


THE BIOENERGY ROADMAP FOR SA & AUSTRALIAN BIOMASS FOR BIOENERGY ASSESSMENT



RenewablesSA
Low Carbon Economy Unit
Department for the Premier & Cabinet

INTRODUCTION

Bioenergy Roadmap for South Australia

Overview of ABBA Project

Overview of AREMI

Datasets & Analytics

Demonstration

Key Drivers for Bioenergy

- Utilisation of waste streams
- Reduction in CO2 emissions
- Energy security
- Dispatchable power
- Regional development and employment
- Environmental improvement



Current State of Play in SA

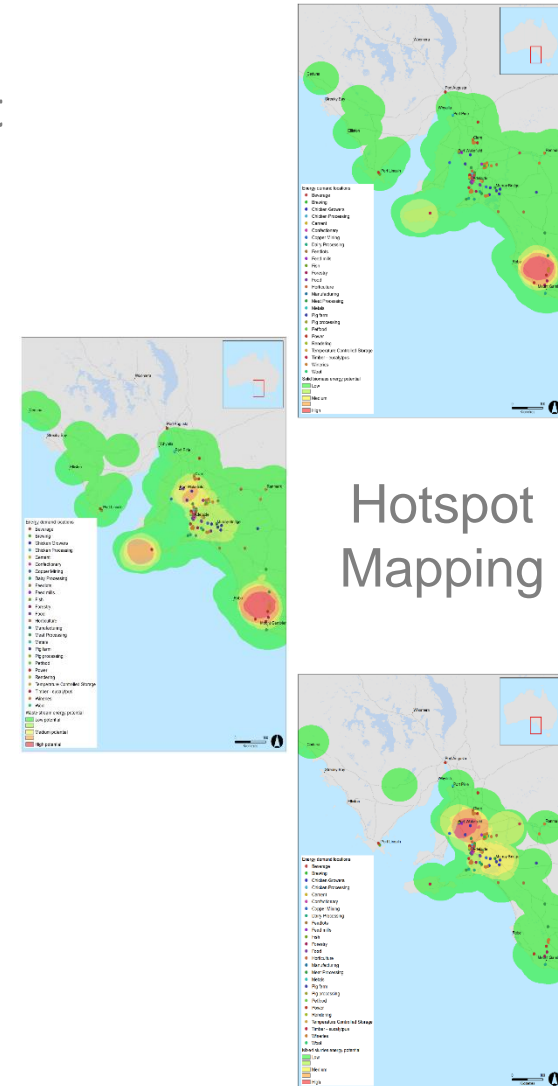
- Combustion of waste crop material, purpose grown crop material, municipal and commercial wastes to produce heat and electricity
- Digestion of wastes to produce gas for heating, conversion to electricity or injection into gas reticulation systems
- Conversion of biomass to produce bio-fuels
- Capture of gas from decomposing wastes (landfill gas) to convert to electricity

In Australia the capture of gas from decomposing wastes and the combustion of waste crop material are the more typical applications.



Bioenergy Roadmap – Stage 1

- Bioenergy Roadmap for South Australia Report
- Identifies hotspot areas:
 - Sufficient feedstock quantities
 - Matched demand for heat and electricity with conversion technologies
 - Logistical issues: low 40-50km; high 100km
- GIS data loaded onto web-based application
 - Multiple data sources
 - Accessible and searchable



<http://www.renewablesa.sa.gov.au/investor-information/bio-energy-roadmap/stage-1>



Bioenergy Roadmap – Stage 2

Working in hotspot areas to lay the groundwork for new bioenergy projects by:

- Providing information on bioenergy alternatives for electricity and heat production
- Link biomass suppliers to users of energy
- Demonstrate how local businesses can be supported to add value



Forums

Feasibility Funding and Grants



ABBA

National database of biomass resources
across Australia

Catalyse investment in the renewable
energy sector by:

- Providing information on types, volumes and locations of potential bioenergy feedstocks
- Collates and presents information via the Australian Renewable Energy Mapping Infrastructure (AREMI) interface, a central source for renewable energy mapping data and information
- Includes interactive analytic tools



ABBA

ARENA

- Funded by Australian Renewable Energy Agency (ARENA)
- Collaboration of 6 States, Queensland University of Technology, Sunshine Coast University, Industry and Data61/CSIRO
- Building on current regionally based data and filling the gaps, for a national approach with public accessibility.
- Project managed by Rural Industries Research & Development Corporation (RIRDC)



RURAL INDUSTRIES
Research & Development Corporation

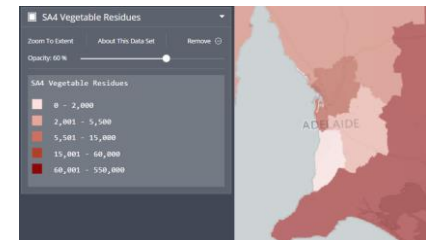
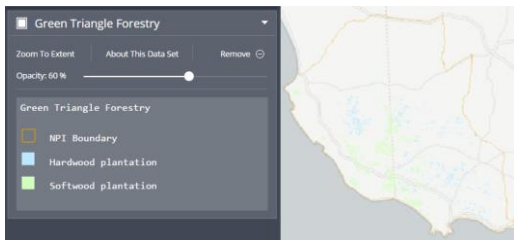
AREMI

Australian Renewable Energy Mapping Infrastructure

Part of the 'National Map' which provides an open framework of geospatial data services

Provides access to renewable energy and general information

Overlay, download, upload datasets



AREMI

Data layers include:

Biomass location, type & volume

Existing bioenergy providers, location & volume

Existing infrastructure - e.g. gas, electricity

Information tools relating to biomass availability, economics and sustainability

AREMI is a spatial data platform for the Australian energy industry

We are focused on supporting Developers, Financiers, and Policy Makers in evaluating spatial renewable energy information.

AREMI is funded by the Australian Renewable Energy Agency and developed by Data61 in partnership with Geoscience Australia and the Clean Energy Council.

The AREMI website provides access to renewable energy and general information which has been provided by various third party data custodians. As a condition of using this website, users should understand and must accept, that the information and data provided on the AREMI website:

- is entirely dependant on the accuracy of the information and data which has been provided by the third party data custodians;
- is not necessarily complete;
- sometimes is general in nature; and
- should not be relied on in place of independent research and professional advice.

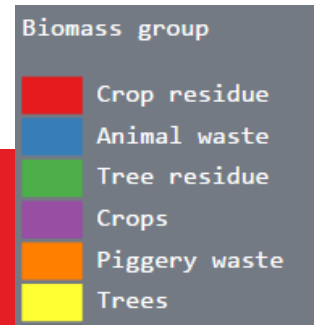
AREMI, Data61 and Geoscience Australia, do not warrant, and are not liable for the accuracy of the information and data on the AREMI website.

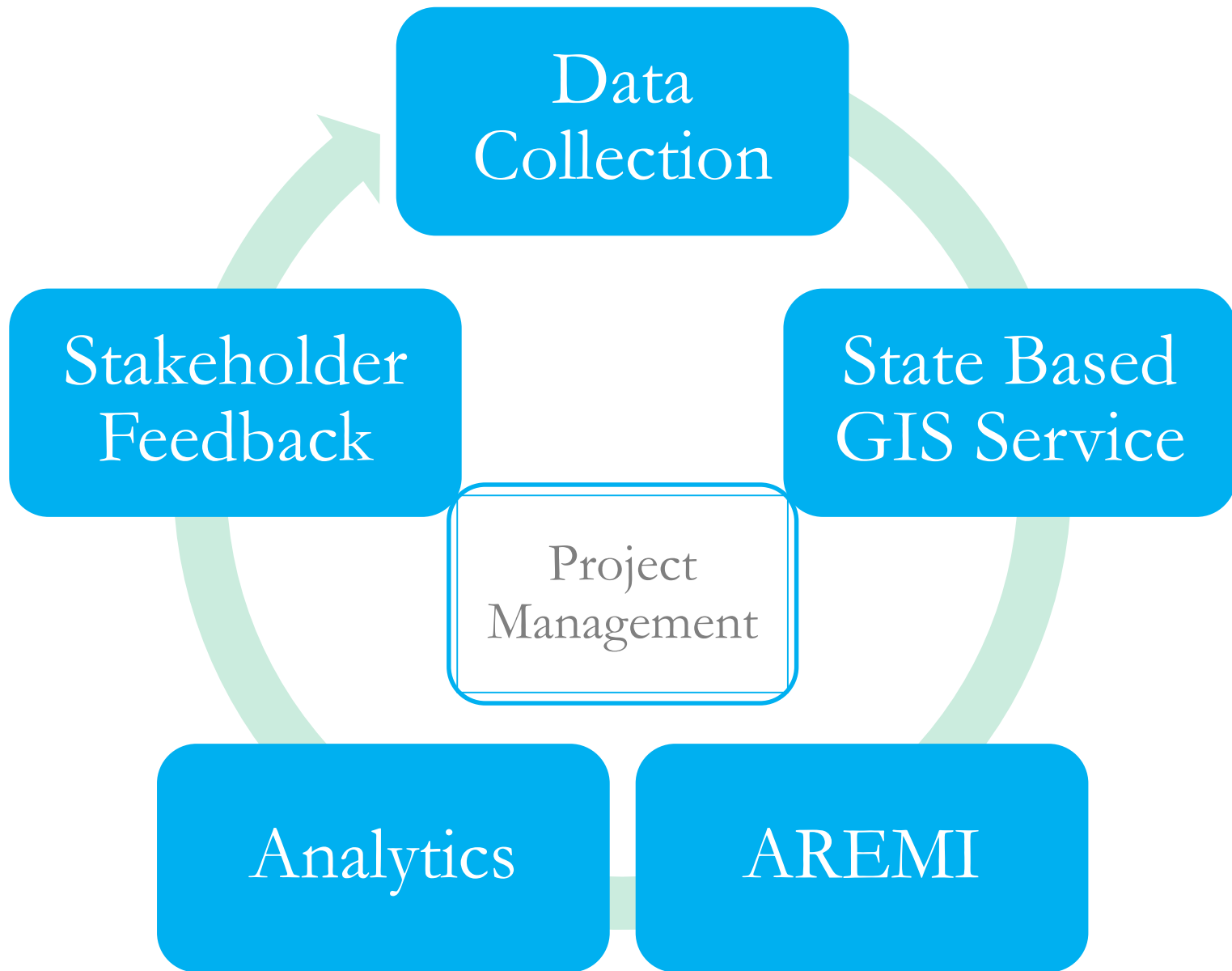
I Agree

Biomass Projects - Electricity, fertiliser and 100 megalitres of water saved from pig waste

Type	Project
Title	Electricity, fertiliser and 100 megalitres of water saved from pig waste
Latitude	-34.924386
Longitude	117.79086
Biomass group	Piggery waste
Biomass type	Piggery waste
Market	
Summary	With over 20,000 pigs in 2011, the Berrybank Farm piggery collects methane from the piggery waste to generate electricity for the farm, feeding any excess into the electricity grid, producing potting mix and fertiliser from the waste and saving over 100 megalitres of water annually. The piggery invested \$2 million in the bioenergy system.
Read more:	Turning piggery waste into electricity - DPI Victoria
URL	http://biomassproducer.com.au/project/electricity-fertiliser-and-100-megalitres-of-water-saved-from-pig-waste/

[Download this Table](#)



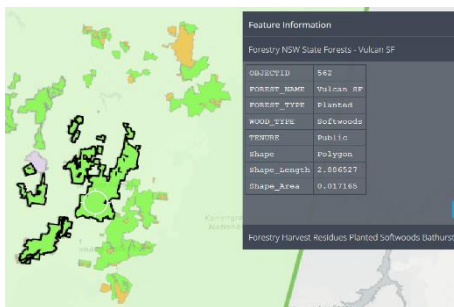
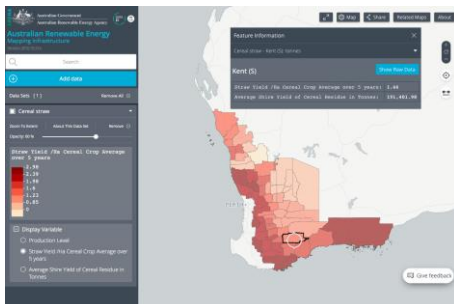


Spatial Data Layers

Biomass Feedstocks mapped to April 2017

WA

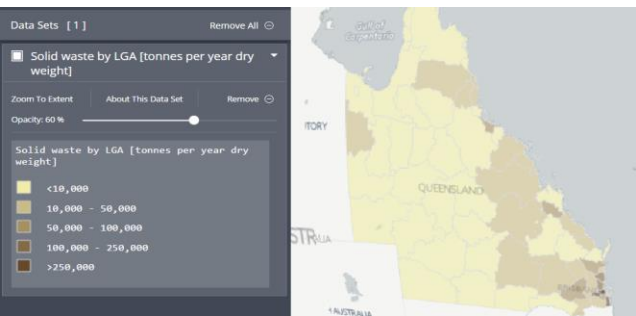
- Cereal Straw
- Oil Mallee plantings
- Grape Marc
- Cattle Feedlots
- Seaweed Wrack



NSW

- Cropping Residues
- Forestry
- Wood Processing Facilities

- QLD
- Forestry
- Urban Waste
- Sugarcane



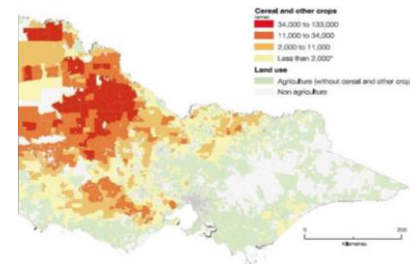
TAS

- Forestry:
- Harvest Residues –
- Hardwood/Softwood
- 2014-2018 + estimates to 2043



VIC

- Cropping Residues
- Forestry & Wood Production
- Livestock
- Waste Management
- Food Processing



South Australian data

Horticulture

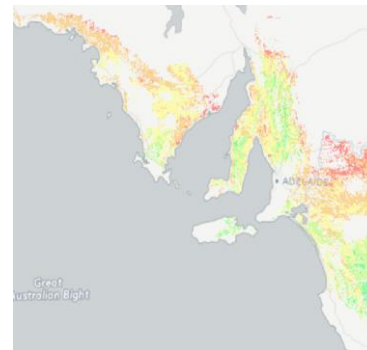
Livestock

Cropping Residues

Simulated Residual Straw

Green Triangle Forestry production

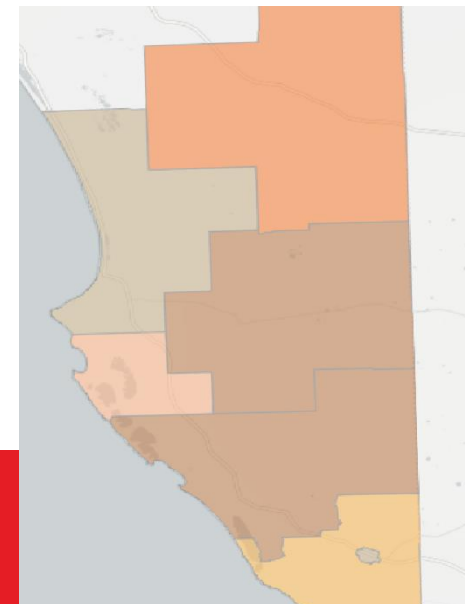
SE SA Biomass Mapping



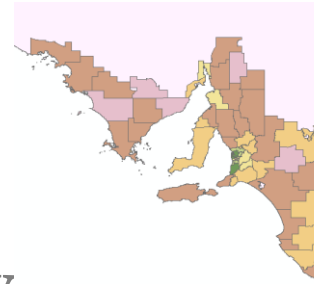
LGA South East SA BIOMASS - Grant	
OBJECTID	5
REGION TYPE	Local Government Area - LGA
REGION NAME	Grant
RESIDUE TYPE	South East South Australia R
RESIDUE UNIT	Tonnes pa
BIOMASS DESCRIPTION	Locations and aggregate amount Australia
TIMEFRAME	2014
TOTAL RESIDUES	2,986,951
MINIMUM	2,000,000
MAXIMUM	4,000,000
Crop Residues	1,000,000 - 2,000,000
Manufacturing & Processing Residues	2,000 - 5,000
Animal Waste	1,000,000 - 2,000,000
Municipal Solid Waste/Construction & Industry	2,000 - 5,000

South Australia

- Agriculture
 - Simulated Residual Straw
 - Cereal Straw
 - Non Cereal Straw
- Horticulture
 - Fruit & Nuts
 - Vegetables
- Livestock
 - Cattle
 - Poultry
 - Sheep
- South East SA - LGA
 - LGA South East SA BIOMASS
 - SE SA Biomass Landuse



Coming up.....



Municipal Solid & Liquid Waste
Construction & Demolition
Commercial & Industrial
Forestry Residues



Green Triangle, KI and Mt Lofty Ranges
Timber Processing Residues



And...

Livestock – Piggeries (National dataset)

Winery and Vineyard Residues (National dataset)



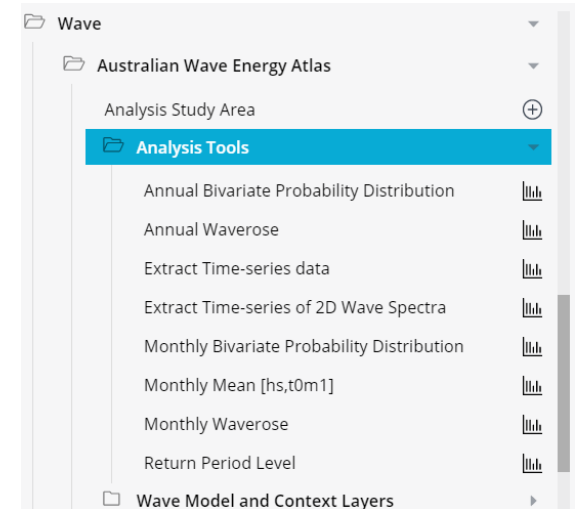
ANALYTIC TOOLS

Queensland University of
Technology

University of the Sunshine Coast
+ PhD Students

Users will be able to interact with
the platform & select scenarios

Survey undertaken to measure
stakeholders' preferences for
different types of assessments



AREMI - Demonstration

<http://nationalmap.gov.au/renewables/>

Australian Government
Australian Renewable Energy Agency

Version: 2017-05-30b

Search

Add data

Data Sets [1] Remove All

MapServer

Zoom To Extent About This Data Set Remove

Opacity: 60 %

Data Catalogue My Data

- Cattle Meat Dairy
- Cereal Straw
- Fruit Nuts
- Green Triangle Forestry
- Hay Silage
- Municipal Organic Waste
 - Municipal Solid Waste**
 - Non Cereal Straw
 - Nursery Flowers Turf
 - Poultry
 - SE Biomass
 - Sheep
 - Simulated Residual Straw 5pc Reduced Rainfall
 - Simulated Residual Straw 10pc Reduced Rainfall
 - Simulated Residual Straw 20pc Reduced Rainfall
 - Simulated Residual Straw Average Rainfall

DATA PREVIEW

Remove from the map

Leaflet | © OpenStreetMap contributors ODbL, © CartoDB CC-BY 3.0, Office of Local Government

Municipal Solid Waste

Data Description

This dataset was derived from Local Government kerbside collection data (2014-15) collected by the Office of Local Government. Municipal residue volumes may vary from year to year. Future biomass data sets could consider providing a range for these biomass residue volumes, which may better reflect the uncertainties in annual volumes that may be generated. It is also important to recognise that source separated organic residues will already be subject to some type of resource recovery and reuse (e.g. manufacture of mulch and compost products, anaerobic digestion for energy production). Future data sets could quantify this resource recovery activity.

See RenewablesSA website for more information including metadata and data sources. <http://www.renewables.sa.gov.au/investor-information/bio-energy-roadmap/biomass->

Municipal Solid Waste

- No Data
- 1 - 200
- 201 - 2,000
- 2,001 - 6,000
- 6,001 - 15,000
- 15,001 - 25,000
- 25,001 - 37,000

Feature Information

MapServer - Onkaparinga (C)

OBJECTID	40
SHAPE	Polygon
REGION TYPE	Local Government Area - LGA
LGA NAME	Onkaparinga (C)
RESIDUE TYPE	Municipal Solid Waste - Biomass Residues
RESIDUE UNIT	Green Metric Tonnes
BIOMASS DESCRIPTION	Biomass residues for Municipal Solid Waste and Other Municipal waste
TIMEFRAME	2014 - 2015
TOTAL RESIDUES	36530
SOURCE SEPARATED ORGANICS	12000
ORGANICS FROM RUBBISH	17000
OTHER ORGANICS	7530

AREMI

ABBA

Data that is on AREMI so far is a first pass

Engagement with industry to validate and provide feedback

Continuity plan for usefulness & longevity of ABBA

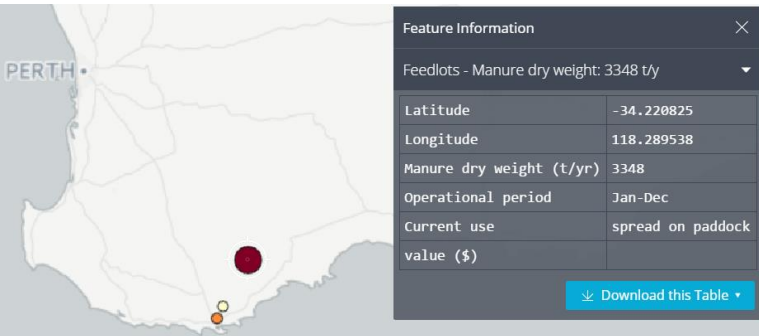
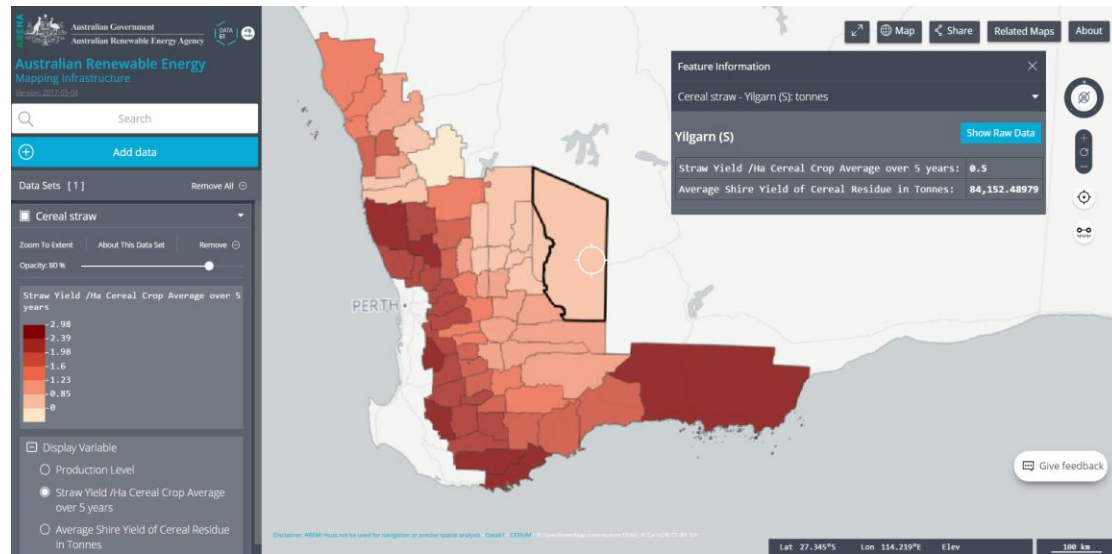
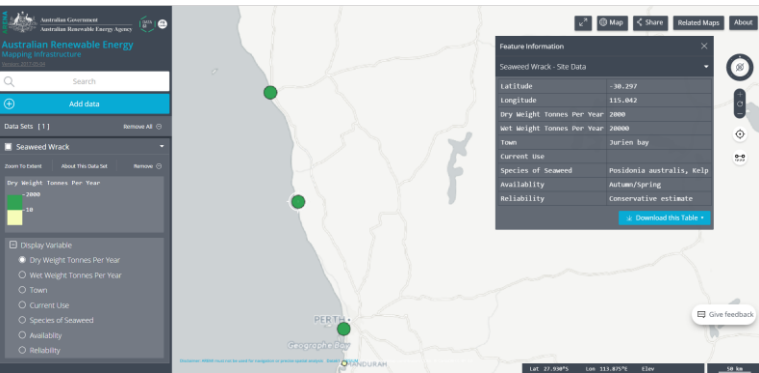
Advocacy and awareness raising in the community
e.g. Bioenergy Roadmap Forums and pre-feasibility grants



THANK YOU



Biomass Feedstocks - Western Australia



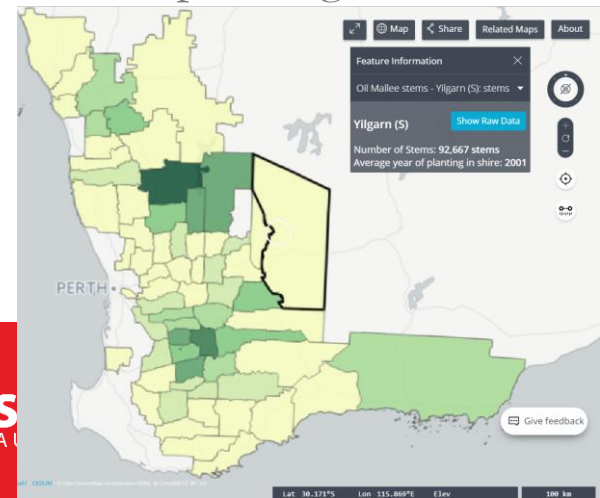
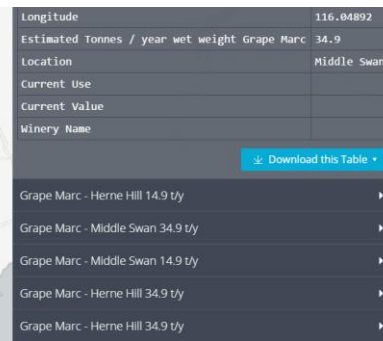
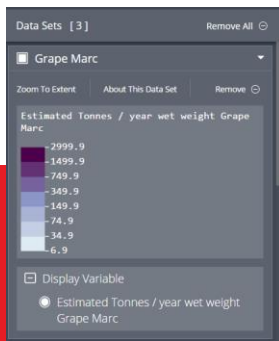
Seaweed Wrack

Cereal Straw

Cattle Feedlots

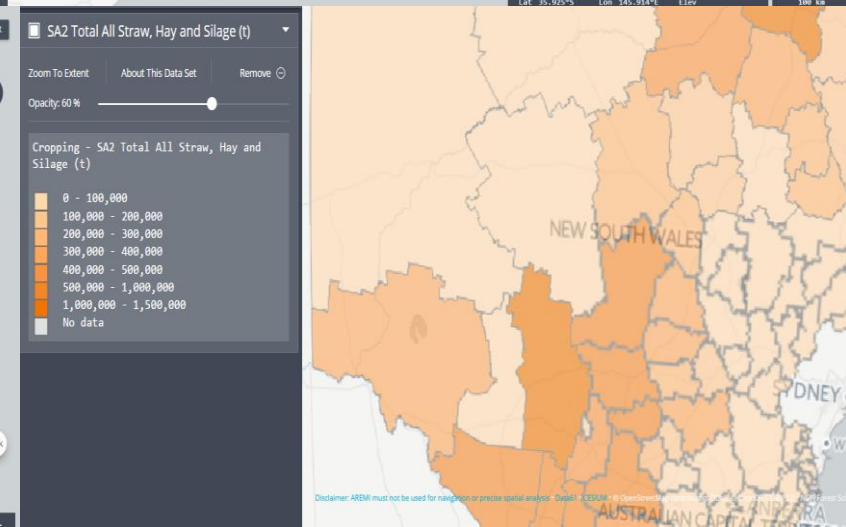
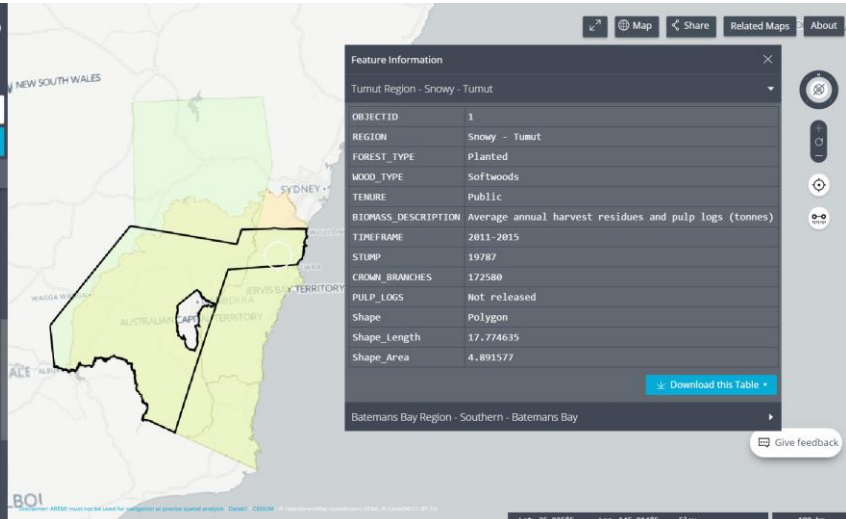
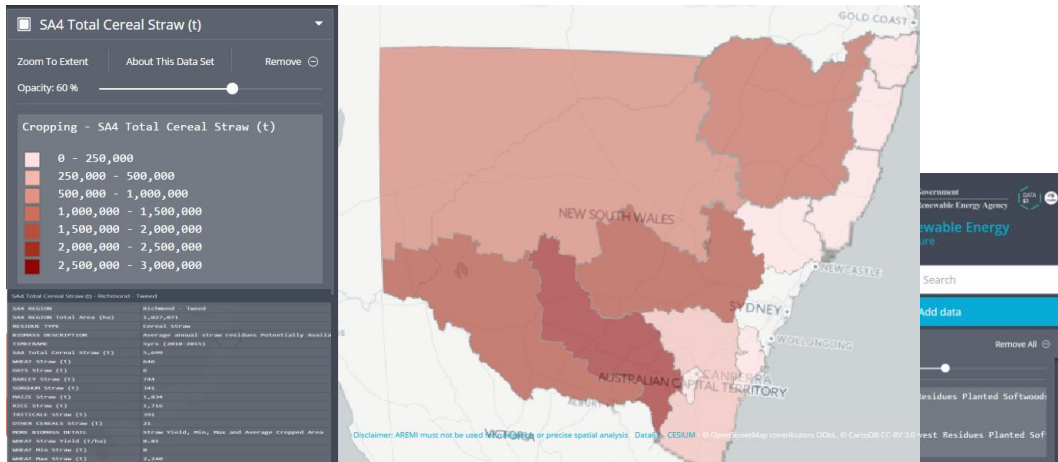
Oil Mallee plantings

Grape Marc



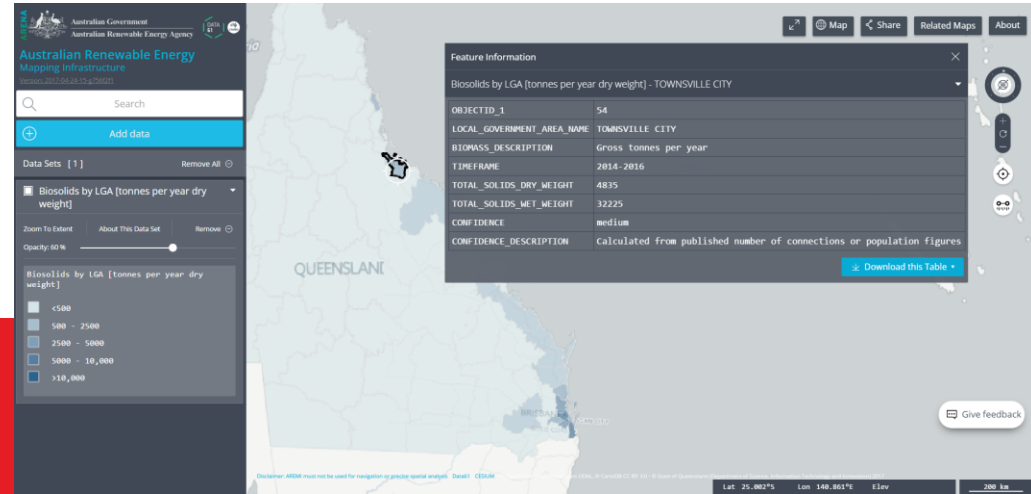
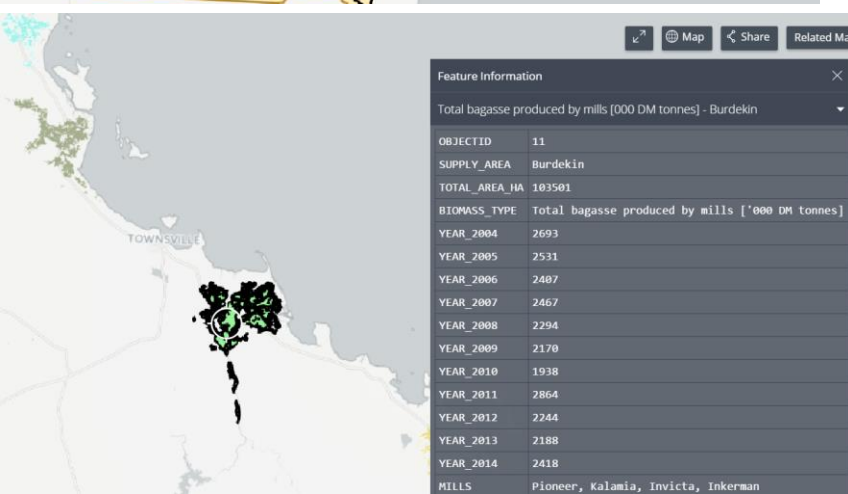
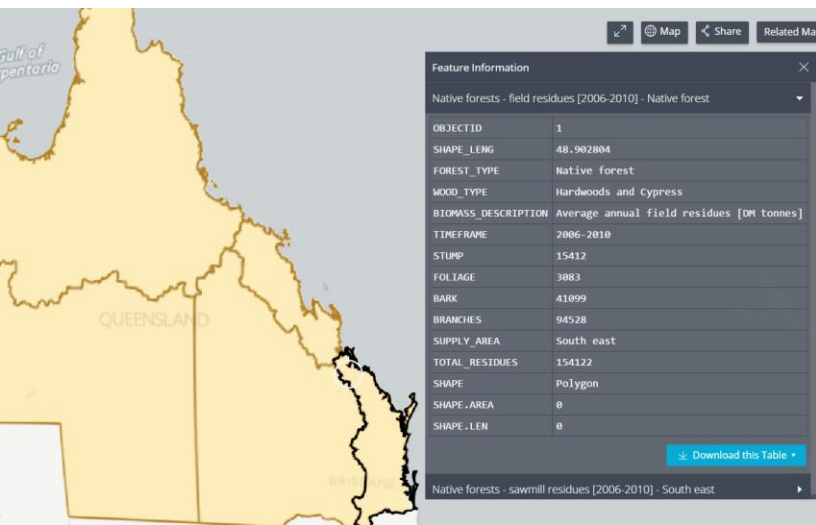
Biomass Feedstocks – New South Wales

Cropping Residues - Forestry
Wood Processing facilities



Biomass Feedstocks – Queensland

Forestry Urban Waste Sugarcane



Biomass Feedstocks – South Australia

Cropping – Livestock - Horticulture
 Simulated Residual Straw
 Green Triangle Forestry
 MSW (Coming)

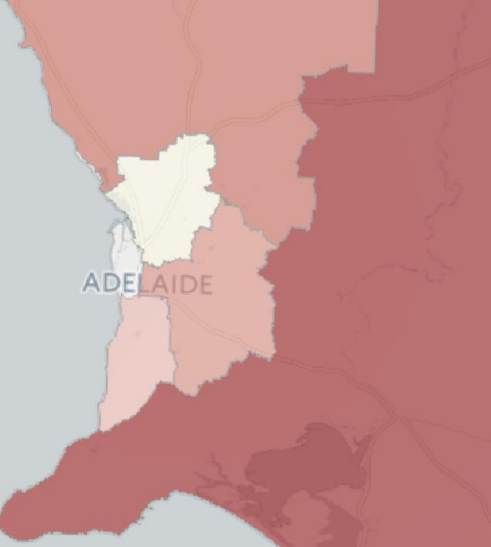
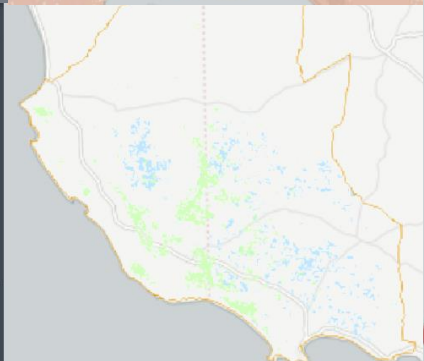
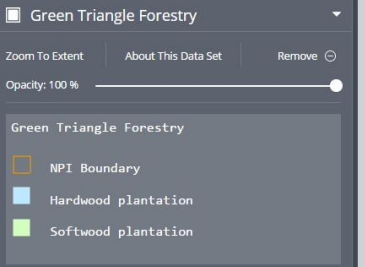
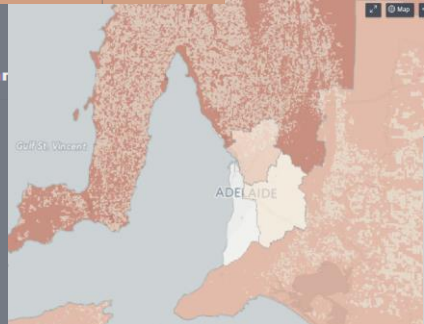
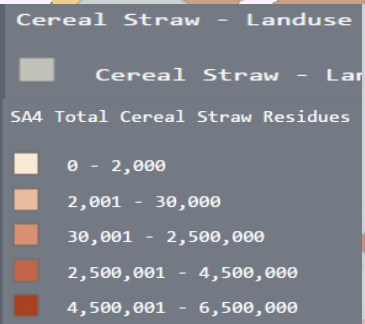
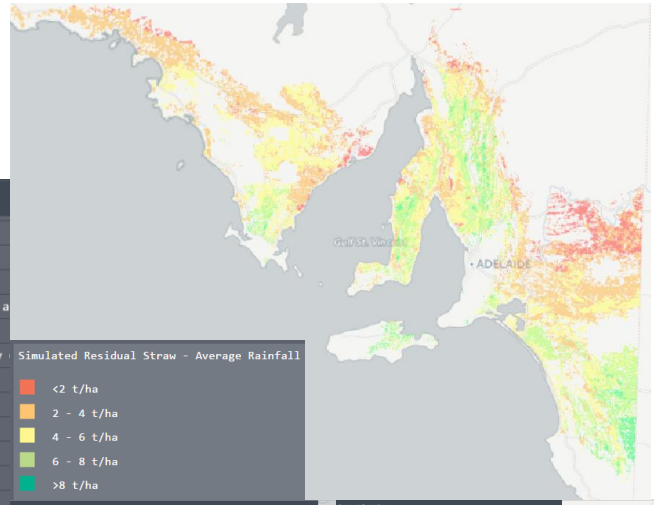
Feature Information

MSW.kmz - Salisbury (C)

Salisbury (C)	
REGION TYPE	Local Government Area - LGA
LGA NAME	Salisbury (C)
RESIDUE TYPE	Municipal Solid Waste - Biomass Residues
RESIDUE UNIT	Tonnes
BIOMASS DESCRIPTION	Biomass residues for Municipal Solid Waste - Kerbside collected
TIMEFRAME	2014 - 2015
TOTAL RESIDUES	32,180
MINIMUM	<Null>
MAXIMUM	<Null>
SOURCE SEPARATED ORGANICS	12000
ORGANICS FROM RUBBISH	14000
OTHER ORGANICS	6180
COMMENT	<Null>

SA4 CATTLE - MEAT & DAIRY - Adelaide - Central and Hills

OBJECTID	1
REGION TYPE	ASGS 2011 - ABS SA4
REGION NAME	Adelaide - Central and Hills
RESIDUE TYPE	Manure volumes per annum from Meat and Dairy
RESIDUE UNIT	Tonnes
BIOMASS DESCRIPTION	Manure residues from Meat and Dairy
TIMEFRAME	2014 - 2015
TOTAL RESIDUES	468,176
MINIMUM - Excluding Field Manure	51,386
MAXIMUM - Including Field Manure	468,176
MEAT - Stockyard Manure	3,397
MEAT - Field Manure	273,100
DAIRY - Milking Shed Manure	47,989
DAIRY - Field Manure	143,690



Australian Government
 Australian Renewable Energy Agency

Australian Renewable Energy Mapping Infrastructure
 Version: 2017-05-24-11-2756201

Search

Add data

Data Sets [1] Remove All

LGA South East SA BIOMASS

Zoom To Extent About This Data Set Remove

Opacity: 60%

- 200,000 - 500,000
- 1,000,000 - 2,000,000
- 2,000,000 - 4,000,000
- 4,000,000 - 6,000,000
- 6,000,000 - 8,000,000

Feature Information

LGA South East SA BIOMASS - Mouse Clicked

OBJECTID	8
REGION TYPE	Local Government Area - LGA
LGA NAME	Mount Gambier
RESIDUE TYPE	South East South Australia Region
RESIDUE UNIT	Tonnes per
BIOMASS DESCRIPTION	Locations and aggregate amounts in Australia
TIMEFRAME	2014
TOTAL RESIDUES	288,248
MINIMUM	288,248
MAXIMUM	288,248
Crop Residues	188,000 200,000
Manufacturing & Processing Residues	<1,000
Animal Manure	200,000 300,000
Municipal Waste Construction & Industry	1,000 10,000