Australian Renewable Energy Agency

Accelerating Australia’s shift towards a sustainable, affordable and reliable energy future

$1.1 billion funding committed to support over 270 projects

$800m funding available to support innovative energy technology - certainty for ARENA and renewable energy sector

150 active and 60 completed projects

$200 million Clean Energy Innovation Fund co-managed by Clean Energy Finance Corporation and ARENA

Knowledge Sharing | Collect, analyse, interpret and disseminate

- Address real and perceived barriers
- Build on lessons learnt
- Accelerate path to commercial adoption without subsidy
Partnership across innovation chain

- **Research**
  - Australian Research Council

- **Development**
  - ARENA

- **Demonstration**
  - Clean Energy Innovation Fund (CEFC & ARENA)

- **Deployment**
  - Clean Energy Finance Corporation

- **Market Accumulation**
  - Emissions Reduction Fund

- **Diffusion**
  - Renewable Energy Target
  - EE Disclosure & Standards

- **Delivery Partners**
  - Universities
  - CSIRO

- **Companies** - Innovators and Established Industry
ARENA technology portfolio

- Solar PV: 110
- Solar Thermal: 38
- Hybrid: 11
- Geothermal: 3
- Bioenergy: 19
- Ocean: 5
- Enabling: 48
What sort of Projects does ARENA fund and how is this determined?
ARENA Act 2011

General Funding Strategy

Programme Guidelines

Investment Plan
Investment Priorities

- **Integrating renewables and grids (IRG)**
  - Establishing innovation lab to build quality projects to complement existing portfolio.

- **Renewables for industrial processes**
  - Working with industry stakeholders to determine prospective opportunities to demonstrate renewables (including bioenergy), reduce costs and improve productivity.

- **Off-grid areas**
  - Economic challenges of lower diesel prices
  - Technical lessons could be relevant to grid applications

- **Fringe-of-grid and network constrained areas**
  - Several relevant projects recently signed
  - Likely to consolidate with IRG priority

- **Large-scale solar PV**
  - Competitive round: 12 successful projects, 460MW grid connected generation across QLD, NSW and WA, total grant allocation of $91.7m
Bioenergy and Biofuels

Bioenergy

- Waste to energy
- Pathways that meet local demand (heat &/or power)
- Efficient aggregation, processing and development of renewable feedstock
- Purification of biogas

Biofuels

- Pathways that meet demand (incl. aviation/marine fuel)
- Efficient aggregation, processing of renewable feedstock
- Processing of bio-crude into refined, drop-in fuels suitable for end users
- Acceptance of co-products for commercialisation
ARENA Project Highlights
Southern Oil Refining

**Lab Scale**
Northern Oil Laboratories
Determine processing requirements

**Demonstration**
Northern Oil Refinery
Trial requirements in batch runs

**Pilot**
Pilot Facility
Trial requirements in a continuous facility

**Full Scale**
Commercial Facility
Full run
RDA Pentland

• Bankable feasibility for integrated 1\textsuperscript{st} and 2\textsuperscript{nd} generation bioethanol plant

• Evaluation of sweet sorghum as alternative sugar source

• Carbon and energy balances comparing 1\textsuperscript{st} and 2\textsuperscript{nd} generation bioethanol production in the Australian context

• Project Partners:
  • TOMSA Destil S.L.
  • Beta Renewables
  • National Australia Bank
  • CEFC
Utilising biogas in sugarcane transport and milling

- Biogas using AD with sugarcane trash as feedstock
- Biofuels using HTL with AD solids as feedstock
- Project Partners:
  - QUT
  - Griffith University
  - Manildra Harwood Sugars
  - Sunshine Sugar
  - Utilitas Pty Ltd
Bioenergy Australia

Participation in the International Energy Agency’s Bioenergy program

- Task 37: Energy from Biogas
- Task 38: Climate Change Effects of Biomass and Bioenergy Systems
- Task 39: Commercialising Conventional and Advanced Liquid Biofuels from Biomass
- Task 42: Biorefining in a Future Bioeconomy
- Task 43: Biomass feedstocks for energy markets
ARENA Announcements
Geodynamics is developing the Goulburn Bioenergy Project – located at Southern Meats sheep abattoir in Goulburn NSW

- Project will generate 1.6MWe, and supply 4,000 MWh of energy to the abattoir annually
- Dual fuel technology generator, blending biogas with natural gas to meet peak demand
- Portfolio development to reduce the cost of generation from future deployments
Unitywater Wastewater Treatment Plant - Kawana QLD

$296,500 ARENA Funding

• Demonstrate co-digestion of sewage biosolids and other feedstocks within existing AD facility at smaller localised wastewater treatment plants

• Study will examine technical and commercial viability of small to medium WTPs producing biogas and renewable energy behind the meter

• If commercially viable, offers alternative opportunity to power generation for WTPs of similar scale
LCA Guidelines - Bioenergy & Biofuel Projects

• LCA method and guidelines document deliver standardised assessment framework
• To be applied to all ARENA-funded bioenergy and biofuel projects
• Developed in partnership with the Australian Life Cycle Assessment Society (ALCAS)
• Guidelines will be periodically revisited and updated, as required

Further information: www.arena.gov.au/lca
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