



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

nier

SOLUTIONS FOR GLOBAL CHALLENGES
ENERGY RESOURCES FOOD WATER

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NEWCASTLE INSTITUTE FOR ENERGY & RESOURCES**



NIER – SOLUTIONS FOR GLOBAL CHALLENGES

WORLD-CLASS RESEARCH | INDUSTRY COLLABORATION | RESEARCH EDUCATION | INNOVATIVE SOLUTIONS

OUR OBJECTIVE

At NIER, we believe global challenges require regional solutions. Our objective is to strengthen regional resilience through the delivery of sustainable solutions for global challenges related to energy, food and water security, and resource sustainability through collaborative research, translation and education.

THE NIER PRECINCT

Located at the University of Newcastle's Callaghan campus, NIER is a 3.8 hectare industrial innovation precinct. Extensive research laboratories, glasshouses and pilot scale workshops offer unique opportunities for industry focused applied research, demonstration and training.



**INDUSTRY ENGAGED
RESEARCH
COLLABORATIONS**



**SUPPORTING SECTORS
OF NATIONAL
SIGNIFICANCE**
ENERGY, RESOURCES,
FOOD & WATER



**INDUSTRY EMBEDDED
DOCTORAL TRAINING
CENTRES**



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RESEARCH CAPABILITY AREAS

Through the research of more than 18 groups and centres that form NIER, we harness collective capacity to facilitate activities that enable the University to drive impact and deliver next generation resources to support resilient regions. Our research expertise is offered in four key capability areas:



Unlocking sector potential with a generation of new materials, processes, technology and services.



Solutions to reduce waste and optimise the use of the world's resources.



Transferring the latest technology into sectors of significance for sustainability and competitive advantage.



Balancing environmental, social and economic activity for regional resilience.



OUR STRENGTHS

A scientist with long hair tied back, wearing safety glasses and a white lab coat, is working in a biosafety cabinet. The cabinet is filled with various laboratory equipment, including pipettes, bottles, and containers. The background shows a window with blinds, suggesting a laboratory setting.

NIER's key areas of strength and focus include:

- **Clean energy solutions** - *Fuels, materials and low emission technologies for a sustainable energy future including energy integration systems*
- **Productivity and utilisation** - *Novel applications for the efficient use of energy and next generation resources, greater competitiveness and sustainable outcomes*
- **Resource recovery and circular economy** - *Development and deployment of technologies and strategies to revolutionise Australia's waste systems*

Moving innovative recycling and clean energy technologies out of the lab and into global manufacturing.



The collaborative TRaCE program will fast track commercialisation, strengthen capability at the institutional level, provide infrastructure for technology development and deliver the critical skills needed to propel clean energy industries into the future.

The focus areas of the TRaCE Program are categorized into three streams positioned to meet TRaCE targets and accelerate the commercialisation of technology.



Australian Government
Department of Education



NSW Decarbonisation Innovation Hub

Fast-tracking research, development and commercialisation to drive solutions for a low emissions economy

The Hub is the coordinating body for 3 networks in strategic areas:



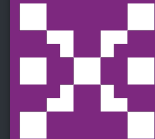
Electrification and Energy Systems Network
DECARB HUB

Electrifying the energy system is key to enable renewable energy solutions



Land and Primary Industries Network
DECARB HUB

The LPI sector is pivotal in achieving substantial, deep cuts in NSW net carbon emissions



Power Fuels including Hydrogen Network
DECARB HUB

New sustainable synthetic power fuels will unlock opportunities for many hard-to-abate sectors

Led by UNSW Sydney and University of Newcastle, partners of the Hub include:



UNSW SYDNEY



WESTERN SYDNEY UNIVERSITY



Southern Cross University



THE UNIVERSITY OF SYDNEY



Charles Sturt University



UNIVERSITY OF WOLLONGONG AUSTRALIA



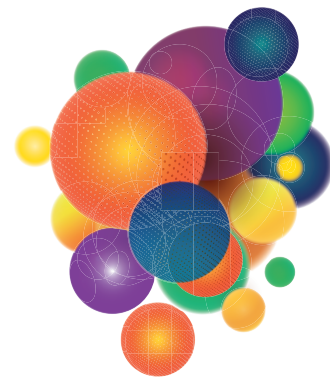
CLIMATEKIC Australia



Department of Primary Industries

- Part of the NSW Government's **Net Zero Industry & Innovation Program** supporting collaboration, partnerships and projects between research, industry and government stakeholders in critical sectors to collaborate and increase the uptake of new technologies to drive decarbonisation in NSW and beyond.
- Launched in 2023, it will receive \$15m state funding over 9 years and leverage funds from industry, commonwealth, private investment and NSW Net Zero initiatives.

ARC CENTRE OF EXCELLENCE



ARC Centre of Excellence for

**ENABLING ECO-EFFICIENT
BENEFICIATION OF MINERALS**

Developing transformational technologies for enabling a competitive and environmentally sustainable future for Australia's minerals industry through:

- reduced environmental footprint
- significant reductions in energy and water use
- higher resources recovery
- future leaders to support the sector



Australian Government

Australian Research Council

WWW.COEMINERALS.ORG.AU

RESEARCH ROADMAPS

NIER's **Research Roadmaps** were produced in consultation with industry partners to identify real, current and future industry priorities and challenges - aligned with NIER capabilities and research intentions. Each roadmap contains a series of essential actions necessary to achieve innovative scientific advances for key regions and industry sectors.

NEWCASTLE INSTITUTE FOR ENERGY AND RESOURCES

TECHNICAL PROSPECTUS



PACIFIC RESEARCH ROAD MAP

A joint capacity building initiative of The University of Newcastle and The Secretariat of the Pacific Regional Environment Programme



ENERGY RESEARCH ROADMAP

Guiding research with impact for a resilient, sustainable future



RESOURCES RESEARCH ROADMAP

Guiding research with impact for a prosperous, resilient and sustainable future



FOOD AND AGRIBUSINESS RESEARCH ROADMAP

Guiding research with impact for resilient regional communities



WATER RESEARCH ROADMAP

Guiding research with impact for resilient regional communities



THANK
YOU



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