PILBARA SOLAR

POWERING AUSTRALIA

RENEWABLE ENERGY RECYCLING

First Nations Business Resources

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Acknowledgement of Country

Powering Australia wishes to acknowledge the First Nations peoples of Australia and recognise their enduring connection to Country through culture, people, place and story. We honour the knowledge systems that have sustained these lands and waters for thousands of generations and recognise the vital role of First Nations leadership and self-determination in shaping a just and sustainable future. As Australia undergoes a significant clean energy and industrial transition, we acknowledge the importance of respectful partnership, cultural integrity, and shared purpose to realise the full opportunity of the clean energy transition.

Business opportunities in renewable energy recycling

Starting your business journey

First Nations businesses are stepping into one of the biggest economic shifts Australia has seen and the opportunity is real, immediate, and growing rapidly.

As the clean energy transition accelerates, there's a clear window to move early and position your business for sustained success. With the right insight and forward planning, you can secure a leading business role in projects that will shape regions and communities for decades to come.

It starts by pinpointing where you fit across renewable energy projects and the supply chains that support them. From there, it's about understanding what work is coming, what's required and when it's happening. The businesses that achieve sustained success are the ones preparing early, investing in the right equipment, forming strong partnerships and aligning with projects before they hit the ground.

This resource is built to help you do exactly that. It cuts through the noise to highlight real opportunities, break down the work involved, and give you a clear direction in beginning a sustainable business on Country.

> "The businesses that achieve sustained success are the ones preparing early, **investing in the right equipment, and aligning with projects before they hit the ground."**

Your practical guide

This resource cuts through the noise. Real opportunities. The work involved. A clear direction to build a sustainable business on Country.

What is renewable energy recycling?

Every solar farm, wind turbine and battery project has an end date. What happens to them when they reach this point is quickly becoming one of the biggest opportunities in the clean energy transition. As these projects reach the end of their life they don't just disappear. Equipment needs to be safely dismantled, removed and managed properly.

Right now, communities are demanding better solutions than simply sending it all to landfill, while some communities are happy to host renewable generation projects they don't want to be left with a legacy problem that will impact future generations. Governments are tightening expectations and project owners are under growing pressure to prove they have a clear plan to reuse, repurpose and recycle materials at scale. This is where the opportunity exists.

"Product stewardship" is a growing term which describes manufacturers and users taking responsibility for materials beyond their usable life. Whether driven by government regulation, customer expectations or the need to stay competitive, companies are being pushed to think beyond installation and into the end life of a product.

Recycling is a new and growing opportunity which comes with complexity and risk. For businesses ready to step in, this is more than a compliance issue, it's a new market. One where those who can recover value, manage materials and deliver sustainable outcomes will be in high demand as the clean energy transition matures.

Why it matters

Old solar panels, wind turbines and batteries don't have to end up in landfill contributing to waste and impacting on Country. Recycling these materials keeps land and waterways clean while unlocking real economic value. Instead of becoming waste, reusing materials and feeding them back into new products creates a circular economy, becoming materials for new industries, new businesses and new revenue streams.

This isn't a small opportunity it's a market ready to scale. As today's clean energy projects age over the next 10-20 years, demand for recycling and recovery services will surge, creating ample opportunity in a booming market. By investing in the opportunity now through capability building and positioning early, businesses can and will be ready to meet the demand.

Recycling and circular economies are about more than creating local jobs, it's about opportunities that can care for Country and can grow alongside the clean energy transition.

Renewable energy project life cycle

From idea to impact, business opportunities exist across all stages, both direct and indirect:

01

Development
(Years 0-4)
Site selection, planning, approvals, and securing funding

02

Construction
(Years 2-4)
Building and installing infrastructure

03

Operations & maintenance
(Years 4–6 onward)
Generating electricity and ongoing maintenance

04

Decommissioning
(Years 29–30)
Removing equipment and restoring the land

Identifying the opportunity and what's coming next

A wave of renewable energy projects across Australia are moving closer to end of life and with it comes a surge of new business opportunities. In starting your own enterprise, it is essential to start mapping future and current renewable generation projects across your region. Specifically seeking to identify; the type of energy generation (Solar/Wind/Other) or storage (battery chemistry), how many megawatts of electricity the facility produces and when the project was constructed. This will give you a good idea of the type of recycling that will be needed, how much waste material there might be and when your services will be needed. When you map this across all projects within your region you can start to understand the viability of your future business.

Over the next decade, decommissioning of renewable projects will ramp up and with it, demand for businesses that can dismantle, recover, and process materials at scale. Decommissioning contractors are already looking for reliable recycling partners to handle the growing volume of materials coming off sites. In some cases, "EPC" (Engineering, Procurement and Construction) contractors are taking this on themselves, making partnerships with established players one of the fastest ways to get in the game.

But the real key to making this work? Turning materials into revenue. Successful businesses don't just collect and process, they secure "off take" which is a buyer for the recovered material. Steel from wind turbines for example, can fetch $200–$400 per tonne, going a long way toward covering decommissioning costs. Copper from cabling and other high value materials can further strengthen the business case.

Solar recycling is a volume business. At roughly $4–$6 per panel, profitability comes from processing at scale and running efficient operations. Meanwhile, newer waste streams like turbine blades and lithium batteries are still emerging, with markets and uses evolving quickly.

This is a space that's still taking shape. The businesses that move early, build the right partnerships, and lock in pathways to market will be the ones that turn renewables recycling into long term opportunity.

Leading business opportunities on Country

The reality is that renewable energy recycling is an extremely important activity while also being a high-risk business opportunity. First Nations businesses getting involved in this sector need to be positioned to take a calculated business assessment and weigh the risk. All businesses will require the ability to seek investment and sustain themselves through periods of uncertain cash flow and have the ability to pivot to other activities should an endeavour turn out to be unviable.

A new recycling business is likely to require some years to develop a recycling methodology, initiate manufacturer networks, establish collection and off-take channels and pitching for investors. Aside from steel and familiar kinds of components, which already have recycling pathways, recycling renewable energy materials involves highly complex processes and faces financial and regulatory hurdles that are yet to be resolved.

Through success in this innovative industry sector, First Nations businesses can meet an important new demand, build skilled on-Country workforces and play a leading role in Australia's circular clean energy economy.

Table 1. provides a high-level overview of the tasks involved in recycling work. This is a newer industry than other business opportunities in renewable energy, and many recycling processes are still in development and will change or advance significantly in the near future. Recycling technology also has long lead times and requires high upfront outlay. Your business may be able to provide some of these services or may seek to contract or partner with others to build capability.

Business segment	Description
Storage or warehousing	The amount of material needed and the operating cycle of recycling plant may require recyclable materials to be stored for a significant time. Delivery to storage is considered in the scope of End-of-Life Decommissioning Resource and is described there. But, if the storage location is a holding site rather than at the plant site, the logistics of transporting material to the plant need to be included and costed.
Sourcing materials and delivering recycled products	Securing and maintaining reliable suppliers and buyers is likely to be necessary for the life of this business opportunity. Good relationships supporting repeat business are important for predictable flows of cash and materials. Whether off-takers (buyers) of recycled products collect them depends on agreed respective scopes of work and if they don't, logistics of delivering recycled products need to be included.
Solar Glass, semiconductor cells, metals, frames	Solar panels are built from layers of glass, cells and plastic, bound with strong adhesives to make a strong unit that can survive decades out in the weather, for this reason they are difficult to take apart. Solar panel glass is specifically manufactured for the industry and heavy, so transport is expensive and a re-injection pathway for the material is difficult to achieve as long as Australia has very little solar manufacturing. Other solar panel components are very difficult to recycle at low cost. For example, historically there has been no technique to recycle silver at a lower cost than its market price, although as prices rise, there could perhaps be an opportunity. Significant volumes of incoming used solar panel stock are around a decade away, and there is no clear offtake market for recovered components besides metals.
Wind Blades, nacelles, power conversion equipment, and towers	Australia already has the facilities and demand to recycle 90-95 per cent of the mass of a wind turbine, but recycling methods for blades are still being developed. Current blade recycling technology involves either chemical or thermal processing to separate the fibres from the resin, or mechanical grinding. The product of grinding is used as a filler or a cement additive and when used for co-processing in cement kilns it reduces fuel requirements. A thermal process pioneered in Spain makes it possible to preserve the properties of the reinforcement fibres, reuse the organic fractions and transform the composite materials into secondary raw materials with high added value. These can be used in new production processes with a quality comparable to that of virgin raw materials.
Batteries Anodes, cathodes, electrolytes, membranes, casing, racking, power conversion equipment	Mechanical and hydraulic separation techniques, including the use of specialist leaching materials, can recover approximately 95% of battery materials. This includes lithium-based batteries that presently dominate renewable energy storage systems worldwide. Mixed battery recycling is available in Australia and recovers copper, aluminium, plastic, steel and mixed metal dust. Mixed metal dust from processed lithium-ion batteries is sent to battery manufacturers to produce new batteries and metals go to recyclers. Other battery equipment (Plastics, Aluminium, Steel etc) can be recycled using conventional methods. Large-format batteries from renewable energy storage and electric vehicles are favourable for recycling with higher margins than batteries from consumer electronics.

Table 1: What's involved in Renewable Generation recycling

Training and skills for success

Building a successful business starts with knowing what is required to deliver on the ground. That means understanding the skills and training required to operate a successful business. Below are examples of some of the qualifications, training and experience needed for recycling services.

Transport / storage logsitics

Training/qualifications needed:
- Vehicle licence (MR/HR/HC)
- Forklift licence
- Load Restraint certificate

Useful job experience/skills that fit this business:
- Driving trucks
- Moving equipment
- Logistics
- Coordination
- Permit applications

Materials handling / recovery / recycling / disposal

Training/qualifications needed:
- White Card
- Machinery tickets
- TAFE Cert-II and III
- Hazardous waste handling
- First Aid
- Safety courses
- Environmental awareness

Useful job experience/skills that fit this business:
- Recycling centres
- Scrap metal
- Ground composite materials
- Waste processing
- Chemical handling
- Permit applications and processing

Solar panel recycling

Training/qualifications needed:
- White Card
- Machinery tickets
- TAFE Cert-II and III
- Hazardous waste handling
- First Aid
- Safety courses
- Environmental awareness

Useful job experience/skills that fit this business:
- Warehousing
- Logisitcs
- Material handling
- Mechanical work
- Fabrication
- Recycling operations
- Crusher operation
- Quarry or recycling plant experience

Battery recycling

Training/qualifications needed:
- Dangerous Goods awareness
- Chemical handling training
- White card
- Machinery tickets
- TAFE Cert-II and III
- Hazardous waste handling
- First Aid
- Safety courses
- Environmental awareness

Useful job experience/skills that fit this business:
- Warehousing
- Hazardous materials handling
- Electrical trades
- Battery systems
- Recycling plant operations
- Lab experience
- Permit applications
- Chemical handling and processing

Table 2: Business opportunities in the recycling stage

Wind turbine recycling

Training/qualifications needed:
- White card
- Working at heights
- Machinery tickets
- TAFE Cert II and III
- Hazardous waste handling
- First Aid
- Safety courses
- Environmental awareness

Useful job experience/skills that fit this business:
- Construction
- Shutdown works
- Mining
- Demolition
- Composite materials
- Scrap metal yards
- Fabrication
- Permit applications

Major equipment needed

The businesses that get ahead are the ones that prepare early, matching capability to opportunity and setting themselves up to deliver with confidence.

This is an indicative list of equipment you will need to start your business for the relevant “Business Activity”. Equipment costs for clean-technology businesses can vary significantly across Australia due to factors such as transport and freight distances, regional supply availability, import costs, and differences in local labour, installation, and compliance requirements.

The equipment list in this resource represents items typically needed but this may differ depending on region, availability and specific sector needs.

01 Solar panel recycling

Panel delamination system (thermal/ mechanical)	Scrap metal baler	Crushers/shredders	Pallet racking and storage
Glass separation / crushing unit	Aluminium frame removal press / saw	Dust extraction & filtration	Testing & QA equipment
	Conveyor systems	Forklifts	

02 Battery recycling

Battery discharge & safety neutralisation units	stations (manual/ semi-auto)	Magnetic & density separators	Monitoring & safety systems
Scrap metal baler	Fire-suppressed storage containers	Electrolyte recovery/ neutralisation	Fume extraction & gas scrubbing
Battery dismantling	Crushers/shredders	Forklifts	

03 Wind farm recycling

All-terrain crane**	Screening plants	Excavator attachments- hydraulic impact drills, shears	Flatbed and extendable trailers
Scrap metal baler	Excavators	Forklifts/telehandlers	Blade cutting systems (water-jet)
Crushers/shredders	Wheel loaders		

Table 3: Indicative entry-level equipment cost.

Discover trusted guidance and support to turn your ideas into opportunities on Country

You don't have to start from scratch. A strong network of support is ready to help you turn ideas into real business outcomes.

WHERE TO START

- First Nations business hubs and chambers
- First Nations business directories
- Industry networks
- Training providers
- Government business support programs

FINANCE AND BUSINESS PLANNING

- Indigenous Business Australia — finance and business planning support
- Australian Government Business Portal – online hub for business support and information
- Local Business Development Commission – provides business support (e.g. Small Business Development Corporation in WA)
- Local Investments Funding Grant – local grant investment
- Grant Connect – provides information about Australian grant opportunities
- Clean Energy Finance Corporation – clean-tech project investment
- National Indigenous Australian Agency – provides information on Indigenous business development grants and regional economic programs
- Northern Australia Infrastructure Facility (NAIF) – supports First Nations communities with finance to build and take part in renewable energy and local infrastructure projects

NETWORKS AND PROCUREMENT

- NIAA Indigenous Procurement Policy – government tender opportunities
- AusTender – Federal Government tender website
- Supply Nation – national procurement networks and business opportunities
- Local Aboriginal Business Directory – connects and promotes Aboriginal-owned businesses across Australia

REGULATION AND INNOVATION

- State and National Environmental Regulation – for waste licensing and compliance requirements

PROJECT MAPPING

- Clean Energy Regulator – Large-scale renewable energy data – federal site with data on approved, committed and probable large-scale renewable energy projects across Australia
- Renew Economy Project Maps – interactive maps of Australia's large-scale solar, wind and BESS farms; identifies future construction opportunities

Key terms	Definitions
Clean energy transition	The shift from fossil fuels (coal, oil, gas) to renewable energy sources such as solar, wind and batteries to reduce carbon emissions and address climate change.
Circular economy	An economic model designed to eliminate waste by keeping materials in use for as long as possible – reusing, repairing and recycling products rather than disposing of them.
Decommissioning	The process of safely shutting down, dismantling, and removing a renewable energy facility (e.g. solar farm or wind turbines) at the end of its operational life and restoring the land.
Epc contractor	Engineering, Procurement and Construction contractor. A company engaged to design, source materials for and build a project – often taking on full responsibility for delivering a facility from start to finish.
Off-taker	A buyer who agrees to purchase (take) a product or service. In this instance it is referring to recovered or recycled materials (e.g. steel, copper, processed battery components) from a recycling business. Securing an off-taker is essential for turning recycled materials into reliable revenue.
Procurement	The process of sourcing and purchasing goods, services or works needed for a project or business. In the context of government contracts or large projects, this often involves a formal tendering process.
Product stewardship	The responsibility of manufacturers, importers, and users to manage the environmental impact of a product throughout its entire life – including after its useful life ends. This may be voluntary or required by law.
Proponent	The organisation or business that proposes, develops, and is responsible for delivering a renewable energy project. Also referred to as the project developer or project owner.
Supply chain	The network of businesses, suppliers, and service providers involved in delivering a product or project from start to finish – covering everything from raw materials and manufacturing through to installation, maintenance, and end-of-life recycling.
Tendering	A formal competitive process where businesses submit proposals (tenders) to win a contract to provide goods or services. Common in government and large-scale project procurement.

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