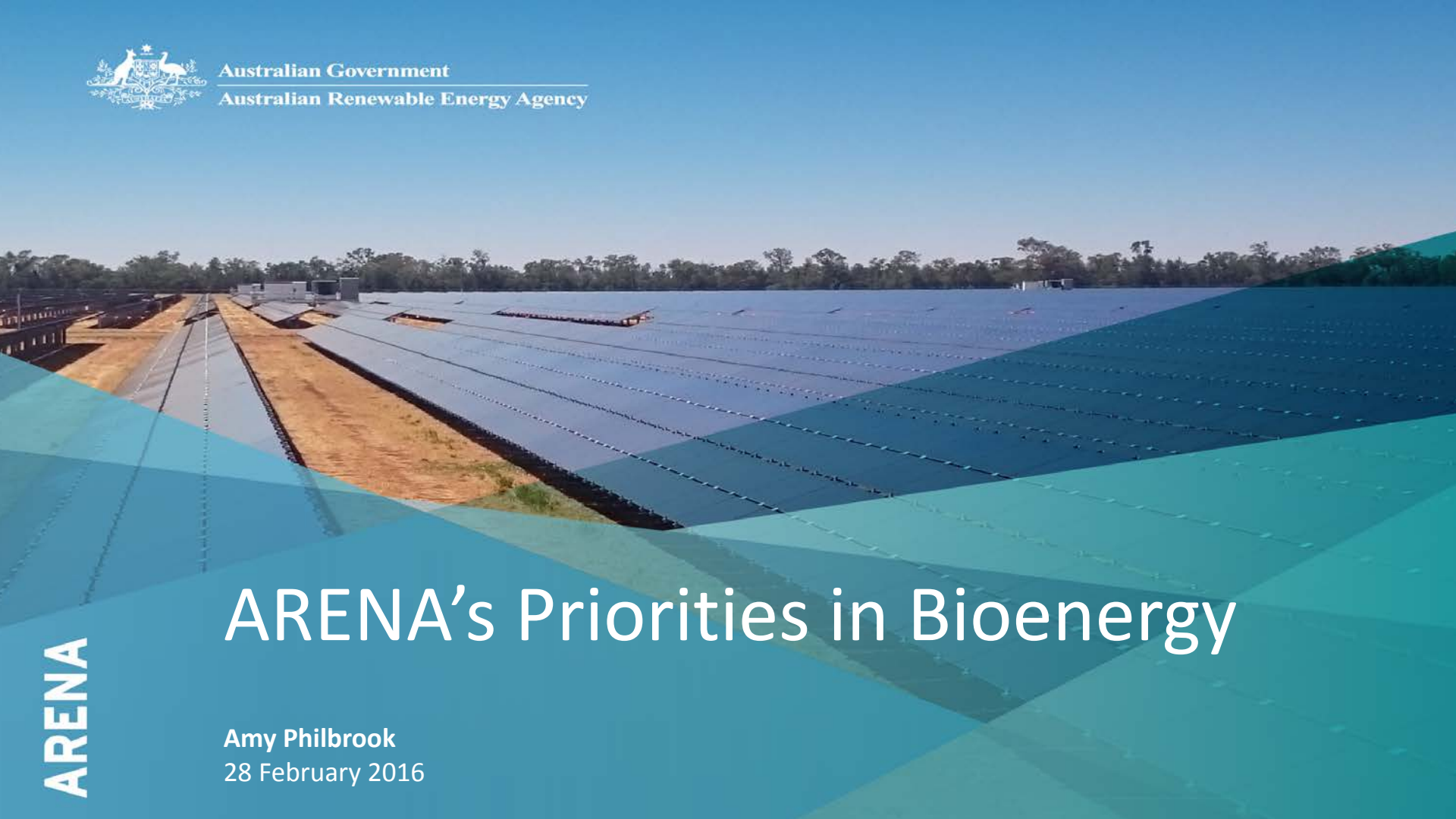




Australian Government
Australian Renewable Energy Agency



ARENA

ARENA's Priorities in Bioenergy

Amy Philbrook
28 February 2016

\$2.5 billion
in funding
to 2022

\$330 million
commitment
target to June
2016

**Established
in 2012 to:**

**Improve
competitiveness**
of renewable energy
technologies

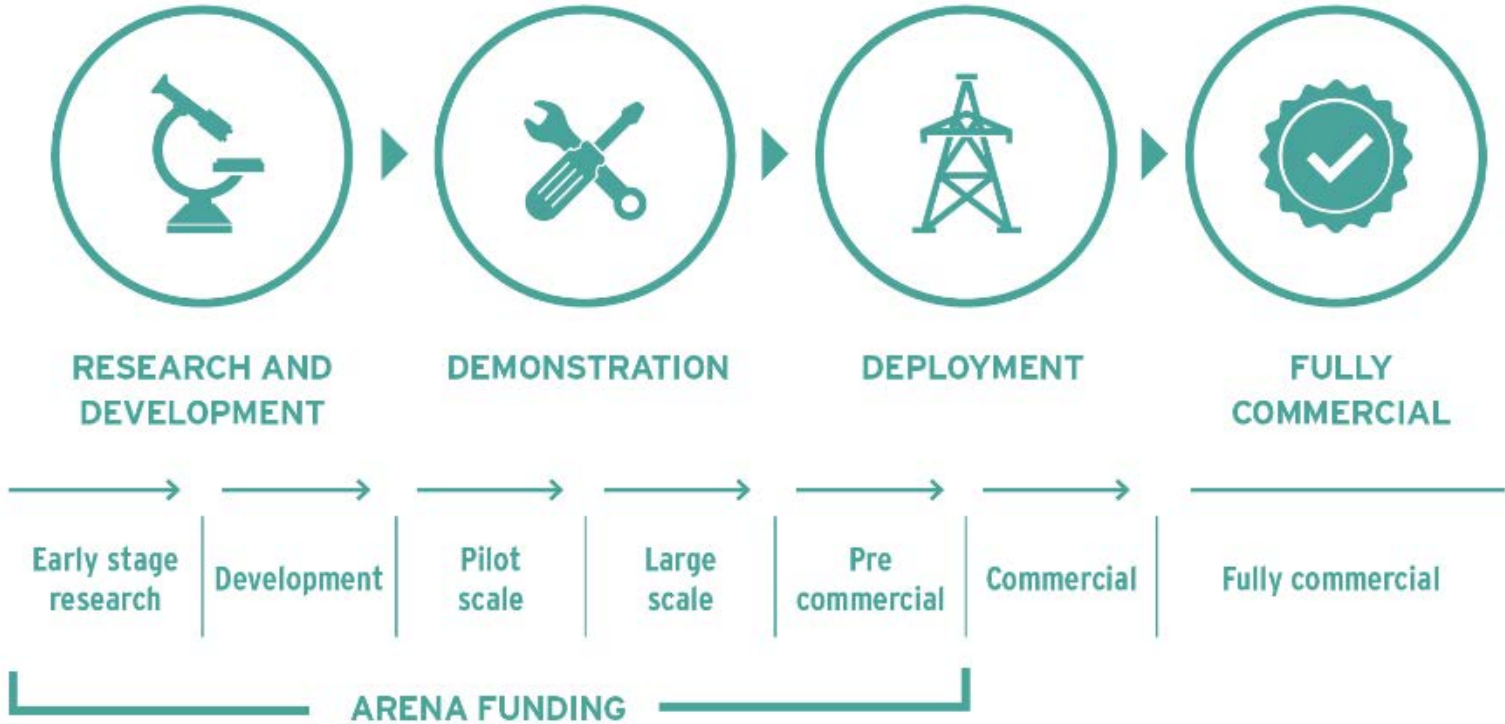
Increase supply
of renewable energy
in Australia

\$1.1 billion
committed
to date

230 supported
projects

41 completed
projects

ARENA Overview



Bridging the gap



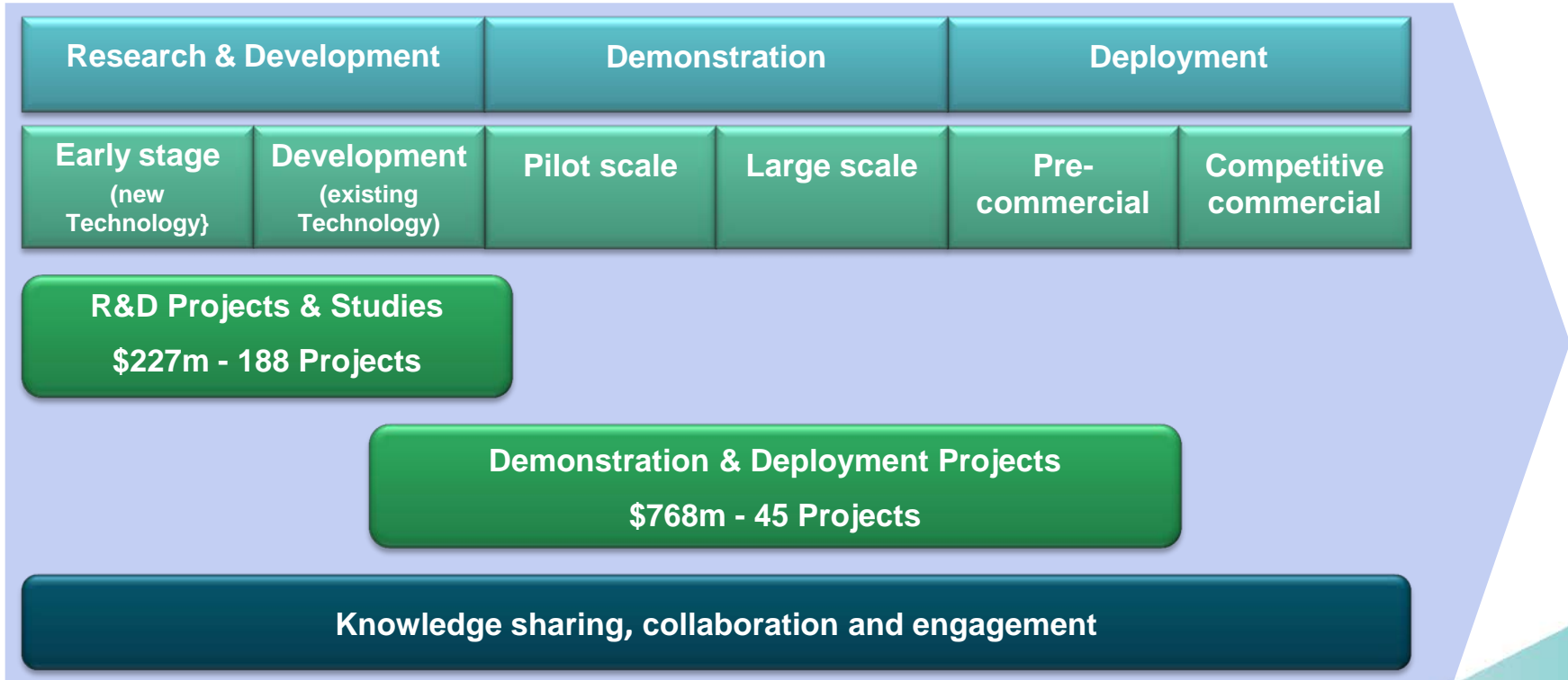
Grant funding to:

- Enable path to commercialisation without subsidy
- Reduce investment risk
- Leverage other investment

Knowledge sharing to:

- Address real and perceived barriers
- Build on lessons learnt
- Disseminate project outcomes to renewable energy industry

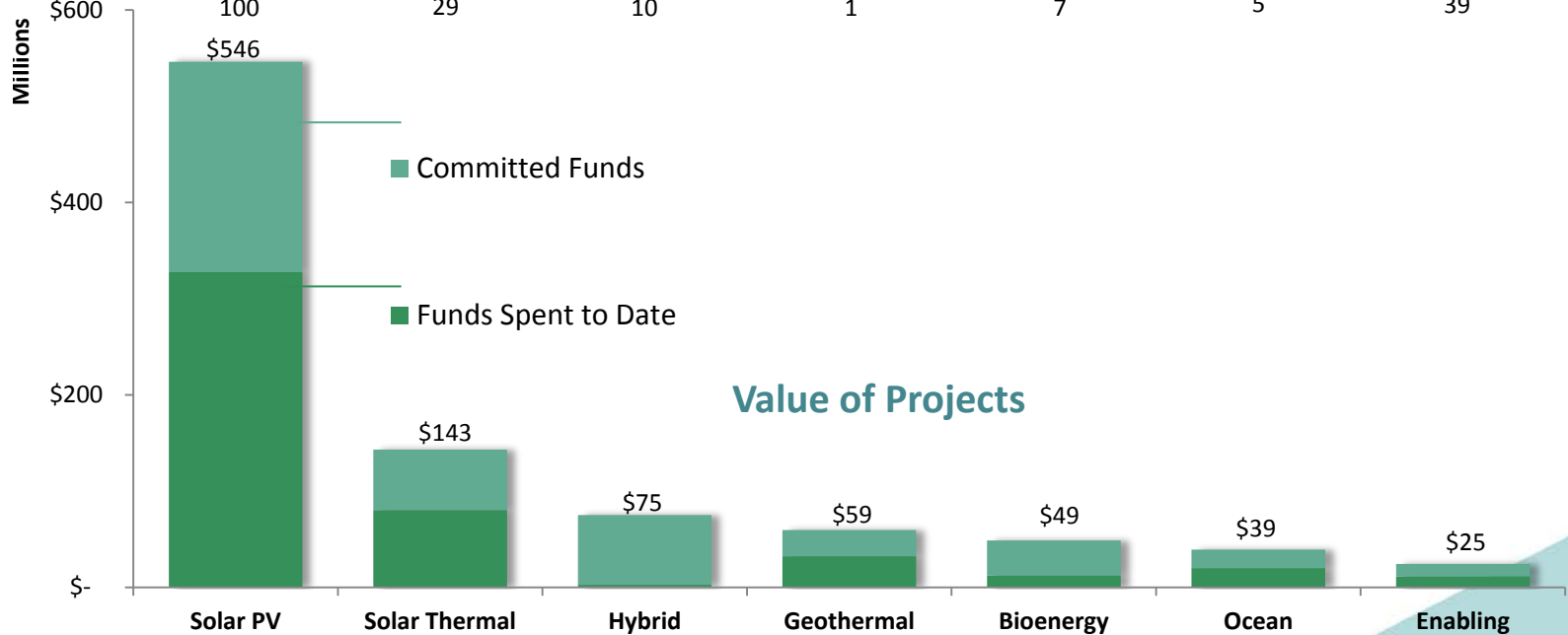
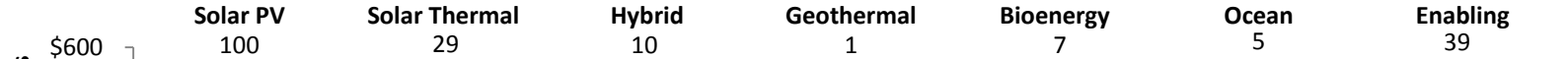
ARENA – Focus of Investment Activities



Portfolio of distributed technologies



Number of Active Projects



Australian Biomass for Bioenergy Assessment (ABBA)



Bioenergy

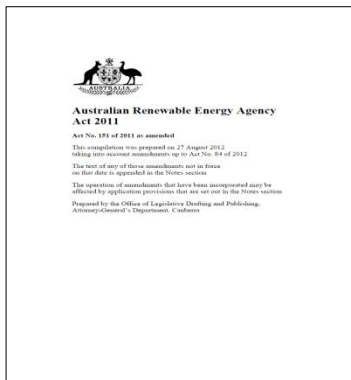


Biofuels

- volumes and availability of biomass for inclusion on AREMI on state-by-state
- project managed and delivered by RIRDC, in partnership with state-based agencies and collaborators
- Multiple layers of biomass resource data in the AREMI platform
- Please contact:
Michael Mazengarb at ARENA
(Michael.Mazengarb@arena.gov.au)
Julie Bird at RIRDC (Julie.bird8@bigpond.com)

Bioenergy Projects

- To date ARENA has funded 17 projects in bioenergy / biofuels
- Australian Biofuel Investment Readiness Program (ABIR) projects
 - Muradel
 - James Cook University
 - Licella
- Knowledge Sharing / Evaluation
 - *Algae Forum* Wednesday, 5 August 2015 – Melbourne's AusIndustry Offices
 - 25 people from R&D, industry and government
 - To communicate the outcomes of two of ARENA's recently completed projects
 - To discuss the barriers to the production of algae biofuels
 - To evaluate ABIR program to shape biofuel investment priorities



ARENA Act 2011



General Funding Strategy



Investment Plan



Programme Guidelines



Investment focus area – Bioenergy and Biofuels



Bioenergy

- 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 (LCA)

Investment priorities

Advancing the commercial development of renewable energy and enabling technologies



Addressing barriers to the long-term uptake of renewables

PRIORITY: Integrating renewables and grids

Helping renewable energy technologies meet energy users' needs

PRIORITY: Renewables for industrial processes

PRIORITY: Off-grid areas

PRIORITY: Fringe-of-grid and network-constrained areas

PRIORITY: Large-scale solar photovoltaics

Renewables in residential and commercial buildings

Community energy

Investment priorities

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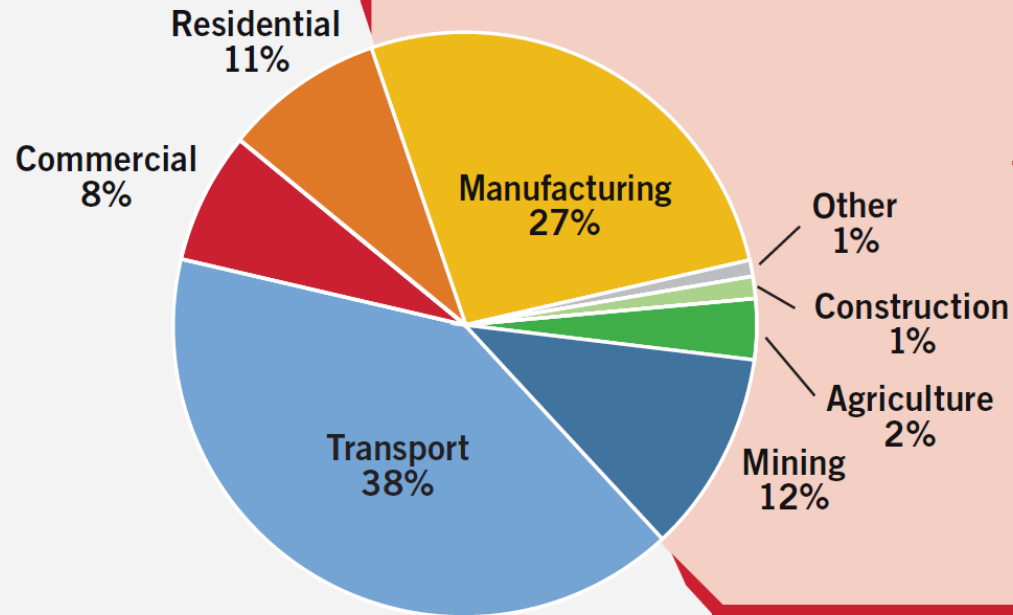
PRIORITY: Large-scale solar photovoltaics

Renewables in residential and commercial buildings

Community energy

Motivation for priority

End use energy 2012-13



**INDUSTRIAL USE
IS APPROXIMATELY
70% FROM GAS**

Renewables for industrial processes

Technologies:



Bioenergy /
waste-to-
energy



Solar
thermal



Geothermal



Hybrid
(Heat pumps)

Industry sectors:

Industries with
access to low or no
cost biomass or
waste streams

High Energy Algal Fuels project

- Construction of algal troughs (3 units, each unit 25m x 2m providing a total of 150m² of culture)
- Continuous treatment process of secondary effluent (chlorinated discharge water from plant)
- Quantifying the treatment of:
 - nutrients (nitrogen, phosphorus),
 - metals (aluminium, manganese, zinc)



Development and Demonstration

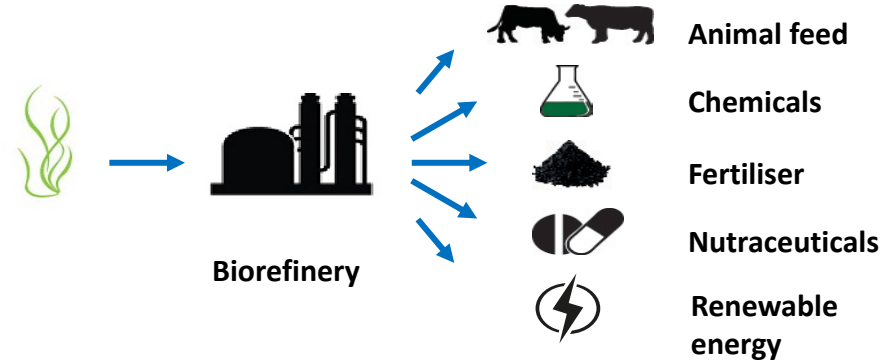
Waste Water Treatment Plant



Primary treatment

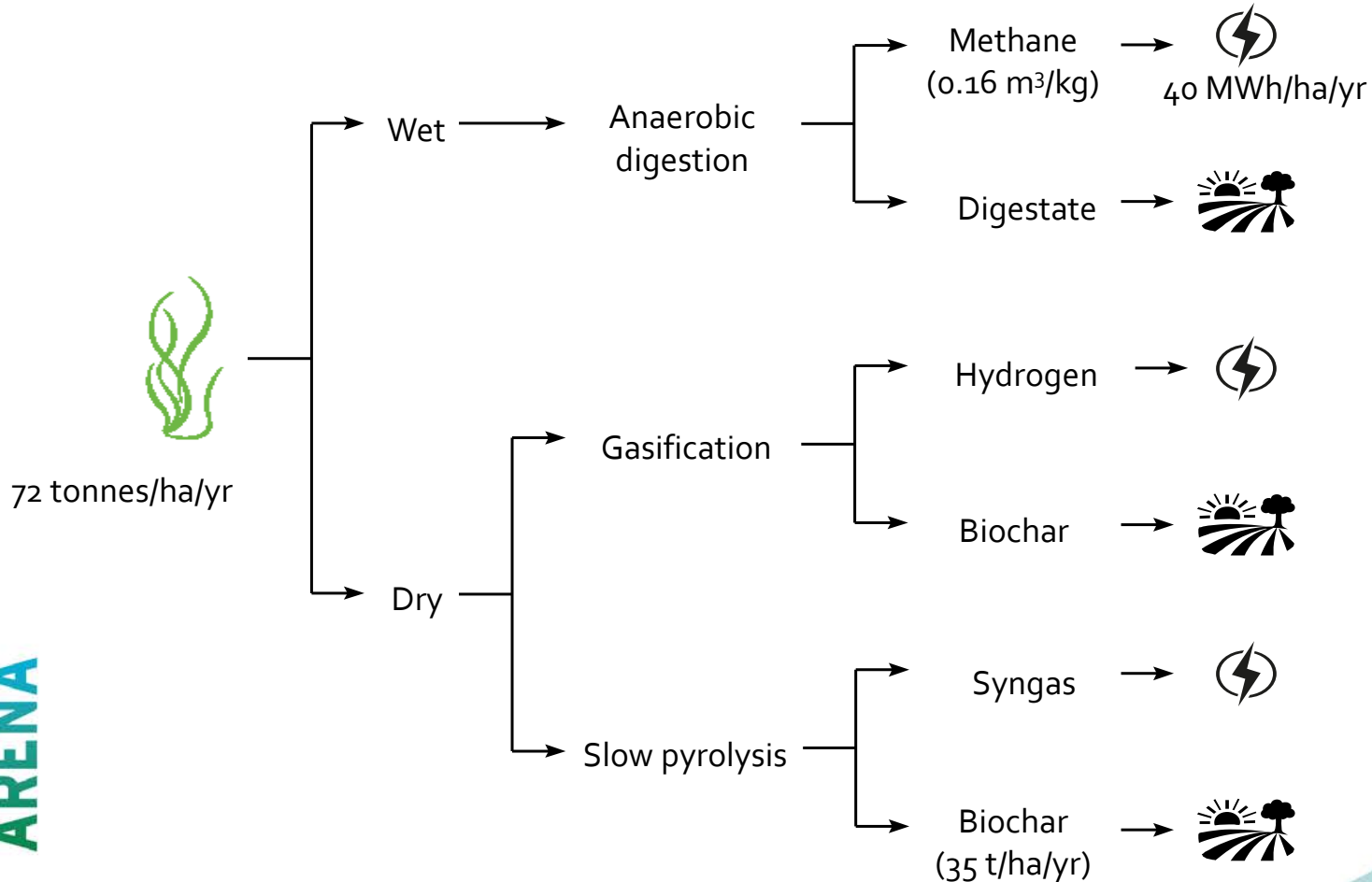
Algal production

Pilot Scale Demonstration



Biorefinery program

Energy Outputs – Biorefinery Program



Energy Productivity and Renewable



Bioenergy

Improving energy efficiency of (renewable energy) technologies

Renewables have been revised up by 14% (180 Mtoe) from 2015*

- Faster-than-expected cost reduction*
- Anticipation of environmental policy*

Beyond energy productivity

- Moving from variable opex to fixed capex**
- Improving the energy supply chain**
- Job creation**

Examples of multiple benefits of EE (and renewables)

- Air quality improvement
- Reduced waste
- Energy security





**\$1.1
Billion**

committed to
support
projects

**Largest
solar farm**

in the southern
hemisphere now
sending electricity
into the grid

**\$2.7
Billion**

In project value
facilitated by
ARENA investment

**37 new
projects**

worth \$365M
announced in
2014-15

**30+ remote
communities**

& industries to benefit
from \$140M in ARENA
funding for 12 project
in remote off-grid &
fringe-of-grid locations

**Award
winning**

World
Environment
Day Award
(UN)

ARENA

Find out more at arena.gov.au