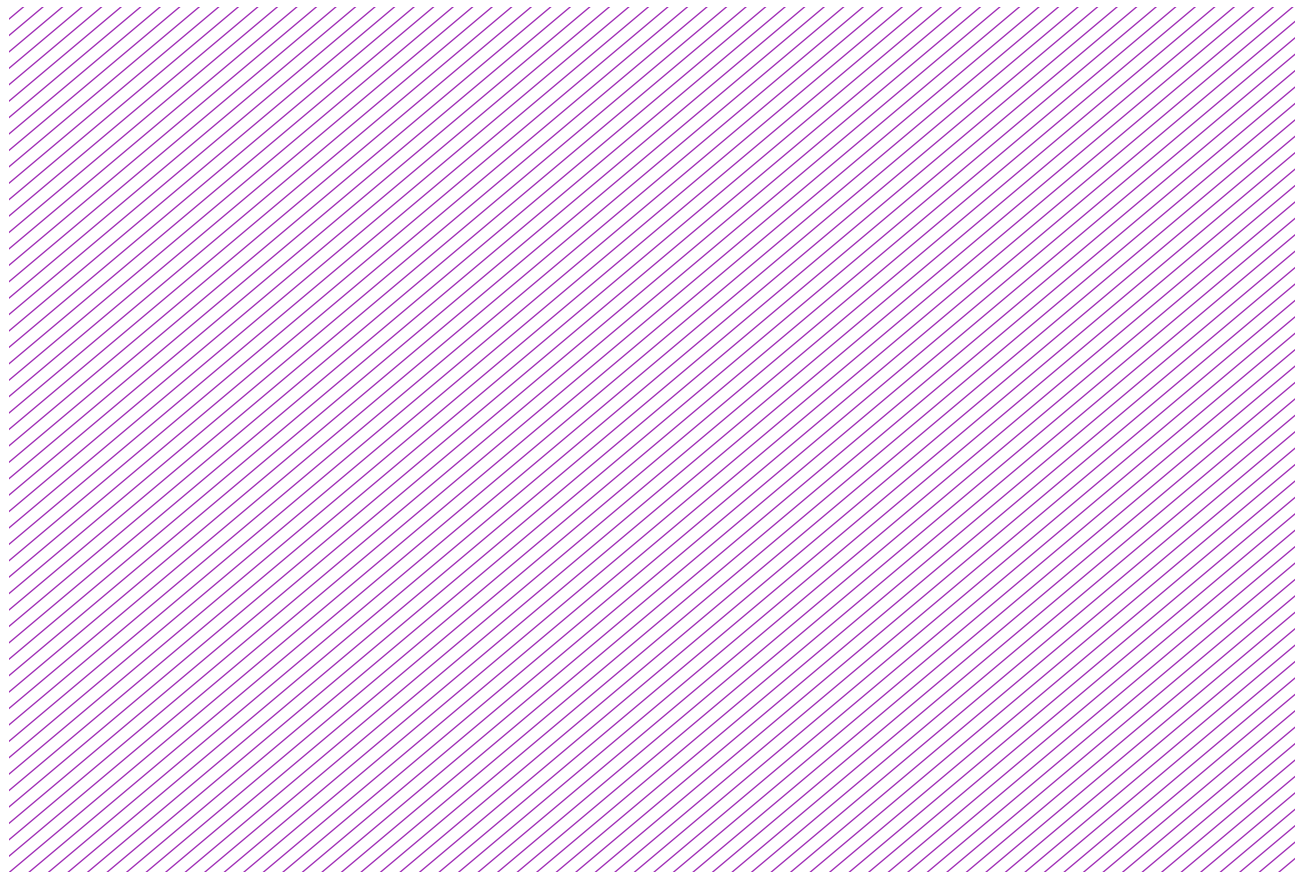
and pilots, and funding for infrastructure. As part of this stream, a Decarbonisation Innovation Hub will be established to help coordinate research, government and industry efforts.

New Low Carbon Industry Foundations aligns with the REIP Attracting new industries pillar. This stream lays the foundations for new low-emissions industries by building enabling infrastructure and increasing the reliability of supply chains.

Through the NZIIP, the NSW government is supporting the development of Clean Manufacturing Precincts (CMPs). CMPs aim to create new low-carbon industries while helping existing high-emitting industries fast-track their emissions reductions (Energy NSW 2021).

Local government

As the closest to the ground, local governments can help to ensure REIPs are tailored to local needs. States and territories could include them in the co-design of decarbonisation roadmaps. Local government is well suited to playing a role in infrastructure and planning assessments as well as in updating zoning schemes to proactively facilitate approvals for infrastructure developments. Additionally, council involvement can positively contribute to outcomes in REIPs through the application of circular economy principles, for example in waste management (Lambert 2018).





Tracking possible REIP locations

Climateworks Centre has tracked existing state and territory government policies and programs, sourced from publicly available information, that could support the establishment of 11 REIPs across Australia. The 11 locations were chosen based on the presence of heavy industry – or with the expectation that heavy industry could be hosted there – and the decarbonisation opportunities they have. The locations are brownfield sites and are not exhaustive, with smaller commercial and business precincts not included.

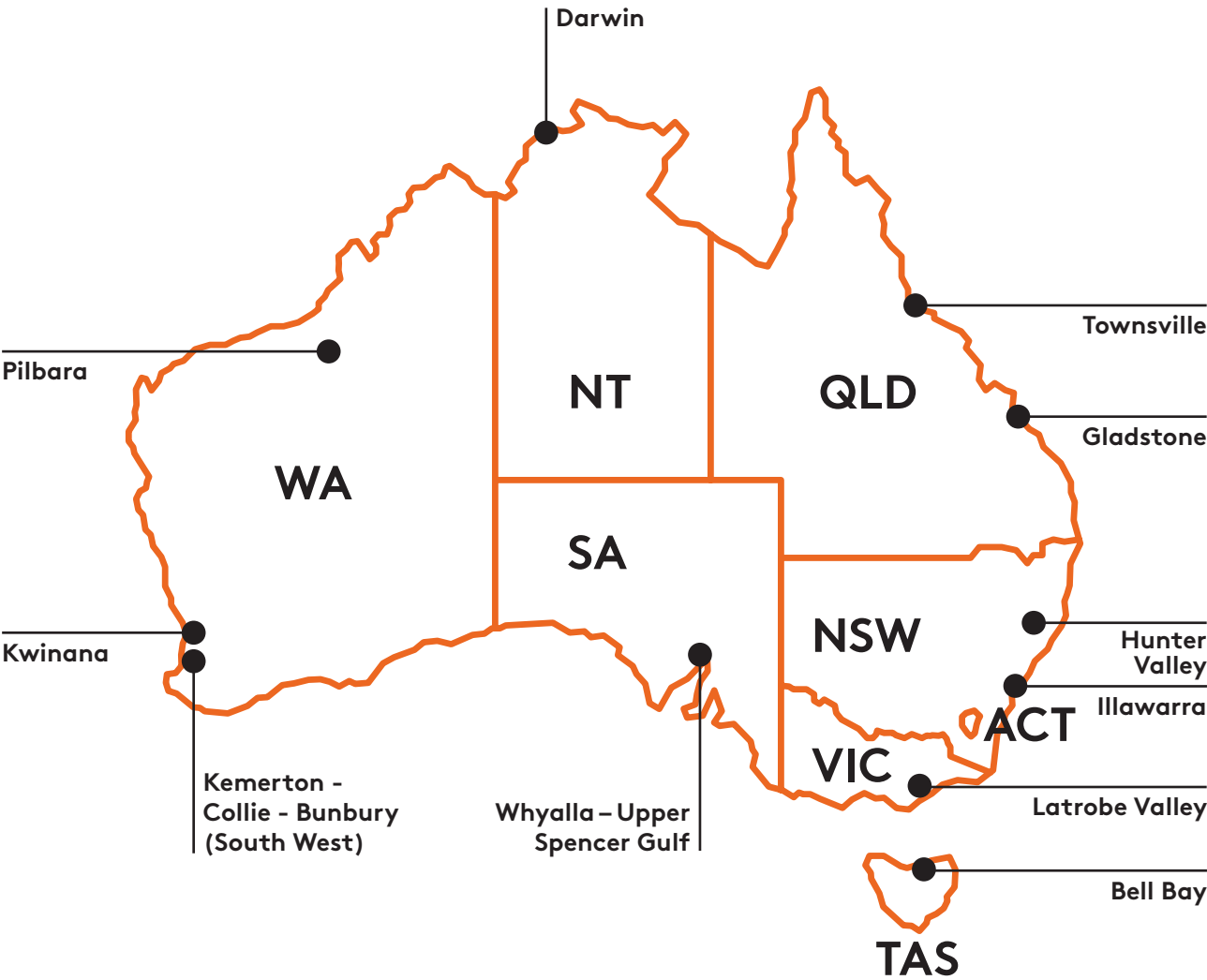
Note that while Darwin, Gladstone and the Pilbara have been identified as possible REIP locations, it is in the context of LNG production decreasing globally by approximately two-thirds from current levels by 2050 (IEA 2021), with an expectation that 91 per cent of emissions resulting from gas and LNG production are abated by 2050 (Climateworks Centre and Climate-KIC Australia, 2023). For Darwin, Gladstone and Pilbara to host REIPs powered by 100 per cent renewable energy, a considerable transformation away from LNG to new clean industries would have to take place.

The following section includes assessments for each REIP location of existing state and territory government initiatives against the REIP sub-pillars and identifies opportunities for further action to support REIPs in each location. A traffic light system has been used. Where a jurisdiction is considered to be undertaking (or has committed to undertake) a suite of actions relevant to the respective location which addresses all sub-pillars of each REIP pillar, the pillar has been coded in green. Where jurisdictions are undertaking (or have committed to undertake) actions relevant to the respective location that addresses some, but not all, sub-pillars under each REIP pillar, the pillar has been coded in yellow. And finally, where jurisdictions are not considered to be undertaking publicly available actions under a pillar, the pillar is coded orange. For each program, the sub-pillar it covers is listed below. Any sub-pillars not covered by existing programs are listed under 'missing sub-pillars'.

The assessments do not consider the scale and speed of policy implementation in terms of what is needed for businesses in a REIP to be powered by 100 per cent renewable energy in line with broader decarbonisation targets or the amount of funding committed compared to what may be needed for a successful REIP. Only open programs are considered, and the assessment does not include individual projects, with the exception of major projects specific to the REIP location (e.g. hydrogen hubs).

A broader list of REIP-enabling government initiatives against each REIP pillar for each state and territory is available in [Appendix A](#).

POSSIBLE REIP LOCATIONS ACROSS AUSTRALIA



Hunter Valley, New South Wales

DETAILS

- + Under the NSW Government's Net Zero Industry and Innovation Program, the Government has committed to establish a Clean Manufacturing Precinct (CMP) in the Hunter Valley (part of the Program's New Low Carbon Industry Foundations stream (\$175m)).
- + The development of a CMP roadmap is underway.
- + NSW Office of Energy and Climate Change is responsible for administering CMPs.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Net Zero Industry and Innovation Program:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p>Business decarbonisation support program:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination + strategic land use and infrastructure planning + innovation and supply chain readiness support + international linkages and coordination support. 	<p>Net Zero Industry and Innovation Program:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + green hydrogen infrastructure + port upgrades + transport infrastructure. <p>Transmission Acceleration Facility:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + Renewable electricity transmission, network, storage/firming infrastructure. 	<p>Net Zero Industry and Innovation Program:</p> <ul style="list-style-type: none"> + R&D for renewable technologies to support decarbonisation + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply + capital outlays for heavy industry upgrades + industrial material and energy efficiency. <p>Hunter Hydrogen Hub:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green</i></p>	<p>Net Zero Industry and Innovation Program:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen) + financial incentives to attract new businesses to REIP (hydrogen) + strategy/plan to attract new businesses to REIP (other; non-hydrogen). <p><i>Hydrogen type: green</i></p> <p>Hunter Hydrogen Hub:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>Port of Newcastle Green Hydrogen Hub:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p>Renewable Manufacturing Fund:</p> <ul style="list-style-type: none"> + incentives to attract new businesses to REIP (other; non-hydrogen).

PILLAR ALIGNMENT ASSESSMENT



AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENTS

Decarbonising existing industries

Kooragang Island
Decarbonisation Project:

- + \$25m CEFC investment.

Attracting new industries

Port of Newcastle Green
Hydrogen Hub:

- + \$1.5m ARENA grant for feasibility study
- + Up to \$41m of Australian Government funding from

Clean Hydrogen Industrial Hubs Program – Hub Implementation funding stream.

Origin Energy's Hunter Valley H2 Hub:

- + Up to \$41m of federal government funding from Clean Hydrogen Industrial Hubs Program – Hub Implementation funding stream.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE NEW SOUTH WALES GOVERNMENT COULD TAKE TO SUPPORT A HUNTER VALLEY REIP

OVERALL

- + Set an emissions reduction goal for a Hunter Valley CMP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas where there is currently minimal co-investment (e.g. attracting new industries other than hydrogen, decarbonising existing industries and building enabling infrastructure).

COORDINATION AND SKILLS

- + Incorporate ongoing industry coordination and strategic land use and infrastructure planning into New Low Carbon Industry Foundations stream of Net Zero Industry and Innovation Program.
- + Ensure supply chain readiness support is provided for manufacturing in the Hunter Valley CMP through NSW Advanced Manufacturing Initiative to promote NSW's advanced manufacturing capabilities internationally.
- + Introduce new policies and funding to support international linkages for industries in the Hunter Valley.

BUILDING ENABLING INFRASTRUCTURE

- + Commit funding to build Hunter-Central Coast Renewable Energy Zone infrastructure.

Illawarra, New South Wales

DETAILS

- + Under the NSW Government's Net Zero Industry and Innovation Program, the Government has committed to establish a Clean Manufacturing Precinct (CMP) in the Illawarra (part of the Program's New Low Carbon Industry Foundations stream).
- + The development of a CMP roadmap is underway.
- + NSW Office of Energy and Climate Change is responsible for administering CMPs.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Net Zero Industry and Innovation Program:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p>Business decarbonisation support program:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination + strategic land use and infrastructure planning + innovation and supply chain readiness support + international linkages and coordination support. 	<p>Net Zero Industry and Innovation Program:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + green hydrogen infrastructure + port upgrades + transport infrastructure. <p>Transmission Acceleration Facility:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + Renewable electricity transmission, network, storage/firming infrastructure. 	<p>Net Zero Industry and Innovation Program:</p> <ul style="list-style-type: none"> + R&D for renewable technologies to support decarbonisation + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply + capital outlays for heavy industry upgrades + industrial material and energy efficiency. <p>Port Kembla Hydrogen Hub:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green</i></p> <p>Tallawarra B Dual Fuel Capable Gas/Hydrogen Power Plant:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: blue and green</i></p>	<p>Net Zero Industry and Innovation Program:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen) + financial incentives to attract new businesses to REIP (hydrogen) + strategy/plan to attract new businesses to REIP (other; non-hydrogen). <p><i>Hydrogen type: green</i></p> <p>Port Kembla Hydrogen Hub:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>Renewable Manufacturing Fund:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other; non-hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation

Incomplete implementation

No implementation

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Decarbonising existing industries

Tallawarra B Dual Fuel Capable Gas/Hydrogen Power Plant:

- + Tallawarra B power station, to be located in the Illawarra region of New South Wales, will operate

as a dual fuel capable 'peaking' plant and be capable of using a blend of natural gas and renewable-based hydrogen in its operations.

- + \$5m Australian Government funding.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE NEW SOUTH WALES GOVERNMENT COULD TAKE TO SUPPORT AN ILLAWARRA REIP

- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. attracting new industries other than hydrogen, decarbonising existing industries, and building enabling infrastructure).

- + Ensure supply chain readiness support is provided for manufacturing in the Illawarra CMP through NSW Advanced Manufacturing Initiative to promote NSW's advanced manufacturing capabilities internationally.
- + Introduce new policies and funding for skills and training programs to support existing workers to transition to new industries and to support international linkages for industries in the Illawarra.

COORDINATION AND SKILLS

- + Incorporate ongoing industry coordination and strategic land use and infrastructure planning into New Low Carbon Industry Foundations stream of Net Zero Industry and Innovation Program.

OVERALL

- + Set a net zero goal for an Illawarra CMP.
- + Align with REIP principles in determining REIP boundaries and developments.

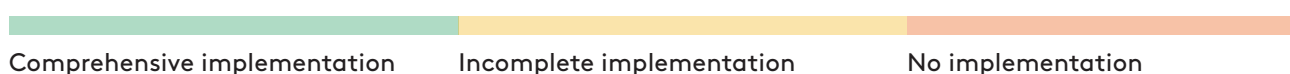
Gladstone, Queensland

DETAILS

- + Gladstone's industry is based on exports of coal, sulfuric acid, aluminium and alumina. More recently, Gladstone has diversified to become one of the largest LNG export ports in the world.³

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Energy and Jobs Plan:</p> <ul style="list-style-type: none"> + strategic land use and infrastructure planning + skills and training programs to support workers to transition to new clean industries + innovation and supply chain readiness support. <p>Industry Partnership Program:</p> <ul style="list-style-type: none"> + innovation and supply chain readiness support + international linkages and coordination funding. <p>Heavy Industry Low-carbon Transition CRC Gladstone Hub:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p>SuperGrid Training Centre and Transmission Hub:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. 	<p>CQ Renewable Energy Zone:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/ firming infrastructure. <p>2022-24 Local Government Grants and Subsidies Program:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + port infrastructure + transport infrastructure + renewable electricity transmission, network, storage/ firming infrastructure. <p>Fitzroy to Gladstone pipeline:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure. <p>Missing sub-pillars:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + green hydrogen infrastructure. 	<p>Heavy Industry Low-carbon Transition CRC Gladstone Hub:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <p>QLD Renewable Energy and Hydrogen Jobs Fund:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply. <p><i>Hydrogen type: renewable (unclear if blue or green)</i></p> <p>Rio Tinto and Sumitomo partnership:</p> <ul style="list-style-type: none"> + Renewable heat and feedstock supply. <p><i>Hydrogen type: unknown</i></p> <p>Business Energy Saving and Transformation Program (QBEST):</p> <ul style="list-style-type: none"> + industrial material and energy efficiency (incl. circular economy). <p>H-2 Hub Gladstone:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. 	<p>2019 QLD Hydrogen Industry Strategy:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: unclear</i></p> <p>Gladstone Hydrogen Consortium:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: blue</i></p> <p>Hydrogen Park Gladstone:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: blue</i></p> <p>Stanwell Corporation's Central Queensland Hydrogen Hub (CQ-H2 Hub):</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen) + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p>

PILLAR ALIGNMENT ASSESSMENT



³ Note that while Gladstone has been identified as a possible REIP location, it is in the context of LNG trade decreasing by approximately two-thirds from current levels by 2050 (IEA 2021), with an expectation that 91 per cent of emissions resulting from gas and LNG production are abated by 2050 (Climateworks Centre and Climate-KIC Australia, 2023). For Gladstone to host a REIP powered by 100 per cent renewable energy, a considerable transformation away from LNG to new clean industries would have to take place.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p><u>Gladstone High School upgrade to prepare students for jobs in the hydrogen industry:</u></p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination. 		<p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + industrial material and energy efficiency + capital outlays for heavy industry upgrades. 	<p><u>Fortescue Future Industries Global Green Energy Manufacturing Centre:</u></p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><u>Central Queensland Statement of Cooperation:</u></p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (other, non-hydrogen). <p><u>Energy and Jobs Plan:</u></p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><u>State Infrastructure Strategy:</u></p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other; non-hydrogen).

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Attracting new industries

Stanwell Corporation's Central Queensland Hydrogen Hub (CQ-H2 Hub):

- + Up to \$69.2 million federal government investment.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE QUEENSLAND GOVERNMENT COULD TAKE TO SUPPORT A GLADSTONE REIP

OVERALL

- + Set a net zero goal for a Gladstone REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. decarbonising existing industries, attracting new industries other than hydrogen, and building enabling infrastructure).

COORDINATION AND SKILLS

- + Establish institutional arrangements (e.g. allocation of staff) to convene ongoing industry coordination in a Gladstone REIP once a Gladstone REIP has been designed through the Heavy Industry Low-carbon Transition Cooperative Research Centre (HILT CRC) project.
- + Through the Queensland Government's Industry Partnership Program, provide innovation and supply chain readiness

and support international linkages for businesses in a Gladstone REIP.

- + Ensure that Future Skills Fund initiatives such as Manufacturing Skills Queensland and the Workforce Transition Support Program are available to existing workers in a Gladstone REIP.

BUILDING ENABLING INFRASTRUCTURE

- + Fund additional infrastructure needed for a Gladstone REIP, if identified as being required in the strategic land use and infrastructure planning process.

DECARBONISING EXISTING INDUSTRIES

- + Develop policies and commit funding to support industrial energy efficiency, circular economy and demand management.
- + Develop policies and commit funding for capital outlays for heavy industry upgrades (e.g. to buy, construct, install or commission new facilities and equipment, establish new manufacturing processes, or for process design and engineering directly related to their capital investment): new program design could emulate the NSW Government's Net Zero

Industry and Innovation Program High Emitting Industries stream that includes deploying low-emissions technologies and infrastructure to reduce the emissions associated with existing, high-emitting industrial facilities.

ATTRACTING NEW INDUSTRIES

- + Co-invest in Australian Government funded Gladstone hydrogen projects:
 - > Origin Energy Future Fuels Pty Ltd's Origin & ENEOS MCH Gladstone Project
 - > Vena Energy Services (Australia) Pty Ltd's Euroa Energy Project
 - > Fortescue Future Industries' Green Hydrogen Gigafactory - Electrolyser Manufacturing Facility at Aldoga in Gladstone
- + Ensure existing and future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in fossil fuel-based hydrogen production).
- + Commit funding to attract new industries, other than hydrogen, to Gladstone REIP (e.g. critical minerals and batteries).

Townsville, Queensland

DETAILS

- + Townsville is recognised as a centre for business and investment, with transport links to the Asia-Pacific region. Significant industries in Townsville include agriculture, defence, construction, mining and manufacturing. Queensland Rail and The Port of Townsville provide a transport hub for the region's industries, with the Port of Townsville being Northern Australia's largest for lead, sugar, copper, zinc and fertiliser exports.⁴

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<u>Energy and Jobs Plan:</u> <ul style="list-style-type: none"> + strategic land use and infrastructure planning + skills and training programs to support workers to transition to new clean industries + innovation and supply chain readiness support. <u>SuperGrid Training Centre and Transmission Hub:</u> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. <u>Hydrogen and Renewable Energy Training Facility:</u> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. <u>Manufacturing Hubs Grant Program:</u> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new clean industries. 	<u>SuperGrid:</u> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/firming infrastructure. <u>CopperString 2.0:</u> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/firming infrastructure. Missing sub-pillars: additional infrastructure needed for REIP, such as: <ul style="list-style-type: none"> + water infrastructure + green hydrogen infrastructure + port infrastructure + transport infrastructure. 	<u>Renewable Energy and Hydrogen Jobs Fund:</u> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply. <u>Business Energy Saving and Transformation Program:</u> <ul style="list-style-type: none"> + industrial material and energy efficiency (incl. circular economy). <u>Manufacturing Hubs Grant Program:</u> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation + capital outlays for heavy industry upgrades + industrial material and energy efficiency (incl. circular economy). 	<u>Energy and Jobs Plan:</u> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <u>State Infrastructure Strategy:</u> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <u>Townsville Manufacturing Hub Model:</u> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (other, non-hydrogen). <u>Queensland Resources Common User Facility:</u> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other, non-hydrogen). Missing sub-pillars: <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation	Incomplete implementation	No implementation
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⁴ The Lansdown Eco-Industrial Precinct, located in Townsville, is not included in this assessment as it is a greenfield site. For more information see the Lansdown Eco-Industrial Precinct case study in the 'REIP-enabling policies' section below.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p><u>Hydrogen and Renewable Energy Training facility at Bohle TAFE campus in Townsville:</u></p> <ul style="list-style-type: none"> + skills and training programs to support workers in REIP to transition to new industries. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps + convening ongoing industry coordination in REIP + international linkages and coordination support. 			

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Attracting new industries

Townsville region hydrogen hub:

- + The Australian Government has committed \$70m to

support the development of a hydrogen hub in Townsville.

Hydrogen type: green

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE QUEENSLAND GOVERNMENT COULD TAKE TO SUPPORT A TOWNSVILLE REIP

OVERALL

- + Set a net zero goal for a Townsville REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas (e.g. attracting new industries) for which there is currently minimal co-investment.

COORDINATION AND SKILLS DEVELOPMENT

- + Convene key stakeholder within Townsville to co-design a Townsville REIP roadmap.
- + Convene, or provide support to another party to convene, ongoing industry coordination in a Townsville REIP.
- + Provide innovation and supply chain readiness and support international linkages for industry in a Townsville REIP.

BUILDING ENABLING INFRASTRUCTURE

- + Fund and build any

additional infrastructure identified through strategic land use planning.

ATTRACTING NEW INDUSTRIES

- + Commit funding to attract new industries other than hydrogen, to a Townsville REIP.
- + Ensure existing and future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in fossil fuel-based hydrogen production).

Bell Bay, Tasmania

DETAILS

- + The Bell Bay Industrial Precinct occupies 2,500 hectares and is home to Bell Bay Aluminium, South 32, Ecka Granules, TasPorts, Qube, Forico, Timberlink and a diverse range of businesses.
- + The Bell Bay Industrial Precinct is responsible for 59 per cent of all Tasmania's manufactured exports.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p><u>Bell Bay Advanced Manufacturing Zone:</u></p> <ul style="list-style-type: none"> + convening ongoing industry coordination + strategic land use and infrastructure planning + skills and training programs to support workers to transition to new industries + international linkages and coordination support. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps + innovation and supply chain readiness support. 	<p><u>Tasmanian Green Hydrogen Hub:</u></p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + green hydrogen infrastructure + water infrastructure + renewable electricity transmission, network, storage/firming infrastructure + transport infrastructure + port infrastructure. <p><u>Port Master Plan:</u></p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + port infrastructure. 	<p><u>Advanced Manufacturing Accelerating Growth Program:</u></p> <ul style="list-style-type: none"> + capital outlays for heavy industry upgrades. <p><u>Tasmanian Green Hydrogen Hub:</u></p> <ul style="list-style-type: none"> + renewable heat and feedstock supply + R&D for technologies to support decarbonisation. <p><i>Hydrogen type: green</i></p> <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + industrial material and energy efficiency. <p>Assumption: All electricity in Tasmania is renewable so renewable electricity generation, storage and firming to support industrial decarbonisation is not required.</p>	<p><u>Tasmanian Renewable Hydrogen Action Plan:</u></p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: renewable (unclear if blue or green)</i></p> <p><u>Tasmanian Green Hydrogen Hub:</u></p> <ul style="list-style-type: none"> + incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p>

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation

Incomplete implementation

No implementation

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Attracting new industries

Tasmanian Green Hydrogen Hub:

- + Australian Government funding of up to \$70m.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE TASMANIAN GOVERNMENT COULD TAKE TO SUPPORT A BELL BAY REIP

OVERALL

- + Set a net zero goal for the Bell Bay Industrial Precinct.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. decarbonising existing industries, attracting new industries other than hydrogen, and building enabling infrastructure).

COORDINATION AND SKILLS

- + Fund Bell Bay Advanced Manufacturing Zone to:
 - > Convene key stakeholder within the Bell Bay Industrial Precinct to co-design a Bell Bay REIP roadmap, and

- > Provide innovation and supply chain readiness support to businesses within Bell Bay Industrial Precinct.
- + Focus innovation and supply chain readiness support to a Bell Bay REIP through the Renewable Energy Coordination Framework.

DECARBONISING EXISTING INDUSTRIES

- + Direct funding committed in the 2020–2021 State Budget (\$1.3m over four years) – a \$10m no-interest loan scheme for large Tasmanian industrial businesses to trial existing clean technologies or test new innovative production processes – towards industries located in the Bell Bay Industrial Precinct.
- + Progress to the next stage of the Tasmanian Future Gas Strategy – Discussion Paper, in particular implement options to transition away from gas for industrial activities, such as heat and feedstock supply.
- + Commit R&D funding for technologies that support

industrial decarbonisation, focusing on heat and non-energy emissions.

- + Fund Bell Bay Advanced Manufacturing Zone to establish a circular economy and waste management scheme in the Bell Bay Industrial Precinct.

ATTRACTING NEW INDUSTRIES

- + Develop policies and commit funding to attract new industries other than hydrogen, to a Bell Bay REIP.
- + Expand Advanced Manufacturing Accelerating Growth Program to include funding to attract new industries other than hydrogen, to a Bell Bay REIP.
- + Ensure existing and future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in fossil fuel-based hydrogen production).

Kwinana, Western Australia

DETAILS

- + Kwinana is home to alumina refining, ammonia, fertilisers, chemicals production, nickel refining and other battery mineral processing, as well as cement and a range of supporting industries.
- + Industries are located in the Kwinana Strategic Industrial Area and broader Western Trade Coast.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Heavy Industry Low-carbon Transition CRC Kwinana Hub:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p>10-year Industrial Land Strategy (2021):</p> <ul style="list-style-type: none"> + strategic land user and infrastructure planning. <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination + skills and training programs to support workers to transition to new industries + innovation and supply chain readiness support + international linkages and coordination support. 	<p>Westport:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + port infrastructure. <p>Missing sub-pillars:</p> <p>additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + renewable electricity transmission, network, storage/firming infrastructure + green hydrogen infrastructure + transport infrastructure. 	<p>Heavy Industry Low-carbon Transition CRC Kwinana Hub:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <p>Clean Energy Future Fund:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply + industrial material and energy efficiency. <p>Big Battery Project:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation. <p>Renewable Hydrogen Fund:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green</i></p> <p>H2Kwinana:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green</i></p>	<p>WA Renewable Hydrogen Strategy and Roadmap:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>Renewable Hydrogen Fund:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>H2Kwinana:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>H2Perth:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green and blue</i></p> <p>Global Advanced Industries Hub:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (other; non-hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation

Incomplete implementation

No implementation

CONT.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
		<p>H2Perth</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green and blue (grey in initial stages)</i></p> <p>Kwinana Energy Transformation Hub</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: blue</i></p> <p>Carbon Innovation Grants Program:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + capital outlays for heavy industry upgrades. 	<p>Kwinana Energy Transformation Hub</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: blue</i></p> <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other; non-hydrogen).

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Decarbonising existing industries

Big battery at Synergy's Kwinana Power Station:

- + 100 MW battery storage system to support uptake of renewables and long-term grid stability

- + Australian Government commitment of \$15m.

Attracting new industries

H2Kwinana:

- + bp Australia and Macquarie Capital are investigating the establishment of a renewables-based hydrogen hub at bp Australia's Kwinana site in Western Australia.
- + The Australian Government has committed up to \$70m as part of the

Australian Government Clean Hydrogen Industrial Hubs Program – Hub Implementation funding stream.

Kwinana Hydrogen Hub:

- + The Australian Government has committed \$140m towards two new hydrogen hubs in Western Australia, one in Kwinana and the other in the Pilbara.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE WESTERN AUSTRALIA GOVERNMENT COULD TAKE TO SUPPORT A KWINANA REIP

OVERALL

- + Set a net zero goal for a Kwinana REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. decarbonising existing industries, attracting new industries other than hydrogen, and building enabling infrastructure).
- + Ensure that the Global Advanced Industries Hub economic framework focused on industry development and attraction, land and infrastructure, and skills and workforce development for the Western Trade Coast aligns with the REIP pillars.

COLLABORATION AND SKILLS

- + Fund a body such as the Kwinana Industries Council (KIC) to:
 - > Convene ongoing industry coordination to implement the Kwinana roadmap produced by the HILT CRC.
 - > Provide innovation and supply chain readiness and support international linkages to businesses within the Kwinana REIP.
- + Conduct strategic land use and infrastructure planning with the City of Kwinana to identify additional infrastructure requirements for a Kwinana REIP.
- + Develop and deliver skills and training programs to support workers in the Kwinana REIP to transition to new industries.

BUILDING ENABLING INFRASTRUCTURE

- + Fund additional infrastructure needed for a Kwinana REIP, as identified in the strategic land use and infrastructure planning process.

DECARBONISING EXISTING INDUSTRIES

- + Develop policies and commit funding to support capital outlays for heavy industry upgrades (e.g. for industry to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or for process design and engineering directly related to their capital investment).

ATTRACTING NEW INDUSTRIES

- + Build on Western Australia's Future Battery and Critical Minerals Industries to target opportunities to attract new industries in the broader Western Trade Coast.
- + Ensure existing and future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in fossil fuel-based hydrogen production).

Pilbara, Western Australia

DETAILS

- + The Pilbara is home to five Strategic Industrial Areas (SIA): Boodarie SIA, Anketell SIA, Burrup SIA, Maitland SIA, and Ashburton North SIA.
- + Industries located in the Burrup SIA include, for example:
 - > North West Shelf Venture project – a joint venture between Woodside, Shell, BHP Billiton, BP, Chevron and Japan Australia LNG
 - > Woodside's Pluto LNG plant
 - > Yara Pilbara Fertilisers plant
 - > Yara Pilbara Nitrates' \$600m technical ammonium nitrates plant.
- + The Boodarie SIA connects directly with Port Hedland Port and industry includes the Alinta and TransAlta gas fired power plants, while the Ashburton North SIA connects directly with the Onslow Port and industry includes the Wheatstone LNG Gas Plant and BHP Macedon Domestic Gas Plant.⁵

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Heavy Industry Low-carbon Transition CRC Pilbara Hub:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p>Pilbara Hydrogen Hub:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries. <p>10-year Industrial Land Strategy (2021):</p> <ul style="list-style-type: none"> + strategic land user and infrastructure planning. <p>Memorandum of Understanding (MOU) to drive energy opportunities with Japan:</p> <ul style="list-style-type: none"> + international linkages and coordination support. 	<p>Missing sub-pillars:</p> <p>additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + renewable electricity transmission, network, storage/firming infrastructure + green hydrogen infrastructure + port infrastructure + transport infrastructure. 	<p>Heavy Industry Low-carbon Transition CRC Pilbara Hub:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <p>Pilbara Hydrogen Hub:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green and blue</i></p> <p>Asian Renewable Energy Hub:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation. <p>Carbon Innovation Grants Program:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. 	<p>WA Renewable Hydrogen Strategy and Roadmap:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>Renewable Hydrogen Fund:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p>Pilbara Renewable Hydrogen Hub:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p>

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation	Incomplete implementation	No implementation
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Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination + innovation and supply chain readiness support. 		<p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + capital outlays for heavy industry upgrades + industrial material and energy efficiency. 	<p>Pilbara Hydrogen Hub:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green and blue</i></p> <p>Asian Renewable Energy Hub:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen) + strategy/plan to attract new businesses to REIP (other; non-hydrogen). <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other; non-hydrogen).

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Decarbonising existing industries

Energy Security and Regional Development Fund:

- + The Australian Government has committed \$1.5 billion to the Pilbara region in Western Australia to support mining, mineral processing and local manufacturing, and to provide investment in hydrogen and renewable energy projects.

Attracting new industries

Pilbara Hydrogen Hub:

- + The Australian Government has committed \$140m towards two new hydrogen hubs in Western Australia, one in Kwinana and the other in the Pilbara.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE WESTERN AUSTRALIA GOVERNMENT COULD TAKE TO SUPPORT A PILBARA REIP

OVERALL

- + Set a net zero goal for a Pilbara REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. decarbonising existing industries, attracting new industries other than hydrogen, and building enabling infrastructure).

COORDINATION AND SKILLS DEVELOPMENT

- + Through the WA Government's Net Zero Industrial Estates initiative:
 - > Convene ongoing industry coordination in the Pilbara REIP.

- > Provide innovation and supply chain readiness and support international linkages to businesses within a Pilbara REIP.
- + Develop a strategic land use and infrastructure plan as part of a Pilbara REIP roadmap, co-designed with the Heavy Industry Low-carbon Transition CRC Pilbara Hub, to identify additional infrastructure requirements for a Pilbara REIP.
- + Develop and deliver skills and training programs to support workers in the Pilbara REIP to transition to new industries.

BUILDING ENABLING INFRASTRUCTURE

- + Fund additional infrastructure needed for a Pilbara REIP, as identified in the strategic land use and infrastructure planning process.

DECARBONISING EXISTING INDUSTRIES

- + Establish a fund to support the research, development and commercialisation of renewable energy technology for a Pilbara REIP.

- + Support industrial material and energy efficiency (incl. circular economy) projects in a Pilbara REIP through future funding rounds of the Clean Energy Futures Fund.
- + Develop policies and commit funding to support capital outlays for heavy industry upgrades (e.g. to support existing industry to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or for process design and engineering directly related to their capital investment).

ATTRACTING NEW INDUSTRIES

- + Commit funding to attract new industries other than hydrogen, to a Pilbara REIP.
- + Ensure existing and future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in new fossil fuel-based hydrogen production).

Kemerton– Collie–Bunbury (South West), Western Australia

DETAILS

- + The Kemerton–Collie–Bunbury sub-region is home to two Strategic Industrial Areas (Kemerton SIA and Shotts SIA) and several other established and developing major industrial estates.
- + Kemerton is home to silicon metal manufacturing, industrial chemical production, a lithium hydroxide plant and a number of other industries. Alumina operations are located at Worsley and a graphite processing facility is situated in Collie.
- + The South West region holds significant deposits of energy minerals such as lithium, alumina and heavy mineral sands.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p><u>Economic Development Action Plan for the Collie and Bunbury Regions:</u></p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries. <p><u>Collie transition package:</u></p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries. <p><u>Heavy Industry Low-carbon Transition CRC South West Hub:</u></p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p><u>10-year Industrial Land Strategy (2021):</u></p> <ul style="list-style-type: none"> + strategic land use and infrastructure planning. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination + innovation and supply chain readiness support + international linkages and coordination support. 	<p><u>Collie Transition Package:</u></p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/firming infrastructure. <hr/> <p>Missing sub-pillars:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + green hydrogen infrastructure + port infrastructure + transport infrastructure. 	<p><u>Economic Development Action Plan for the Collie and Bunbury Regions:</u></p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply. <p><u>Carbon Innovation Grants Program:</u></p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + capital outlays for heavy industry upgrades + industrial material and energy efficiency. 	<p><u>WA Renewable Hydrogen Strategy and Roadmap:</u></p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green</i></p> <p><u>Collie Futures Industry Development Fund:</u></p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other; non-hydrogen). <p><u>South West Advanced Manufacturing Hub:</u></p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (other; non-hydrogen). <p><u>Collie Transition Package:</u></p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other; non-hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation

Incomplete implementation

No implementation

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

No current Australian or local government co-investment commitments.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE WESTERN AUSTRALIA GOVERNMENT COULD TAKE TO SUPPORT A SOUTH WEST REIP

OVERALL

- + Set a net zero goal for a South West REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. decarbonising existing industries, attracting new industries and building enabling infrastructure).

COORDINATION AND SKILLS DEVELOPMENT

- + Through the WA Government's Net Zero Industrial Estates initiative:
 - > Convene ongoing industry coordination in a South West REIP.
 - > Provide innovation and supply chain readiness and support international linkages to businesses within the South West REIP.
- + Develop a strategic land use and infrastructure plan as part of a South West REIP roadmap, co-designed with the Heavy Industry Low-carbon Transition CRC South West Hub, to identify additional infrastructure requirements for a South West REIP.

BUILDING ENABLING INFRASTRUCTURE

- + Fund and build any additional infrastructure identified through the strategic land use and infrastructure planning process through the South West Advanced Manufacturing Hub.

DECARBONISING EXISTING INDUSTRIES

- + Expand implementation of the Economic Development Action Plan for the Collie and Bunbury Regions by committing funding towards promoting Collie's role as a South West Interconnected System (SWIS) energy hub, including through capital outlays for heavy industry upgrades, industrial material and energy efficiency (incl. circular economy).

ATTRACTING NEW INDUSTRIES

- + Develop policies and commit funding to attract hydrogen to a South West REIP.
- + Ensure future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in new fossil fuel-based hydrogen production).

Whyalla–Upper Spencer Gulf, South Australia

DETAILS

- + Whyalla–Upper Spencer Gulf has a substantial industrial base, providing mining, engineering and steel manufacturing services.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>SA H2H Hydrogen Technology Cluster:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination. <p>Heavy Industry Low-carbon Transition CRC Upper Spencer Gulf Hub:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps. <p>Industry Capability Network South Australia:</p> <ul style="list-style-type: none"> + innovation and supply chain readiness support <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + strategic land use and infrastructure planning + skills and training programs to support workers to transition to new industries + international linkages and coordination support. 	<p>Port Bonython Clean Hydrogen Industrial Hub:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure + green hydrogen infrastructure + renewable electricity transmission, network, storage/firming infrastructure + transport infrastructure + port infrastructure. <p>Northern Water Supply Project:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + water infrastructure 	<p>Hydrogen Jobs Plan:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green</i></p> <p>Port Bonython Clean Hydrogen Industrial Hub:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p><i>Hydrogen type: green and blue</i></p> <p>Cultana Solar Farm:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation. <p>Solar River solar and battery project:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation. <p>Green hydrogen project at Port Pirie:</p> <ul style="list-style-type: none"> + renewable heat and feedstock supply. <p>Heavy Industry Low-carbon Transition CRC Upper Spencer Gulf Hub:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + capital outlays for heavy industry upgrades + industrial material and energy efficiency. 	<p>Hydrogen Roadmap for South Australia:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green and blue</i></p> <p>South Australia's Hydrogen Action Plan</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green and blue</i></p> <p>Port Bonython Clean Hydrogen Industrial Hub:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen). <p><i>Hydrogen type: green and blue</i></p> <hr/> <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (other; non-hydrogen) + financial incentives to attract new businesses to REIP (other; non-hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation

Incomplete implementation

No implementation

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Attracting new industries

Port Bonython Clean Hydrogen Industrial Hub:

- + The Australian Government has allocated up to \$70m towards the South Australian government's Port Bonython Hydrogen Hub Activation project.

Hallett Construction Materials:

- + The Australian Government has allocated \$20m (through

the Modern Manufacturing Initiative) for Hallett Construction Materials to build an integrated green cement business, consisting of a slag granulating plant at Whyalla Steelworks; a grinding, processing and distribution hub at Port Augusta; and a product receival, blending and distribution hub at Port Adelaide.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE SOUTH AUSTRALIA GOVERNMENT COULD TAKE TO SUPPORT A WHYALLA-UPPER SPENCER GULF REIP

OVERALL

- + Set a net zero goal for a Whyalla–Upper Spencer Gulf REIP.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. decarbonising existing industries, attracting new industries other than hydrogen, and building enabling infrastructure).

COORDINATION AND SKILLS DEVELOPMENT

- + Develop a strategic land use and infrastructure plan for the Whyalla–Upper Spencer Gulf REIP roadmap, developed by the Heavy Industry Low-carbon Transition CRC Whyalla–Upper Spencer Gulf Hub, to identify additional infrastructure requirements for a Whyalla–Upper Spencer Gulf REIP.
- + Develop and implement skills and training programs to support existing workers in the Whyalla–Upper Spencer Gulf region transition to new clean industries.

DECARBONISING EXISTING INDUSTRIES

- + Develop and deliver a program to directly support heavy industry in the Whyalla–Upper Spencer Gulf REIP to decarbonise, for

example, by funding capital outlays for heavy industry upgrades and industrial energy efficiency measures.

ATTRACTING NEW INDUSTRIES

- + Build on the SA Government's Climate Action Plan 2021-25, which lays out a strategy for attracting and growing businesses and industries powered by renewables, with funding to attract new industries other than green hydrogen, to a Whyalla–Upper Spencer Gulf REIP.
- + Ensure existing and future hydrogen policies and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in new fossil fuel-based hydrogen production).

Darwin, Northern Territory

DETAILS

- + The Northern Territory Government is working with industry and the Australian Government to transform Middle Arm Sustainable Development Precinct (Middle Arm) into a globally competitive, sustainable precinct with a focus on low-emissions petrochemicals, renewable hydrogen, carbon capture storage and minerals processing.
- + Two existing brownfield LNG plants are the only existing industries at Middle Arm.⁶

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Middle Arm Sustainable Development Precinct:</p> <ul style="list-style-type: none"> + strategic land use and infrastructure planning. <p>Infrastructure Strategy Plan 2022-2030:</p> <ul style="list-style-type: none"> + strategic land use and infrastructure planning. <p>Skilling the Territory Investment Plan 2022-23:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries. <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps + convening ongoing industry coordination + innovation and supply chain readiness support + international linkages and coordination support. 	<p>Missing sub-pillars:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + transport infrastructure + water infrastructure + renewable electricity transmission, network, storage/firming infrastructure + green hydrogen infrastructure + port infrastructure. 	<p>Carbon Capture Utilisation and Storage Hub:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation. <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation + renewable heat and feedstock supply + capital outlays for heavy industry upgrades + industrial material and energy efficiency. 	<p>Darwin H2 Hub:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen). <p>Local Jobs Fund:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (other non-hydrogen). <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (other; non-hydrogen) + financial incentives to attract new businesses to REIP (hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation	Incomplete implementation	No implementation
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⁶ Note that while Darwin (Middle Arm Sustainable Development Precinct) has been identified as a possible REIP location, it is in the context of LNG trade decreasing by approximately two-thirds from current levels by 2050 (IEA 2021), with an expectation that 91 per cent of emissions resulting from gas and LNG production are abated by 2050 (Climateworks Centre and Climate-KIC Australia, 2023). For Darwin to host a REIP powered by 100 per cent renewable energy, a considerable transformation away from LNG to new clean industries would have to take place.

AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Building enabling infrastructure

In 2022, the Australian Government committed \$2 billion for the Middle Arm Sustainable Development Precinct which includes:

- + \$1.5 billion investment in marine infrastructure on the Middle Arm Peninsula. This includes building a modular offloading facility (MOF) and common-use wharf as well as widening the shipping channel to provide the precinct with access to the port.
- + \$200m to deliver land-based components including upgrading to roads, building a rail spur through the

precinct and developing a new road network for the industrial subdivision.

Decarbonising existing industries

Carbon Capture Utilisation and Storage Hub:

- + In 2022, the Australian Government committed \$2 billion for the Middle Arm Sustainable Development Precinct which includes:
 - > \$300m investment for the development of a carbon capture and storage hub to realise low-emissions manufacturing and clean hydrogen production within the precinct.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE NORTHERN TERRITORY GOVERNMENT COULD TAKE TO SUPPORT A MIDDLE ARM REIP

OVERALL

- + Set a net zero goal for a Middle Arm REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. attracting new industries other than hydrogen).

COORDINATION AND SKILLS DEVELOPMENT

- + Incorporate the following elements into the Middle Arm Sustainable Development Precinct Master Plan, identified as a key priority in the Territory Economic Reconstruction Committee Final Report recommendations:
 - > Convene key stakeholders to co-design a Middle Arm REIP roadmap (including decarbonisation goal and implementation plan).
 - > Build additional infrastructure required to turn Middle Arm into a REIP.
 - > Support innovation and supply chain readiness.
 - > Support international linkages.

BUILDING ENABLING INFRASTRUCTURE

- + Fund and build any additional infrastructure identified through the Middle Arm Sustainable Development Precinct Master Plan process.

DECARBONISING EXISTING INDUSTRIES

- + commit funding towards solutions for decarbonising the existing LNG industry, including:
 - > R&D funding for decarbonisation technologies
 - > renewable electricity generation, storage and firming
 - > renewable heat and feedstock supply
 - > industrial material and

energy efficiency (incl. circular economy)

- > capital outlays for heavy industry upgrades

and include LNG decarbonisation in the Middle Arm Sustainable Development Precinct Master Plan.

ATTRACTING NEW INDUSTRIES

- + Build on the Territory Critical Minerals Plan and Northern Territory Renewable Hydrogen Master Plan with a strategy

to attract new businesses and commit funding to attract new industries other than hydrogen, to a Middle Arm REIP.

- + Provide incentives for new businesses (hydrogen and non-hydrogen) to set up in a REIP.
- + Ensure Northern Territory Renewable Hydrogen Strategy, along with future hydrogen policies (strategies/plans) and funding prioritise the growth of green hydrogen

and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in new fossil fuel-based hydrogen production).

Latrobe Valley, Victoria

DETAILS

- + Latrobe Valley's economy is heavily focused on traditional industries with manufacturing accounting for a large share of regional production and output.
- + There are 804 industrial facilities located in the Latrobe Valley, which could be supported through a REIP.

Coordination and skills	Building enabling infrastructure	Decarbonising existing industries	Attracting new industries
<p>Latrobe Valley Authority:</p> <ul style="list-style-type: none"> + convening ongoing industry coordination. <p>Solar Victoria:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries. <p>Worker Transition Service:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries. <p>Industry Investment Readiness Program:</p> <ul style="list-style-type: none"> + innovation and supply chain readiness support + international linkages and coordination support. <p>Regional Jobs Fund:</p> <ul style="list-style-type: none"> + skills and training programs to support workers to transition to new industries + innovation and supply chain readiness support. <p>Boosting Wind Power and Renewable Jobs:</p> <ul style="list-style-type: none"> + skills and training programs to support workers in REIP to transition to new industries. <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + convening key stakeholders to co-design REIP roadmaps + strategic land use and infrastructure planning. 	<p>Renewable Energy Zones:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/firming infrastructure. <p>Star of the South:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/firming infrastructure. <p>State Electricity Commission:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + renewable electricity transmission, network, storage/firming infrastructure. <p>Missing sub-pillars:</p> <p>Additional infrastructure needed for REIP, such as:</p> <ul style="list-style-type: none"> + transport infrastructure + water infrastructure + green hydrogen infrastructure + port infrastructure. 	<p>Renewable Energy Zones:</p> <ul style="list-style-type: none"> + renewable electricity generation, storage and firming to support industrial decarbonisation. <p>Gippsland Regional Circular Economy Plan:</p> <ul style="list-style-type: none"> + industrial material and energy efficiency (incl. circular economy). <p>Missing sub-pillars:</p> <ul style="list-style-type: none"> + R&D for technologies to support decarbonisation + renewable heat and feedstock supply + capital outlays for heavy industry upgrades. 	<p>Latrobe Valley New Energy Jobs and Investment Prospectus:</p> <ul style="list-style-type: none"> + strategy/plan to attract new businesses to REIP (hydrogen; other non-hydrogen). <p>Regional Jobs Fund:</p> <ul style="list-style-type: none"> + financial incentives to attract new businesses to REIP (hydrogen; other non-hydrogen).

PILLAR ALIGNMENT ASSESSMENT

Comprehensive implementation	Incomplete implementation	No implementation
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AUSTRALIAN AND LOCAL GOVERNMENT CO-INVESTMENT COMMITMENT

Attracting new industries

- + The Australian and Victorian Governments have each invested \$50m for the Hydrogen Energy Supply Chain project's pilot phase.

NET ZERO EMISSIONS GOAL FOR THE REIP LOCATION:

None

OPPORTUNITIES THE VICTORIAN GOVERNMENT COULD TAKE TO SUPPORT A LATROBE VALLEY REIP

- + Apply principles from the Victorian Government's Precinct Structure Planning Guidelines: New Communities in Victoria and A Guide to Delivering Community Precincts.
- + Undertake strategic land use and infrastructure planning for a Latrobe Valley REIP.

upgrades to improve energy efficiency, reduce waste and cut water use.

- + Create a heavy-emitting industries energy efficiency fund in a similar vein to the now closed Business Recovery Energy Efficiency Fund.

ATTRACTING NEW INDUSTRIES

- + Re-commence the Latrobe Valley Economic Facilitation Fund of which a key funding stream was 'Investment attraction – helping new businesses to locate in the Latrobe Valley'.
- + Ensure future hydrogen policies (strategies/plans) and funding prioritise the growth of green hydrogen and demonstrate a vision for phasing out blue hydrogen (i.e. not lock in new fossil fuel-based hydrogen production).

OVERALL

- + Set a net zero goal for a Latrobe Valley REIP.
- + Align with REIP principles in determining REIP boundaries and developments.
- + Partner with the Australian Government to co-invest in areas for which there is currently minimal co-investment (e.g. co-invest in the Gippsland Renewable Energy Park, which has received \$8.5m in federal investment, through the CEFC).

BUILDING ENABLING INFRASTRUCTURE

- + Fund and build any additional infrastructure identified through the strategic land use and infrastructure planning process.

DECARBONISING EXISTING INDUSTRIES

- + Design into the Low Carbon Manufacturing Grants Program funding for R&D for technologies to support industrial decarbonisation, the development of renewable heat and feedstock supply and capital outlays for heavy industry upgrades.
- + Build on existing Council-based Environmental Upgrade Finance to help high-emitting industries access funding for building

COORDINATION AND SKILLS DEVELOPMENT

- + Convene key stakeholders in the Latrobe Valley to co-design a Latrobe Valley REIP roadmap

REIP- enabling policies

Australian governments can support REIPs through a suite of aligned policies that address all four pillars. Policy mechanisms should consider regional context, advantages and challenges.

Goals and roadmaps

Net zero goals, ideally aligned with limiting warming to 1.5 degrees Celsius, for REIP locations can provide a clear pathway and confidence in investment for industry. Co-designed decarbonisation roadmaps with timeframes for decarbonising existing industry can help to link ambition across communities, government and industry. State and territory governments are ideally placed to lead the roadmap process. Bringing together stakeholders to co-design roadmaps can help design place-based plans fit for each local context. Engagement with community members, industry, councils, regional bodies and traditional custodians can help to build social licence and foster collaboration.

SUPPORTING RECOMMENDATIONS - State and territory governments

Set clear policy signals

- + Set net zero goals for REIP locations.

Set up for success

- + Co-design decarbonisation roadmaps, with key stakeholders, such as industry and local communities, for REIP locations.

CASE STUDY:

NSW Clean Manufacturing Precincts Decarbonisation Roadmap

**REIP SUB-PILLAR:
CONVENING KEY
STAKEHOLDERS TO
CO-DESIGN REIP
ROADMAPS.**

As part of its Net Zero Industry and Innovation fund, the NSW Government has held a series of targeted stakeholder consultation workshops. These workshops brought together a diverse range of stakeholders to participate in the co-design of Clean Manufacturing Precincts (CMPs) in the Illawarra and Hunter and to explore the potential to build strategic alliances that will deliver regional decarbonisation.

Stakeholders were from heavy industry, suppliers, engineering services firms, unions, NGOs, research organisations, universities, start-ups, and government agencies.

The workshops allowed stakeholders to share challenges, opportunities and ideas for industrial decarbonisation in their regions.

The stakeholder workshops fed into a competitive expression of interest (EOI) process to develop decarbonisation roadmaps for each region. The roadmaps will provide a pathway for the region and for key industry stakeholders to accelerate their shift to net zero emissions.

Fostering market demand for new zero carbon technology

Public finance can play an important role by de-risking private ventures and unlocking investment. Public-private partnerships in early technology development stages can help share risk. Companies can then build experience in emerging industries while providing first-mover benefits to successful businesses (IRENA 2020). Co-investment between states and territories and the Australian Government (including through ARENA and the CEFC) could help unlock further private investment.

Stimulating early demand for zero carbon technology (such as green hydrogen) is important to avoid carbon 'lock-in' situations where firms replace ageing equipment with new fossil fuel-reliant equipment (Reeve 2021). Policy designs should reflect that zero carbon technologies are at different stages of technical and commercial readiness. For example, co-funding grants can help support the commercial viability of technologies while feed-in tariff reforms can help to drive initial phases of mass deployment (IEA Renewable Energy Technology Deployment Technology Collaboration Programme 2017). As technologies move through the stages of commercial readiness, policy instruments can be shifted accordingly. Contracts for difference, underwriting, guaranteed purchases and concessional debt instruments can encourage technology development further along the Commercial Readiness Index (CRI) (ARENA 2020). Guaranteed purchases through government procurement and certification schemes for green products are other options that can foster market demand for zero carbon technology (Ghisetti 2017).

SUPPORTING RECOMMENDATIONS - State and territory governments

Set up for success

- + Incentivise demand for new zero carbon technology and accelerate deployment of commercial technologies needed for the development of REIPs, with Australian Government co-investment.

Stimulating new industries

REIPs can help to attract new industries, providing long-term economic growth and job opportunities. Grant programs could be aimed at helping new zero carbon industries relocate into REIPs. Innovative businesses can be attracted by supportive regulations and incentives (such as voluntary emissions standards) (COAG Industry and Skills Council 2017). The private sector is likely to seize opportunities provided by increased renewable energy and onshore manufacturing. International examples have shown that industry has been willing to co-invest in funding to help open new markets (UK Research and Innovation 2022).

CASE STUDY:

Tasmania's Bell Bay Green Hydrogen Hub

REIP PILLAR: ATTRACTING NEW INDUSTRIES

The Bell Bay Green Hydrogen Hub in Tasmania, to be located within the Bell Bay Advanced Manufacturing Zone, will establish the environment and infrastructure necessary for operations in order to begin unlocking the potential for large-scale green hydrogen exports while supporting domestic market activation in Tasmania and in mainland Australia. The Hub has attracted significant interest from the private sector.

The Australian Government has provided \$70m in grant funding through the 'Activating

a Regional Hydrogen Industry - Hydrogen Hub Implementation scheme', matched by state and industry (Renewables Climate and Future Industries Tasmania, n.d.).

Funding through the grant program will support investment in shared-use infrastructure such as upgrading port facilities, water supply, and transmission networks as well as activating domestic markets. Focusing purely on green hydrogen, the Hub aims to tap into strong global demand and open up international trade channels.

Enabling infrastructure

Investment in transmission infrastructure and storage is needed at scale to support an increase in demand for renewable energy due to industrial decarbonisation. While REIPs do not necessarily need to be located within a REZ, access to renewable energy is essential. Funding can be directed towards priority projects identified in the Australian Energy Market Operator's Integrated System Plan and towards transmission upgrades near existing and planned REZs that are in proximity to REIP locations (Climate Council 2022). For REIPs outside of the National Energy Market, similar principles would apply with a need to fund infrastructure and transition upgrades for renewable energy in proximity to REIP locations consistent with system plans such as the Whole of System Plan for Western Australia's south-west interconnected network. Low-interest loans, potentially co-funded by the CEFC, could help to support the timely rollout of transmission infrastructure. Integrating demand management into generation and storage can reduce costs for users (Houssainy and Livingood 2021).

Shared user infrastructure such as roads, ports, rail and water facilities are likely to need upgrading in each REIP location to cater to new industries (such as green hydrogen) and to ensure sufficient capacity for transport and export. Public-private partnerships or co-investments from users could help to overcome funding barriers (Loh, n.d). A coordinating body for each REIP could help ensure infrastructure project costs are kept down. This can avoid over or under-development of infrastructure (Wood et al. 2021). Roadmaps can help coordinate shared user infrastructure development amongst actors within REIPs.

CASE STUDY:

SA Port Bonython Hydrogen Hub

REIP PILLAR: BUILDING ENABLING INFRASTRUCTURE AND ATTRACTING NEW INDUSTRIES

The Port Bonython Hydrogen Hub is slated to be South Australia's first large-scale hydrogen export terminal. Port Bonython, located 16 km from Whyalla in the Upper Spencer Gulf, has an existing export terminal, 1700 hectares of developable land, and ample wind and solar resources from REZs located in proximity.

The South Australian Government allocated \$37m

from the 2020–2021 state budget to upgrade the Port Bonython jetty. In May 2021, the government called for EOIs from companies and investors to develop the land around Port Bonython to create a multi-user export precinct and leverage the state's renewable energy, fuels and minerals. Seven projects were shortlisted through the EOI process. The companies involved are contributing to the design and implementation of common-use infrastructure including port upgrades, last mile pipelines and storage and access roads. These infrastructure upgrades will be developed in parallel to their own projects within the Hub.

The seven projects combined could produce more than 1.5 million tonnes of green hydrogen a year and create hundreds of jobs in the region (Carroll 2021).

The South Australian Government has undertaken a zoning code amendment to the land earmarked for the Hydrogen Hub, changing it from a 'Deferred Urban Zone' to a 'Strategic Employment Zone' with a 'Significant Industry Subzone'. This is anticipated to facilitate significant investment in renewable energy and hydrogen which otherwise would be unlikely to be approved under existing zoning arrangements. The amendment also while balances considerations of sensitive land uses around the Hub (PlanSA 2021).

In April 2022, the Australian Government announced the success of South Australia's application for a \$70m grant towards the development of hydrogen supply chain common-use infrastructure at Port Bonython (ABC News 2022).

Supportive regulations

Supportive planning and zoning laws can help accelerate REIP developments. Where planning responsibilities for infrastructure within a REIP location lie with local government, states and territories could engage with councils early to help remove roadblocks and strategically plan for land use and infrastructure changes that support REIPs (Queensland Department of State Development, Infrastructure, Local Government and Planning 2021). Standardising regulations can help to reduce the level of regulatory navigation required by industry.

Circular economy practices could be built into precinct design. Where waste can be re-used as feedstock in other processes, costs can be reduced and investment made more attractive. This can also have the flow-on effect of reducing the overall cost of technologies such as green hydrogen, opening up opportunities for use earlier than would otherwise be possible. Building markets for circular economy initiatives and triggering corporate action can be facilitated through standards and incentives (Climate-KIC 2020). These practices can build social licence by minimising impacts on the surrounding environment (Scarpellini 2022).

SUPPORTING RECOMMENDATIONS - State and territory governments

Set up for success

- + Undertake strategic land use and infrastructure planning and analysis to identify priority infrastructure needed in REIP locations.

CASE STUDY:

Lansdown Eco-Industrial Precinct

REIP SUB-PILLAR: STRATEGIC LAND USE AND INFRASTRUCTURE PLANNING

The Lansdown Eco-Industrial Precinct (LEIP) is set to be Northern Australia's first environmentally sustainable advanced manufacturing, processing and technology hub, according to Townsville City Council (Peacock 2022). It will be home to new and emerging industries with industrial and manufacturing facilities co-located alongside clean energy generation across over the 2,500 hectares of council-owned land south of Townsville.

It is expected to create more than 5,000 jobs during construction, along with 1,600 initial jobs and more than 9,100 indirect jobs once the precinct is operational. The LEIP is located within proximity to the Port of Townsville and Townsville Airport, enabling project proponents to access export markets, along with road and rail connections.

Townsville City Council has already approved plans to build and operate a 1 GW green hydrogen production plant alongside a behind-the-meter solar and battery storage facility. The proponent, Edify Energy, plans

to produce green hydrogen with a 10 MW pilot-scale facility before increasing capacity in a staged approach (Peacock 2021).

The LEIP Infrastructure Master Plan (IMP) has been developed after detailed analysis and stakeholder input and endorsed by council. It will guide the staged development of the precinct. Under the IMP, work will initially commence on enabling infrastructure, including road and rail access as well as water pipeline upgrades. The IMP details the infrastructure responsibilities of council and proponents and defines a pathway for the overall development of the LEIP. It also adopts circular economy practices into the planning process, promoting reuse and recycling of materials. Options to pool resources and exchange materials, water, energy and waste will be further investigated.

The LEIP has been declared a 'prescribed' project, which will fast track approvals to deliver the enabling infrastructure required for the 2,500 hectare precinct taking shape 40 km south of the Townsville CBD. As a prescribed project, the Coordinator-General will work with the Townsville City Council to provide further coordination and structure an approach to de-risk infrastructure planning and accelerate the precinct's investment readiness.

Skills development

Upskilling and reskilling workers early will ensure workforce capabilities meet the requirements for emerging industries. This can have the added benefit of promoting jobs growth in REIP locations. Skills planning would ideally commence early to ensure that there is a skilled workforce in the initial stages of a REIP. Coordination between industry, government, training institutions and clean energy bodies can assist with identifying skills gaps and supporting recruitment (Clean Energy Council 2020). Australian Government programs, such as the New Energy Skills Apprenticeships Program, could augment state training initiatives (Accenture 2021). The Australian Government can also help coordinate skills development by monitoring skills gaps relevant to REIPs through the National Skills Commission (Clean Energy Council 2022a). Initiatives could include gender equity and targets for local indigenous employment (Clean Energy Council 2022b).

SUPPORTING RECOMMENDATIONS - State and territory governments

Set up for success

- + Identify skills gaps and establish training programs targeting the skills needed within REIPs.

CASE STUDY:

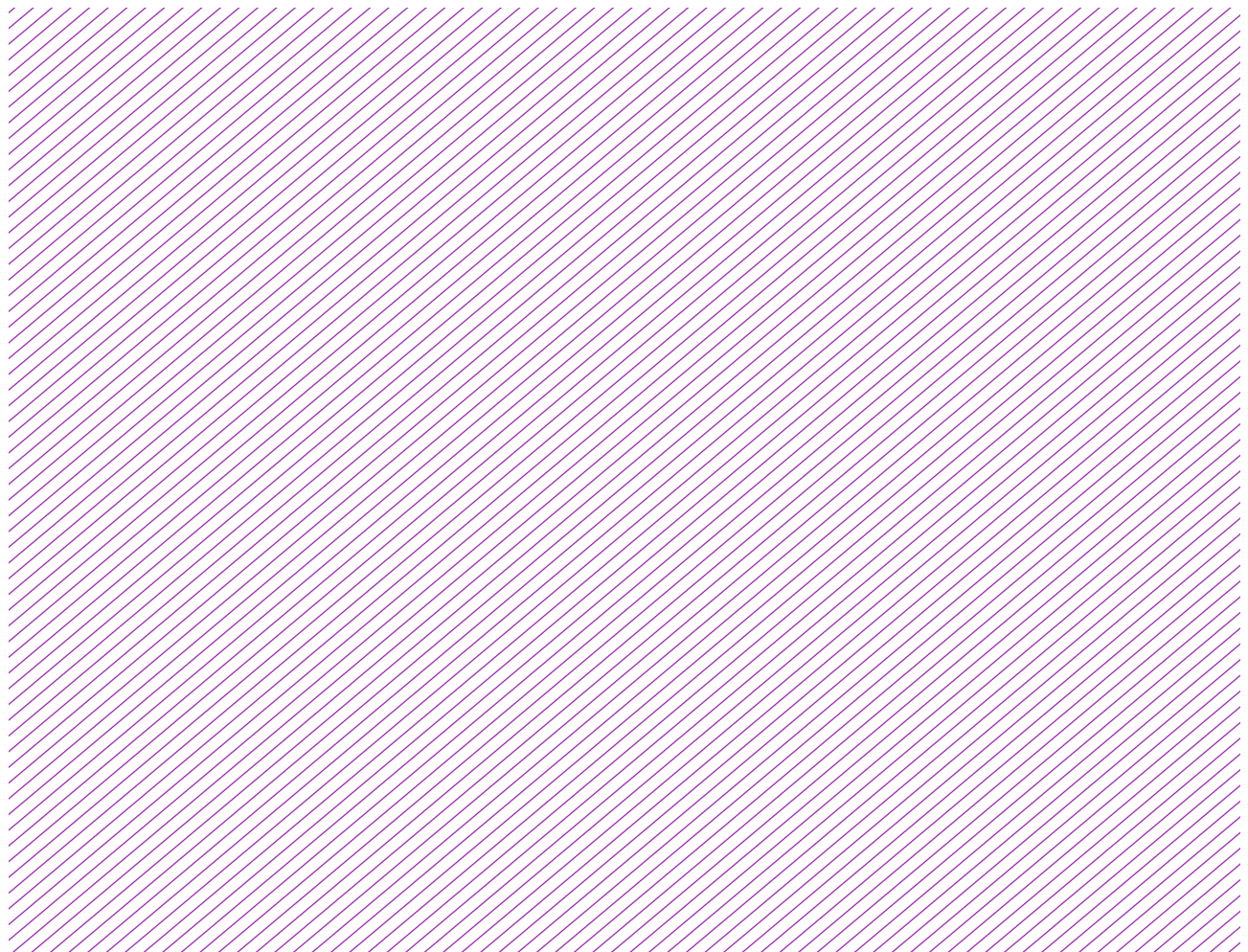
Skills and training packages in Queensland's Energy and Jobs Plan

As part of its Energy and Jobs Plan, the Queensland Government is investing \$90m to establish two new regional SuperGrid Training Centre and Transmission Hubs. The purpose-built hubs, the first of which will be located in Gladstone, will act as a regional base for training energy system workers. They will help build the critical skills needed in Queensland's energy transformation and support apprentices to find local employment.

Queensland is also taking steps to prime its workforce with the skills needed in the hydrogen industry, with the opening of Australia's first

Hydrogen Centre of Excellence. The training centre will host specialised equipment and training rooms and is expected to enhance training capacity by 400 apprentices per year. The facility will leverage partnerships between industry, unions and governments to deliver a skilled workforce for the hydrogen industry.

A new \$150m Job Security Guarantee, backed by an Energy Workers Charter, will also support workers in publicly owned coal-fired power stations with access to reskilling opportunities and advice on future career pathways.



Collaboration in REIPs

Actors (groups in or nearby a REIP, such as industrial businesses, local communities or owners of infrastructure facilities) can share in benefits arising from collaboration across the precinct.

International experience of clustering has shown that individual businesses benefit from the interconnectedness within precincts through increased partnerships, knowledge sharing, and risk sharing (Accenture 2022). Collaborative precincts can spur actors' economic performance in addition to accelerating decarbonisation efforts (Benneworth et al. 2003).

Where partnerships are developed between actors, a sense of shared purpose can help nurture trust and promote further collaboration. This can lead to positive feedback loops where increased interaction among geographically concentrated businesses results in lower costs for new technologies (Lin et al. 2006).

Securing a foundational, or anchor, proponent for decarbonisation within the REIP could help kick-start investment. By securing an anchor proponent as part of a REIP implementation consortium, the attractiveness of investment into the REIP location could be boosted and help de-risk funding ventures (Dimos et al. 2021). Anchor proponents are a key feature of best practice in successful science and innovation clusters. Lessons from previous ventures can be applied when designing collaboration across REIPs (The Royal Society 2020).

CASE STUDY:

Zero Carbon Humber

The Humber industrial cluster is a priority test-bed for decarbonising industry and is the largest industry precinct in the United Kingdom.

Zero Carbon Humber consists of 12 parties – across energy producers, industry players, infrastructure operators, engineering firms and academic institutions – all working closely across the cluster on multiple infrastructure initiatives. Partnerships and co-dependencies are built-in at each stage of projects to strengthen synergies across the cluster (Accenture 2021a).

Shared infrastructure is being delivered by a partnership of industry players and is partly funded by the UK government's Industrial Decarbonisation Challenge. Meanwhile, an anchor proponent formed through a collaborative project is helping to build a hydrogen market and scale demand for hydrogen to be used as a feedstock in further industrial processes. This could potentially lead to lower hydrogen prices (Accenture 2021a).

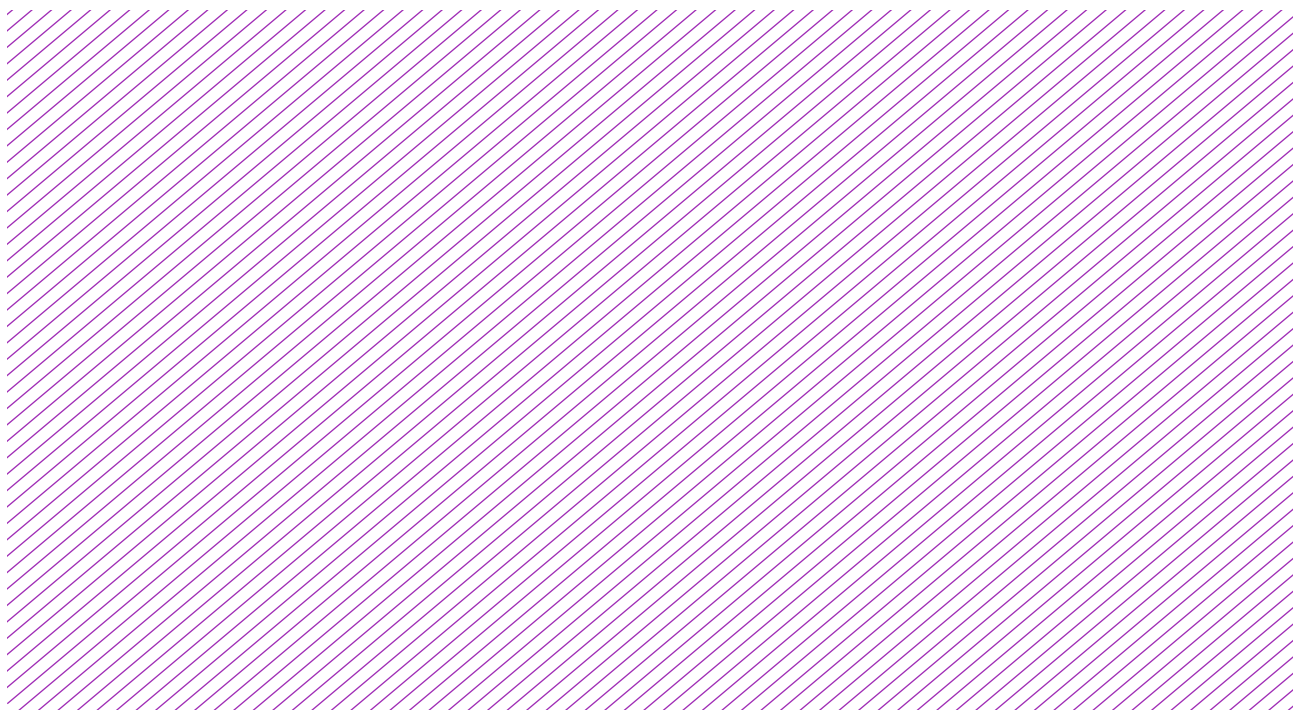
Demand response programs offer great potential for large-scale energy flexibility (Siddiquee et al. 2021). Where a large foundational proponent is secured, precincts can benefit through scaling up of renewable energy available for other precinct users. Load, or demand-side, management can be an effective tool for supporting both industry and the energy system through voluntary programs to compensate users for reducing electricity use during high price periods or when reliability is of concern (Chen 2018). This can then support others in the precinct through reduced energy consumption costs and a reliable energy supply (Golmohamadi 2022).

How might some of the key actors within a REIP benefit from collaboration?

ACTOR	HOW THE ACTOR CAN BENEFIT FROM COLLABORATION:	WHAT THE ACTOR CAN PROVIDE OTHERS WITHIN A REIP:
Industry	<ul style="list-style-type: none"> + access to cheap renewable electricity from Purchase Power Agreements (PPAs) with generator located close to REIP + access to lower-cost green hydrogen for feedstock, heat or storage when renewable electricity sources exceed demand + access to a skilled workforce + knowledge spillovers. 	<ul style="list-style-type: none"> + a purchaser of lower-cost renewable energy from nearby generator + reduced renewable energy costs for all users through industrial demand response + improved energy reliability through load management programs.
Renewable electricity generator	<ul style="list-style-type: none"> + ongoing supply agreements to sell renewable electricity to industrial users + customers locked in to buy products + increased investor confidence due to ongoing demand. 	<ul style="list-style-type: none"> + cheap and abundant renewable electricity including for green hydrogen production.
Renewable energy storage facility	<ul style="list-style-type: none"> + plentiful users of storage facilities (e.g. renewable electricity generators) + customers locked in to buy products + increased investor confidence due to ongoing demand + access to PPAs. 	<ul style="list-style-type: none"> + firmed lower-cost renewables for industrial processes.
Green hydrogen facility	<ul style="list-style-type: none"> + access to cheap renewable electricity from PPAs with generator located close to REIP + customers locked in to buy products + increased investor confidence due to ongoing demand. 	<ul style="list-style-type: none"> + green hydrogen for industrial processes, buildings, heating and transport.

→
CONT.

ACTOR	HOW THE ACTOR CAN BENEFIT FROM COLLABORATION:	WHAT THE ACTOR CAN PROVIDE OTHERS WITHIN A REIP:
Port	+ access to increasing concentration of users within proximity.	+ access to export markets.
Waste and recycling facility	+ access to increasing concentration of users within proximity.	+ recycled products for new process feedstock.
R&D Facility	+ new and pilot technologies for research and innovation.	+ new low-carbon technology solutions (e.g. hydrogen electrolyzers).
Local communities	+ access to secure jobs + access to social infrastructure + skills development opportunities.	+ community support and social licence to operate for industry.



A proposed governance model for REIPs

A governance model that is ambitious, proactive, well-coordinated, place-based and collaborative can accelerate the creation of REIPs and lead to better social and economic outcomes (Wiseman & Wollersheim 2021).

We propose the Australian Government coordinate the rollout of REIPs across the country by establishing a national place-based industrial decarbonisation program (Program), delivered in partnership with state and territory governments. The purpose of this Program would be to accelerate regional industrial decarbonisation while ensuring the transition of regions occurs in a clustered, coordinated and collaborative way, prioritising those regions that have the biggest opportunity for transformation in the shift to a low-carbon global economy.

The Program can be implemented through two levels of governance:

- + A national coordinating body administered by a secretariat at the federal level, with an advisory group comprising state and territory departmental officials.
- + Regional coordinating bodies – using existing entities where possible, such as the Latrobe Valley Authority in Victoria (see case study on page 59) or create new, separate entities.

A national coordinating body would ideally have a mandate to:

- + Perform a central coordination role across all portfolios relevant to the four REIP pillars, including focusing on enabling infrastructure, strategic land use planning and decarbonising existing industries.
- + Support jurisdictions to identify and establish investment cases for priority REIP locations to unlock regional economic opportunities (emissions abatement potential, beyond near-term ability to phase-down carbon intense power generation, should be an important criterion in determining priority locations).
- + Establish program guidelines and objectives, including setting long-term goals and vision for priority locations.
- + Reach an agreed approach with state and territory governments to develop roadmaps for priority locations and co-fund roadmap development.
- + Design, with state and territory governments, a national co-investment partnership model and funding prioritisation framework to scale up funding to priority locations.
- + Work closely with regional coordinating bodies to ensure beneficial place-based outcomes.

Regional coordinating bodies could act as intermediaries between a national coordinating body and local industry and community, leveraging their understanding of the local context and tailoring the REIP to regional strengths.

Regional coordinating bodies could incorporate the following principles (Hunter Jobs Alliance 2021):

- + Mission-focused and mandated to support local communities by aligning opportunities for economic development with a sustainable zero carbon economy.

- + Suitably independent in their decision-making processes so as to be able to focus on the long-term economic development of the region.
- + Collaborative, representative and transparent – with community involvement into long-term planning.

These bodies could be responsible for outlining the REIP's principles and verifying that all parties within the location meet them. Regional coordinating body functions could include convening regional stakeholders to co-design REIP roadmaps, administering co-funding, engaging with community, helping to identify priority projects, connecting industry to funding opportunities and identifying local workforce gaps.

SUPPORTING RECOMMENDATIONS - Australian Government

Establish governance mechanisms

- + Establish a national coordinating body to coordinate Program design, administered by an Australian Government secretariat with an advisory group comprising state and territory departmental officials.

- + Develop Program guidelines and objectives, including setting long-term goals and vision for REIPs.
- + Support state and territory governments in determining priority REIP locations to unlock regional economic opportunities (e.g. identified hydrogen hub locations).

SUPPORTING RECOMMENDATIONS - State and territory governments

Establish governance mechanisms

- + Administer the deployment and ongoing activities of each REIP through a regional coordinating body (leveraging existing entities where possible).

CASE STUDY:

Victoria's Latrobe Valley Authority

The Latrobe Valley Authority (LVA) takes a place-based approach to support the economic transformation in the Latrobe Valley and Gippsland, and to provide for a strong future in the region by catalysing long-term sustainable prosperity.

The LVA aims to bring community, business and government together to understand and work on regional initiatives. Its approach is based on global best practice in placed-based contemporary regional development and puts collaborative partnerships at the heart of its operations.

Funding for REIPs can be delivered through two funding streams. Once priority REIP locations have been determined by jurisdictions with the support of the Australian Government, the Australian Government would provide tendered funding for state and territory governments for Coordination and skills pillar activities (e.g. the development of decarbonisation roadmaps and strategic land-use and infrastructure planning). Funding would be matched by state and territory governments.

Once decarbonisation roadmaps have been developed and relevant infrastructure has been planned within prioritised regions, a 'co-investment partnership' model between federal, state and territory governments would be implemented to fund the regions' transformation (aligning with building enabling infrastructure, decarbonising existing industries, and attracting new industries pillars). The model should include a prioritisation framework for ensuring fair funding allocation across jurisdictions.

Given the pace required to decarbonise industry in line with Australia's commitments under the Paris Agreement – and for regional areas to seize the opportunities available in a future 'green' economy – government funding needs to be pooled together to have a greater impact and to attract rapid investment from the market. The scale of finance needed is in the billions for each region (Climateworks Centre and Climate-KIC Australia 2022).

Through a 'co-investment partnership', Australian governments can call forward a greater scale of investment, where funding is pooled from relevant federal programs and agencies (e.g. Powering the Region Fund, National Reconstruction Fund, the CEFC, ARENA) and state and territory funds. This can ensure that the transition in these regions occurs in a coordinated and collaborative way that builds on existing initiatives, unlocking further levels of private investment into industrial regions.

State and territory coordinating bodies would coordinate federal, state and territory government co-investment. Project consortiums would apply for co-investment, demonstrating in the process how the funding would meet REIP roadmap goals.

KEY RECOMMENDATIONS

1. Australian governments establish REIPs through a national place-based industrial decarbonisation program (Program), planned and delivered by the Australian Government in partnership with state and territory governments. This will ensure the transition of industrial regions occurs in a coordinated and collaborative way.
2. Australian governments co-design a 'co-investment partnership' through which Program funding will be administered, to send a clear signal to invest in industrial decarbonisation.

SUPPORTING RECOMMENDATIONS - Australian Government

Scale up ambition

- + Provide co-investment in line with all pillars, for example, through funding for:
 - > planning processes (including roadmaps)
 - > developing and upgrading transmission infrastructure needed to

- provide firm, lower-cost renewable energy into REIP locations
- > decarbonising existing industries (such as through research and development and capital outlays); and
- > attracting new industries.

There is also an opportunity for the private sector to take on a more prominent role in ongoing governance of REIPs. Where synergies already exist between private actors, a corporate association could be tasked with administering the ongoing activities of the REIP through an initial co-investment with the expectation that it could fund itself through revenues generated from the REIP, once established (Bricout 2014).

Attracting private sector investment

Attracting private capital is important for reaching the scale of funding needed to fully decarbonise industry in potential REIP locations (Climateworks Centre and Climate-KIC Australia 2022).

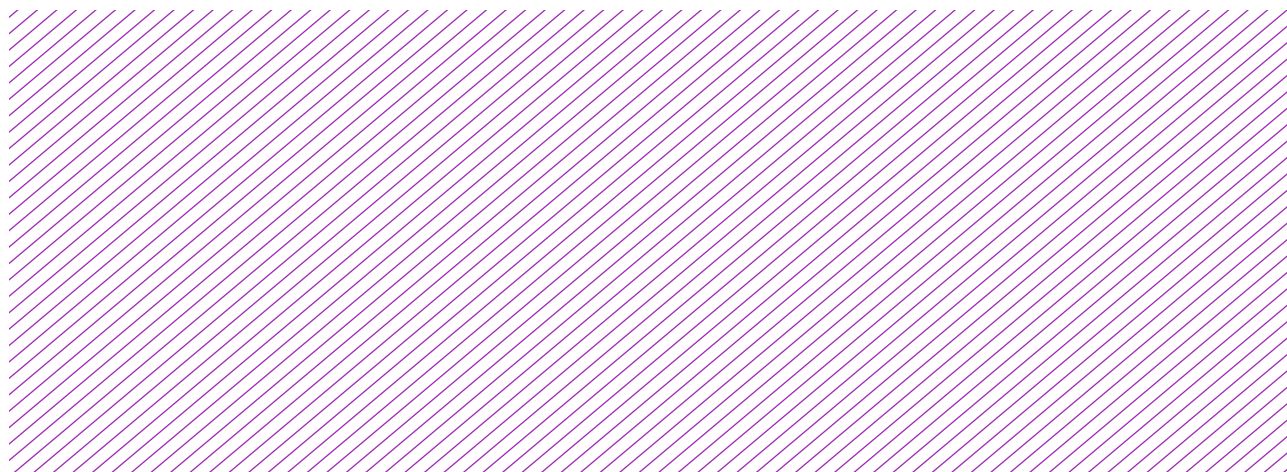
However, the complex nature of projects raises the risk level for industrial investors (Accenture 2021a). By tackling both financial and technology risk, governments can help to reduce barriers to investment and promote risk-sharing between public and private sectors.

Demonstrations of long-term commitment from governments can assist in removing barriers in the initial development stages. This could be through co-investment in shared infrastructure and emerging technologies and also through supportive policy and regulatory environments and decarbonisation roadmaps.

Amending state and local planning laws and zoning schemes to be more supportive of the infrastructure and developments required in REIPs can also help to attract private investment and fast track new and emerging industries. Setting a clear direction towards a low-carbon economy through mission-oriented funding arrangements, net zero targets and co-investment commitments aimed toward building assets in new industries (such as green hydrogen) could entice investment.

Co-investment partnerships between state and territory governments, funded and financed through the federal budget and CEFC respectively, could signal to the private sector that a greater magnitude of public investment is being made available for industrial region decarbonisation. This opens up the opportunity to leverage greater private investment compared to funding provided by state and territory governments on their own. Offtake agreements, or PPAs, could induce investment by providing guarantees of cash flow for higher-risk projects (e.g. where technology is yet to reach the commercially deployable stage). By providing PPAs, governments can support the growth of emerging industries and associated infrastructure at scale (Clean Energy Regulator 2016).

To support emerging technologies and reduce technology risk for the private sector, governments can adjust policies as technology moves along the Commercial Readiness Index (see 'REIP-enabling policies' section above for more detail).





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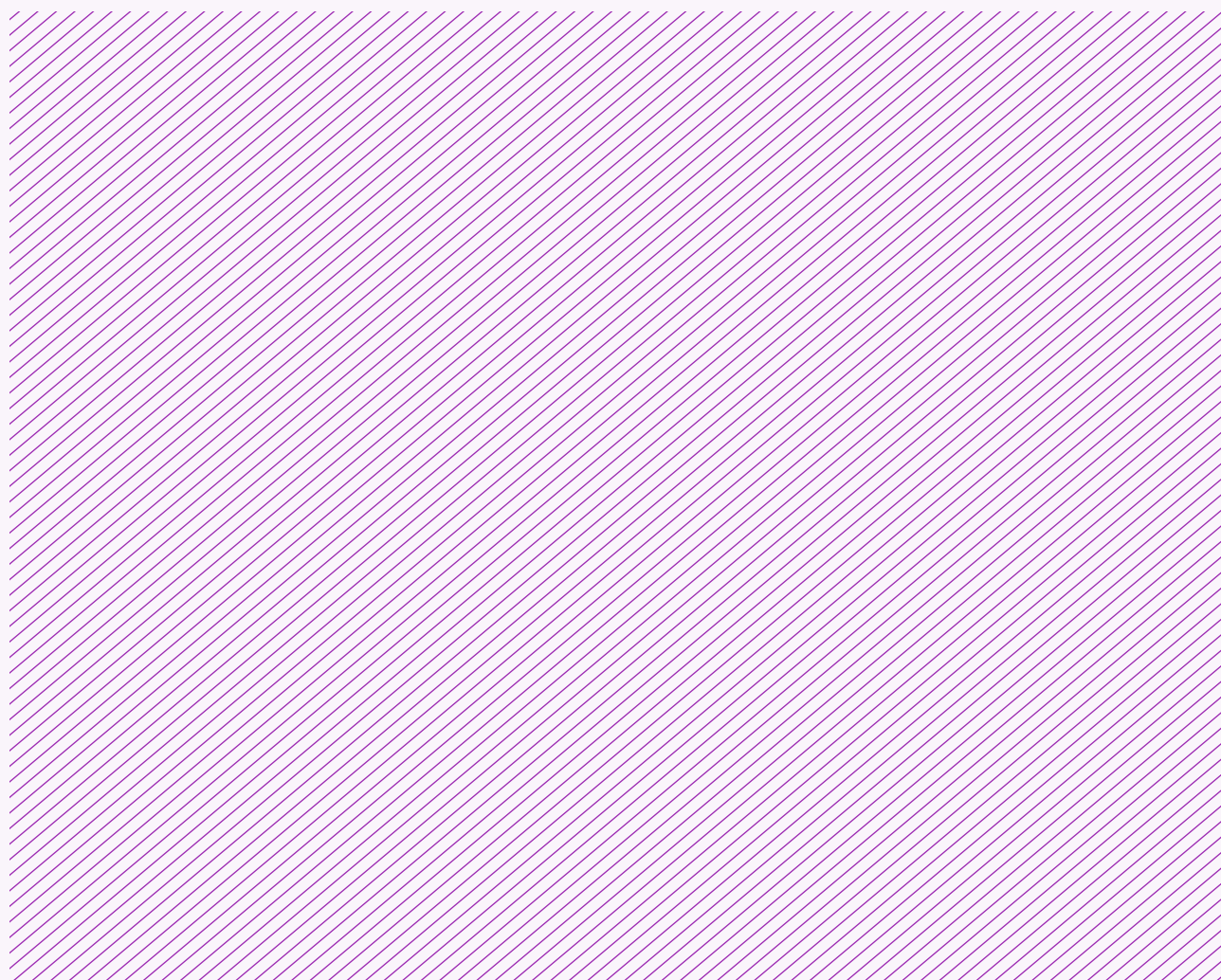
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Appendix A

State and territory initiatives relevant to supporting REIPs

Tasmania

The Tasmanian Government is employing a variety of initiatives that could support the development of REIPs within the state. With all electricity in Tasmania being renewable and initiatives in place to support the transition to renewable heat and feedstock sources, there is little more the state can do to progress the decarbonisation of existing industries. Additional progress can be made to set up the architecture to convene REIP roadmap design, build enabling infrastructure and attract new industries to REIP regions. These steps would be beneficial, helping to build low-carbon industries in Tasmania, and further reducing emissions.

CURRENT POLICIES AND PROGRAMS ADDRESSING REIP PILLARS

Coordination and skills

- + **Tasmanian Advanced Manufacturing Action Plan 2024**
 - > convening ongoing industry coordination in REIP
 - > innovation and supply chain readiness support
 - > international linkages and coordination support
- + **Advanced Manufacturing Business Improvement Program**
 - > convening ongoing industry coordination in REIP
 - > innovation and supply chain readiness support
- + **Our Infrastructure Future: 3-Year Infrastructure Strategy**
 - > strategic land use and infrastructure planning
- + **Emissions Reduction and Resilience Plans**
 - > innovation and supply chain readiness support
- + **Climate Change Action Plan (under development)**
 - > convening ongoing industry coordination in REIP
 - > innovation and supply chain readiness support
- + **Precinct Planning Guidelines for Tasmania**
 - > strategic land use and infrastructure planning
- + **Renewable Energy Coordination Framework**
 - > innovation and supply chain readiness support
 - > strategic land use and infrastructure planning (planning underway or completed of land use and additional infrastructure needed for REIP, beyond basic infrastructure needs)
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Energising Tasmania**
 - > skills and training programs to support workers to transition to new clean industries

Building enabling infrastructure

- + **Battery of the Nation**
 - > industrial material and energy efficiency (incl. circular economy)
 - > capital outlays for heavy industry upgrades
- + **Marinus Link**
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **Renewable Energy Zones**
 - > renewable electricity transmission, network, storage/ firming infrastructure

Decarbonising existing industries

- + **State Budget 2020-2021**
 - > industrial material and energy efficiency (incl. circular economy)
 - > capital outlays for heavy industry upgrades
- + **Tasmanian Renewable Energy Action Plan**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
 - > strategy/plans to attract new businesses to REIP (other; non-hydrogen)
- + **Tasmanian Future Gas Strategy - Discussion Paper**
 - > renewable heat and feedstock supply
- + **Advance Manufacturing Accelerating Growth Program**
 - > capital outlays for heavy industry upgrades
- + **Industry Activation Study**
 - > R&D for technologies to support decarbonisation
- + **State Budget 22-23**
 - > renewable heat and feedstock supply
- + **Draft Bioenergy Vision for Tasmania**
 - > renewable heat and feedstock supply
- + **Renewable Electricity Target**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation

Attracting new industries

- + **Tasmanian Renewable Hydrogen Action Plan**
 - > strategy/plans to attract new businesses to REIP (hydrogen)
 - > incentives to attract new businesses to REIP (hydrogen)
- + **Memorandums of Understanding with Flanders and Port of Rotterdam**
 - > Strategy/plans to attract new businesses to REIP (hydrogen)
- + **Advanced Manufacturing Accelerating Growth Program (AMAGP)**
 - > financial incentives to attract new businesses to REIP (other, non-hydrogen)

Further opportunities to enable REIPs:

- + institutional arrangements (e.g. allocation of staff) to convene key stakeholders to co-design REIP roadmaps
- + funding for building enabling REIP infrastructure (water, green hydrogen and transport infrastructure and port upgrades)
- + policies (strategies/plans) and funding to attract new industries to REIP locations, other than hydrogen e.g. critical minerals and batteries.

South Australia

South Australia has a range of existing initiatives supporting each pillar. The government has made progress towards both facilitating the investment in renewable electricity infrastructure and green hydrogen that can enable REIPs, and attracting new clean industries to potential REIP locations. While the government has a list of strategies in place to support existing industries to decarbonise, there is an opportunity to increase funding in that area. The government also has many opportunities to develop policies aimed at skills development and coordination in REIP locations.

PILLARS

Coordination and skills

- + 20-Year State Infrastructure Strategy
 - > strategic land use and infrastructure planning

Building enabling infrastructure

- + Project EnergyConnect
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + South Australia's Hydrogen Action Plan
 - > green hydrogen infrastructure
 - > strategy/plans to attract new businesses to REIP

Decarbonising existing industries

- + Emission reduction targets
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + Renewable electricity target
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + South Australia's Waste and Resource Recovery Infrastructure Plan (2018)
 - > industrial material and energy efficiency (incl. circular economy)

- + **Waste and Recycling Commercialisation Program**
 - > industrial material and energy efficiency (incl. circular economy)
 - > innovation and supply chain readiness support
- + **Climate Change Action Plan 2021-2025**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
 - > incentives to attract new businesses to REIP
- + **Heavy Industry Low-Carbon CRC**
 - > R&D for technologies to support decarbonisation
- + **SA Cooperative Research Centre Assistance Program**
 - > R&D for technologies to support decarbonisation
- + **Australian Hydrogen Centre**
 - > renewable heat and feedstock supply
- + **Hydrogen Jobs Plan**
 - > renewable heat and feedstock supply
- + **Business Sustainability Program**
 - > industrial material and energy efficiency (incl. circular economy)

Attracting new industries

- + **South Australia's Hydrogen Action Plan**
 - > strategy/plan to attract new businesses to REIP (hydrogen)
- + **Hydrogen Roadmap for South Australia**
 - > strategy/plan to attract new businesses to REIP (hydrogen)
- + **Economic Recovery Fund**
 - > incentives to attract new businesses to REIP (hydrogen; other, non-hydrogen)
- + **Statement of Cooperation on the Development of a Hydrogen Industry in South Australia**
 - > strategy/plan to attract new businesses to REIP (hydrogen)
- + **Feasibility study on export of South Australian green hydrogen to Rotterdam**
 - > strategy/plan to attract new businesses to REIP (hydrogen)

Further opportunities to enable REIPs:

- + institutional arrangements (e.g. allocation of staff) to convene key stakeholders to co-design REIP roadmaps
- + institutional arrangements (e.g. allocation of staff) to convene ongoing industry coordination in REIP
- + policies (strategies/plans) and funding for skills and training programs to support workers in REIP locations to transition to new industries
- + policies (strategies/plans) and funding for innovation and supply chain readiness support
- + policies (strategies/plans) and funding to support international linkages and coordination (e.g. manufacturers in Australia and overseas to work together to build manufacturing networks and ecosystems, unlock complementary capabilities, overcome barriers to scale and grow, and access global markets)

- + funding for building enabling REIP infrastructure (water, green hydrogen and transport)
- + funding to support the development of renewable electricity generation, storage and firming to support industrial decarbonisation
- + funding to support the development of renewable heat and feedstock supply
- + policies (strategies/plans) and funding to support capital outlays for heavy industry upgrades (e.g. to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or for process design and engineering directly related to their capital investment)
- + policies (strategies/plans) to attract new industries to REIP locations (other, non-hydrogen).

Victoria

The Victorian Government has multiple skills and training programs that could support workforces in REIP locations. The government is also covering all aspects of the attracting new industries pillar. While there are strategies in place for decarbonising existing industries, additional funding across all sub-pillars would help progress this. Funding could also be put towards building the enabling infrastructure, aside from renewable electricity which is addressed in existing policies, in REIP regions.

PILLARS

Coordination and skills

- + **Solar Victoria: Training and workforce development package**
 - > skills and training programs to support workers in REIP to transition to new industries
- + **Victoria's Climate Change Strategy**
 - > skills and training programs to support workers in REIP to transition to new industries
 - > renewable electricity transmission, network, storage/ firming infrastructure
 - > industrial material and energy efficiency (incl. circular economy)
 - > Strategy/plans to attract new businesses to REIP
- + **Industry Investment Readiness Program**
 - > innovation and supply chain readiness support
- + **Gippsland Smart Specialisation Strategy**
 - > convening ongoing industry coordination in REIP
 - > industrial material and energy efficiency (incl. circular economy)
- + **Victoria's Infrastructure Strategy 2021-2051**
 - > strategic land use and infrastructure planning
- + **Hydrogen Worker Training Centre**
 - > skills and training programs to support workers in REIP to transition to new industries

- + **Clean Economy Workforce Skills Initiative**
 - > skills and training programs to support workers in REIP to transition to new industries
- + **Victorian Skills Plan**
 - > skills and training programs to support workers in REIP to transition to new industries
- + **Wind Worker Training Centre**
 - > skills and training programs to support workers in REIP to transition to new industries

Building enabling infrastructure

- + **Renewable Energy Zones**
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **State Electricity Commission**
 - > renewable electricity transmission, network, storage/ firming infrastructure
 - > skills and training programs to support workers in REIP to transition to new industries
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Victorian Energy Storage Targets**
 - > renewable electricity transmission, network, storage/ firming infrastructure (if relevant)

Decarbonising existing industries

- + **New Energy Technology Strategy**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Emissions Reduction Targets**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Renewable Energy Target**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Offshore Wind Targets**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Gippsland Regional Circular Economy Plan**
 - > industrial material and energy efficiency (incl. circular economy)
- + **Manufacturing Growth Program**
 - > capital outlays for heavy industry upgrades
- + **Breakthrough Victoria**
 - > R&D for technologies to support decarbonisation
 - > renewable electricity generation, storage and firming to support industrial decarbonisation

- > industrial material and energy efficiency (incl. circular economy)
- > renewable heat and feedstock supply
- > financial incentives to attract new businesses to REIP (hydrogen)
- > financial incentives to attract new businesses to REIP (other, non-hydrogen)

Attracting new industries

- + **Regional Jobs Fund**
 - > incentives to attract new businesses to REIPs (other, non-hydrogen; hydrogen)
 - > skills and training programs to support workers in REIP to transition to new industries
 - > innovation and supply chain readiness support
- + **Made in Victoria 2030**
 - > strategy/plans to attract new businesses to REIPs (other, non-hydrogen)
 - > skills and training programs to support workers in REIP to transition to new industries
- + **Renewable Hydrogen Industry Development Plan**
 - > strategy/plans to attract new businesses to REIP (hydrogen)
- + **Victorian Industry Investment Fund**
 - > financial incentives to attract new businesses to REIP (other, non-hydrogen)
- + **Regional Economic Development Strategies**
 - > strategy/plan to attract new businesses to REIPs (other, non-hydrogen)
 - strategy/plan to attract new businesses to REIP (hydrogen)

Further opportunities to enable REIPs:

- + institutional arrangements (e.g. allocation of staff) to convene key stakeholders to co-design REIP roadmaps
- + institutional arrangements (e.g. allocation of staff) to convene ongoing industry coordination in REIP (regions other than Gippsland)
- + policies (strategies/plans) and funding to support international linkages and coordination (e.g. manufacturers in Australia and overseas to work together to build manufacturing networks and ecosystems, unlock complementary capabilities, overcome barriers to scale and grow, and access global markets)
- + funding for building enabling REIP infrastructure (water, green hydrogen and transport)
- + policies (strategies/plans) for the development of renewable heat and feedstock supply
- + funding for renewable electricity generation, storage and firming to support industrial decarbonisation.

New South Wales

The New South Wales Government has a suite of policies covering coordination in REIP locations, building the enabling infrastructure needed and progressing the decarbonisation of industry. The government has the opportunity to further strengthen policies and funding to support international linkages to unlock complementary capabilities between manufacturers in Australia and overseas, helping to access global markets.

PILLARS

Coordination and skills

- + **Net Zero Industry and Innovation Program**
 - > convening key stakeholders to co-design REIP roadmaps
 - > innovation and supply chain readiness support
 - > financial incentives to attract new businesses to REIP (other; non-hydrogen)
- + **NSW Electricity Strategy**
 - > strategic land use and infrastructure planning
- + **Electricity Infrastructure Roadmap**
 - > strategic land use and infrastructure planning
- + **Transmission Infrastructure Strategy**
 - > strategic land use and infrastructure planning
- + **Decarbonisation and Circular Design in Infrastructure**
 - > strategic land use and infrastructure planning
 - > industrial material and energy efficiency (incl. circular economy)
- + **Business Decarbonisation Support Program**
 - > skills and training programs to support workers in REIP to transition to new industries
 - > capital outlays for heavy industry upgrades
- + **NSW Advanced Manufacturing Industry Development Strategy**
 - > innovation and supply chain readiness support

Building enabling infrastructure

- + **Net Zero Industry and Innovation Program**
 - > renewable electricity transmission, network, storage/ firming infrastructure
 - > water infrastructure
 - > green hydrogen infrastructure
 - > transport infrastructure
 - > port upgrades
- + **Renewable Energy Zones**
 - > renewable electricity transmission, network, storage/ firming infrastructure
 - > renewable electricity generation, storage and firming

- + **Pumped Hydro Recoverable Grants Program**
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **State Budget 2022-23**
 - > water infrastructure
 - > transport infrastructure
 - > capital outlays for heavy industry upgrades
 - > industrial material and energy efficiency
 - > financial incentives to attract new businesses to REIP (other, non-hydrogen)

Decarbonising existing industries

- + **Net Zero Industry and Innovation Program**
 - > R&D for technologies to support decarbonisation
 - > capital outlays for heavy industry upgrades
 - > renewable heat and feedstock supply
 - > industrial material and energy efficiency
 - > financial incentives to attract new businesses to REIP (hydrogen)
 - > financial incentives to attract new businesses to REIP (other, non-hydrogen)
- + **Emissions Reduction Targets**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **NSW Circular Economy Policy Statement**
 - > industrial material and energy efficiency (incl. circular economy)
- + **NSW Energy Savings Scheme**
 - > industrial material and energy efficiency (incl. circular economy)
- + **Clean Technology Research & Development Grants**
 - > R&D for technologies to support decarbonisation
 - > renewable heat and feedstock supply
- + **Innovation Research Acceleration Program**
 - > R&D for technologies to support decarbonisation
- + **MVP Ventures Program**
 - > R&D for technologies to support decarbonisation

Attracting new industries

- + **Net Zero Industry and Innovation Program**
 - > strategy/plan to attract new businesses to REIP (other, non-hydrogen; hydrogen)
 - > incentives to attract new businesses to REIP (hydrogen)
- + **NSW Advanced Manufacturing Industry Development Strategy**
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)
- + **NSW Government Hydrogen Strategy**
 - > strategy/plans to attract new businesses to REIP (hydrogen)

- + **Renewable Manufacturing Fund**
 - > incentives to attract new businesses to REIP (other, non-hydrogen)
- + **Future Industries Investment Program**
 - > incentives to attract new businesses to REIP (other, non-hydrogen)
- + **Regional Investment Activation Fund**
 - > incentives to attract new businesses to REIP (other, non-hydrogen)

Further opportunities to enable REIPs:

- + institutional arrangements (e.g. allocation of staff) to support ongoing industry coordination in CMPs
- + policies (strategies/plans), legislation and regulations to support strategic land use and infrastructure planning for CMP regions specifically
- + policies (strategies/plans) and funding to support international linkages and coordination (e.g. manufacturers in Australia and overseas to work together to build manufacturing networks and ecosystems, unlock complementary capabilities, overcome barriers to scale and grow, and access global markets)
- + funding for building enabling REIP infrastructure (renewable electricity transmission, network, storage/firming infrastructure) for the Hunter-Central Coast and Illawarra REZs.

Northern Territory

The Northern Territory Government has a strong set of policies towards building the skills needed in REIP locations and understanding respective infrastructure planning requirements. Additionally, there is a suite of policies aimed at attracting new industries, although the government has the opportunity to make progress in building infrastructure and helping current industries to decarbonise.

PILLARS

Coordination and skills

- + Industry Buildskills Program
 - > skills and training programs to support workers in REIP to transition to new industries
- + Northern Territory Infrastructure Plan and Pipeline
 - > strategic land use and infrastructure planning
- + Infrastructure Strategy 2022 to 2030
 - > strategic land use and infrastructure planning
- + Skilling the Territory Investment Plan 2022-23
 - > skills and training programs to support workers to transition to new clean industries

Building enabling infrastructure

No programs currently support this pillar.

Decarbonising existing industries

- + Emissions Reduction Target
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + Renewable Electricity Target
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + Northern Territory Roadmap to Renewables: Fifty per cent by 2030
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + Centre for Renewable Energy
 - > R&D for technologies to support decarbonisation

Attracting new industries

- + **Northern Territory Renewable Hydrogen Master Plan**
 - > strategy/plan to attract new businesses to REIP (hydrogen)
- + **The Territory Critical Minerals Plan**
 - > strategy/plan to attract new businesses to REIP (other, non-hydrogen)
- + **Local Jobs Fund**
 - > financial incentives to attract new businesses to REIP (other, non-hydrogen)
- + **Northern Territory Renewable Hydrogen Strategy**
 - > strategy/plan to attract new businesses to REIP (hydrogen)

Further opportunities to enable REIPs:

- + policies (strategies/plans), legislation and regulations to support strategic land use and infrastructure planning for specific REIP regions
- + policies (strategies/plans) and funding to support the convening key stakeholders to co-design REIPs and ongoing industry coordination in REIPs
- + policies (strategies/plans) and funding to support international linkages and coordination (e.g. manufacturers in Australia and overseas to work together to build manufacturing networks and ecosystems, unlock complementary capabilities, overcome barriers to scale and grow, and access global markets)
- + funding for building enabling REIP infrastructure (water, Electricity transmission and network infrastructure, green hydrogen and transport infrastructure; and port upgrades)
- + policies (strategies/plans) and funding to support industrial and material energy efficiency (incl. circular economy)
- + funding to support the development of renewable electricity generation, storage and firming to support industrial decarbonisation
- + funding to support the development of renewable heat and feedstock supply
- + policies (strategies/plans) and funding to support capital outlays for heavy industry upgrades (e.g. to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or for process design and engineering directly related to their capital investment)
- + funding to attract new industries to REIP locations (hydrogen).

Queensland

Queensland's Energy and Jobs Plan and SuperGrid blueprint provide a strong basis for a range of policies that could support REIPs across its jurisdiction. The Queensland Government has an opportunity to build on their current programs by implementing policies aimed at bringing stakeholders together to design decarbonisation roadmaps, attracting new industry players and building linkages internationally.

PILLARS

Coordination and skills

- + **Industry Partnership Program**
 - > convening ongoing industry coordination in REIP
 - > innovation and supply chain readiness support
- + **Future Skills Fund**
 - > skills and training programs to support workers in REIP to transition to new industries
- + **Advancing Manufacturing Skills: A Skills, Training and Workforce Development Strategy for the Manufacturing Industry in Queensland**
 - > skills and training programs to support workers in REIP to transition to new industries
- + **State Infrastructure Strategy**
 - > strategic land use and infrastructure planning
- + **Energy and Jobs Plan**
 - > strategic land use and infrastructure planning
 - > skills and training programs to support workers to transition to new clean industries
 - > innovation and supply chain readiness support
 - > industrial material and energy efficiency (incl. circular economy)
 - > strategy/plans to attract new businesses to REIP (hydrogen)
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)
- + **SuperGrid Training Centre and Transmission Hub**
 - > skills and training programs to support workers to transition to new clean industries
- + **Renewable and Hydrogen Training Facilities**
 - > skills and training programs to support workers to transition to new clean industries
- + **Central Queensland Statement of Cooperation**
 - > convening ongoing industry coordination in REIP
- + **Job Security Guarantee**
 - > skills and training programs to support workers to transition to new clean industries
- + **Regional Economic Futures Fund**
 - > strategic land use and infrastructure planning
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)

Coordination and skills

- + **2022-24 Local Government Grants and Subsidies Program**
 - > renewable electricity transmission, network, storage/ firming infrastructure
 - > water infrastructure
 - > green hydrogen infrastructure
 - > transport infrastructure
 - > port upgrades
- + **South East Queensland Community Stimulus Program**
 - > renewable electricity transmission, network, storage/ firming infrastructure
 - > water infrastructure
 - > green hydrogen infrastructure
 - > transport infrastructure
 - > port upgrades
- + **Renewable Energy Zones**
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **SuperGrid**
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **Central Queensland Grid Reinforcement**
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **Building our Regions**
 - > water infrastructure

Decarbonising existing industries

- + **Emissions Reduction Targets**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Renewable Electricity Target**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **Renewables 400**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + **QLD Renewable Energy and Hydrogen Jobs Fund**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
 - > renewable heat and feedstock supply
 - > renewable electricity transmission, network, storage/ firming infrastructure
- + **Clean Energy Hubs**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
 - > capital outlays for heavy industry upgrades
- + **Business Energy Saving and Transformation Program**
 - > industrial material and energy efficiency (incl. circular economy)

Attracting new industries

- + 2019 QLD Hydrogen Industry Strategy
 - > strategy/plans to attract new businesses to REIP (hydrogen)
- + State Infrastructure Strategy
 - > strategy/plans to attract new businesses to REIP (hydrogen)

Further opportunities to enable REIPs:

- + institutional arrangements (e.g. allocation of staff) to support the convening key stakeholders to co-design REIP roadmaps
- + policies (strategies/plans), legislation and regulations to support strategic land use and infrastructure planning for specific REIP regions
- + policies (strategies/plans) and funding to support international linkages and coordination (e.g. manufacturers in Australia and overseas to work together to build manufacturing networks and ecosystems, unlock complementary capabilities, overcome barriers to scale and grow, and access global markets)
- + funding to support R&D for technologies to support decarbonisation (beyond solar)
- + policies (strategies/plans) and funding to support capital outlays for heavy industry upgrades (e.g. to buy, construct, install or commission new facilities and equipment; establish new manufacturing processes; or for process design and engineering directly related to their capital investment)
- + funding to attract new industries to REIP locations (hydrogen; other, non-hydrogen).

Western Australia

The Western Australian Government is making good progress towards attracting new industries to potential REIP locations, and there are supportive policies aimed at land use and infrastructure planning. Policies aimed at building the enabling infrastructure for REIPs are more targeted towards the locations identified in the 'Tracking possible REIP locations' section above, and this could be expanded to other areas. There is the opportunity to go further with additional policies focusing on building the institutional arrangements needed to convene key stakeholders to co-design REIP roadmaps and convening ongoing industry coordination in REIPs.

PILLARS

Coordination and skills

- + Green Steel Assessment
 - > strategic land use and infrastructure planning
- + 10-year Industrial Land Strategy (2021)
 - > strategic land use and infrastructure planning
- + Access Asia Business Grants
 - > international linkages and coordination support
- + Net Zero Industrial Estates
 - > strategic land use and infrastructure planning
- + Whole of System Plan
 - > strategic land use and infrastructure planning
- + Renewable Hydrogen Guidance: Land tenure for large scale renewable hydrogen projects
 - > strategic land use and infrastructure planning
 - > convening ongoing industry coordination in REIP

Building enabling infrastructure

No programs currently support this pillar.

Decarbonising existing industries

- + Energy Transformation Strategy
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + Emissions Reduction Target
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
- + Distributed Energy Resources Roadmap
 - > renewable electricity generation, storage and firming to support industrial decarbonisation

- + **Climate Action Fund**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
 - > renewable heat and feedstock supply
 - + **Carbon Innovation Grants Program**
 - > R&D for technologies to support decarbonisation
 - > capital outlays for heavy industry upgrades
 - + **Sectoral Emissions Reductions Strategies**
 - > all pillars applicable
 - + **Net Zero Emissions Mining**
 - > R&D for technologies to support decarbonisation
 - + **Clean Energy Future Fund**
 - > renewable electricity generation, storage and firming to support industrial decarbonisation
 - > renewable heat and feedstock supply (only if energy related)
 - > industrial material (only if energy related) and energy efficiency
-

Attracting new industries

- + **WA Recovery Plan**
 - > incentives to attract new businesses to REIP (hydrogen)
- + **WA Renewable Hydrogen Strategy and Roadmap**
 - > strategy/plans to attract new businesses to REIP (hydrogen)
- + **Renewable Hydrogen Target**
 - > strategy/plans to attract new businesses to REIP (hydrogen)
- + **Renewable Hydrogen Fund**
 - > incentives to attract new businesses to REIP (hydrogen)
- + **Western Australia's Future Battery Industry Strategy (2019)**
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)
- + **Strategy Update: Western Australia's Future Battery and Critical Minerals Industries**
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)
- + **Investment Attraction and New Industries Fund**
 - > incentives to attract new businesses to REIP (hydrogen; other, non-hydrogen)
- + **Future Batteries Industries CRC**
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)
- + **Green Steel Assessment**
 - > strategy/plans to attract new businesses to REIP (other, non-hydrogen)
- + **Green Energy Assessment Unit**
 - > strategy/plans to attract new businesses to REIP (hydrogen)

Further opportunities to enable REIPs:

- + institutional arrangements (e.g. allocation of staff) to convene key stakeholders to co-design REIP roadmaps
- + institutional arrangements (e.g. allocation of staff) to convene ongoing industry coordination in REIP
- + policies (strategies/plans) and funding for skills and training programs to support workers in REIP locations to transition to new industries
- + policies (strategies/plans) and funding for innovation and supply chain readiness support
- + funding for building enabling REIP infrastructure, such as:
 - > water infrastructure
 - > green hydrogen infrastructure
 - > transport infrastructure
 - > port upgrades
 - > policies and funding to support industrial material (non-energy) efficiency

Australian Capital Territory

The Australian Capital Territory hosts minimal heavy industry within its jurisdiction. However, the government has several policies that support the decarbonisation of existing industries. Its target to source 100% of Canberra's electricity from renewable sources was met in 2020. Other programs support industrial material and energy efficiency and R&D for renewable technologies to support decarbonisation.

PILLARS

Coordination and skills

- + ACT Government Infrastructure Plan
 - > strategic land use and infrastructure planning

Building enabling infrastructure

No programs currently support this pillar.

Decarbonising existing industries

- + Business Energy and Water Program
 - > industrial material and energy efficiency (incl. circular economy)
- + Emissions Reduction Targets
 - > renewable electricity generation, storage and firming to support industrial decarbonisation

+ **Renewable Electricity Target**

- > renewable electricity generation, storage and firming to support industrial decarbonisation

+ **Renewable Energy Innovation Fund**

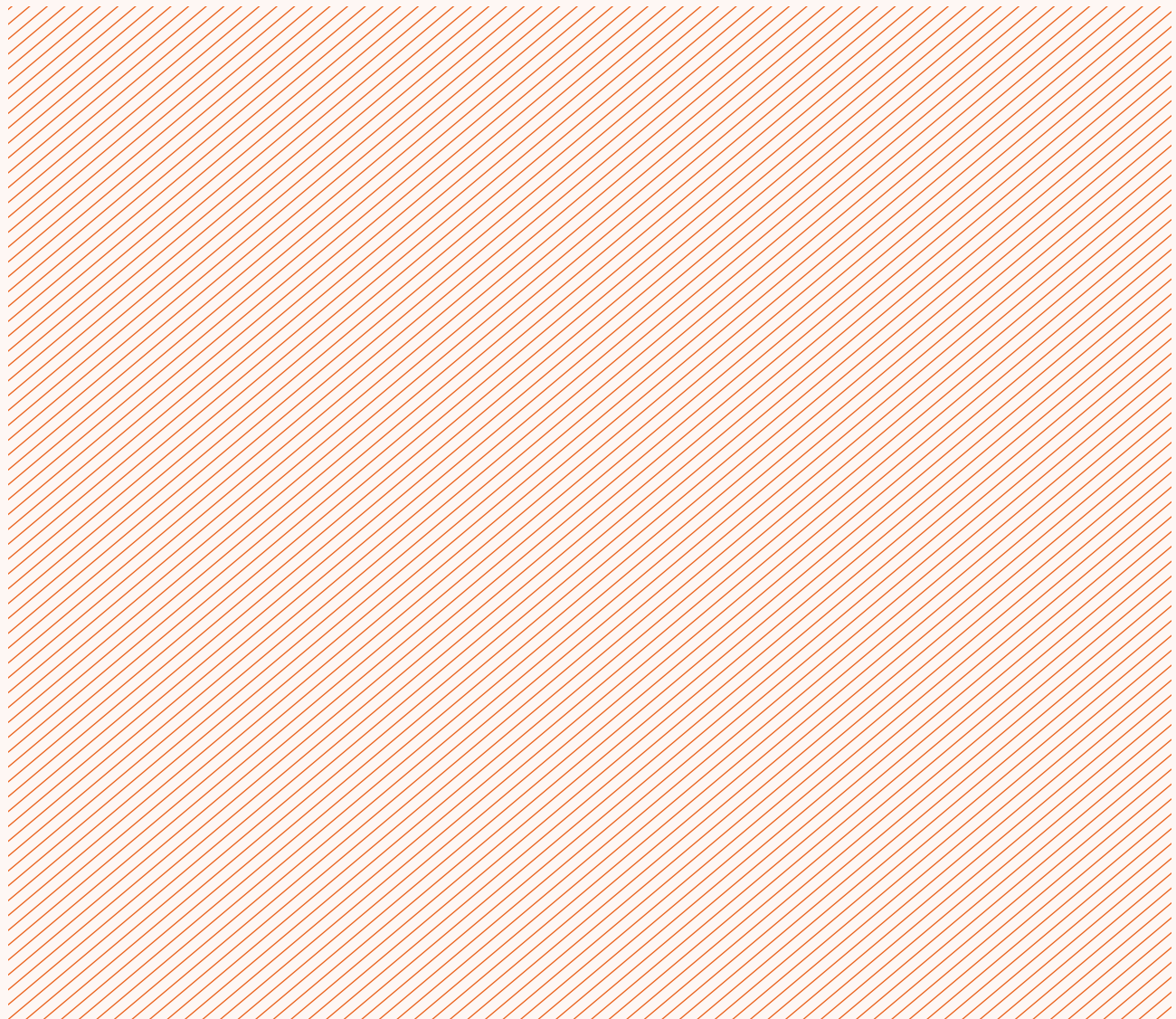
- > renewable electricity generation, storage and firming to support industrial decarbonisation
- > renewable heat and feedstock supply
- > R&D for renewable technologies to support decarbonisation

Attracting new industries

No programs currently support this pillar.

Further opportunities to enable REIPs:

Analysis suggests the ACT has minimal heavy industry, and to that end, no major new policy opportunities have been identified to strengthen pillars.







**For further information
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