



BIOENERGY INDUSTRY DEVELOPMENT IN SOUTH AUSTRALIA

AUSTRALIAN BIOMASS FOR
BIOENERGY ASSESSMENT (ABBA)
&
AUSTRALIAN RENEWABLE ENERGY
MAPPING INFRASTRUCTURE
(AREMI)
&
Funding Opportunities

Bioenergy Seminar

Mt Gambier

6th December, 2018

Mary Lewitzka

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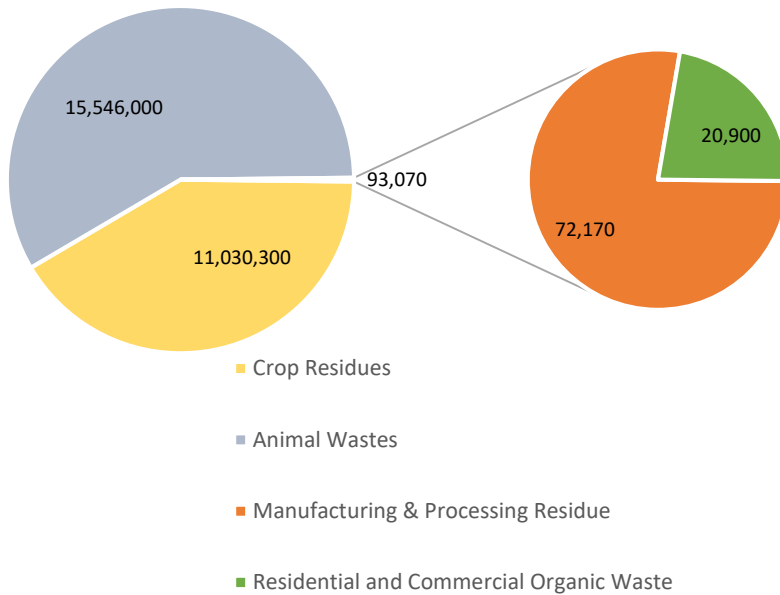
INTRODUCTION

Bioenergy State of Play in SA
Bioenergy Industry Development
Funding Opportunities
Overview of ABBA Project
Overview of AREMI mapping
Datasets & Analytics
Demonstration

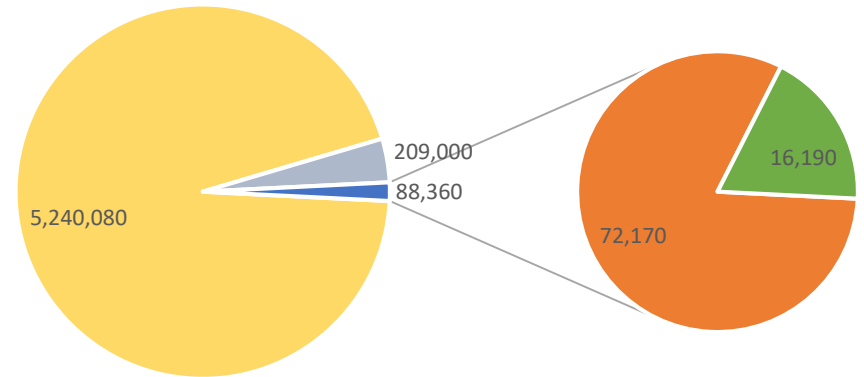


Waste Opportunities Mapping SE SA 2014

Total Waste Biomass (t/p.a.)



Accessible Waste Biomass (t/p.a.)



Forestry data

| Residue Type | Softwood | Hardwood |
|--------------|----------|----------|
| Field | 600484 | 2426200 |
| Mill | 745 | 0 |

27million tonnes per annum – (excludes forestry)

5.5 mtpa accessible (21%)

3 mtpa resource recovered (50% composted or land applied)

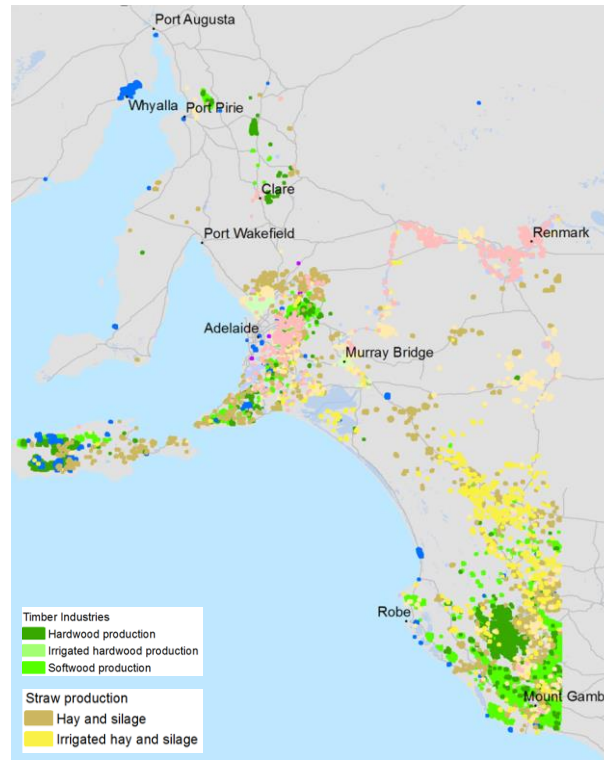
Source: Waste Opportunities Map for the South East; 2014, Zero Waste

Forestry Source: Derived from production volumes contained in the ABARES - National Plantation Inventory, 2015 – 2059

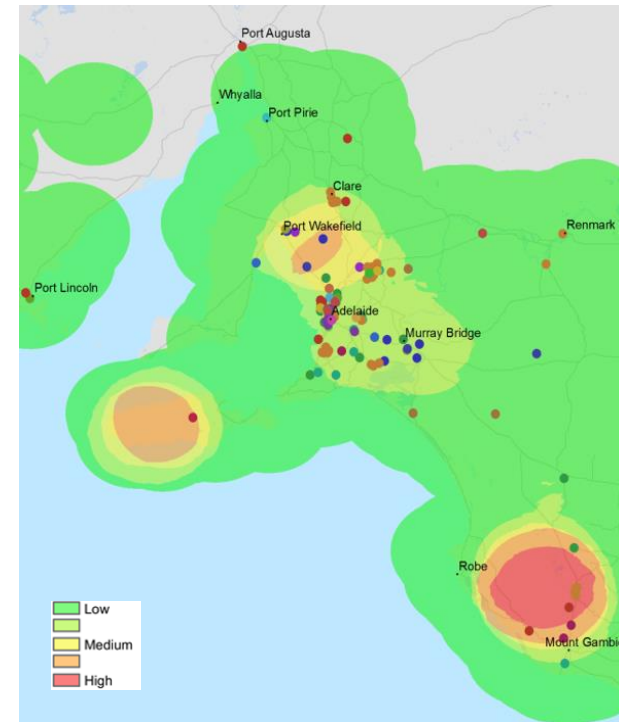
http://www.agriculture.gov.au/abares/forestsaustralia/publications/display?url=http://143.188.17.20/anrdl/DAFFService/display.php?fid=pb_afplsd9aafe20161215.xml

Bioenergy Roadmap for SA 2015

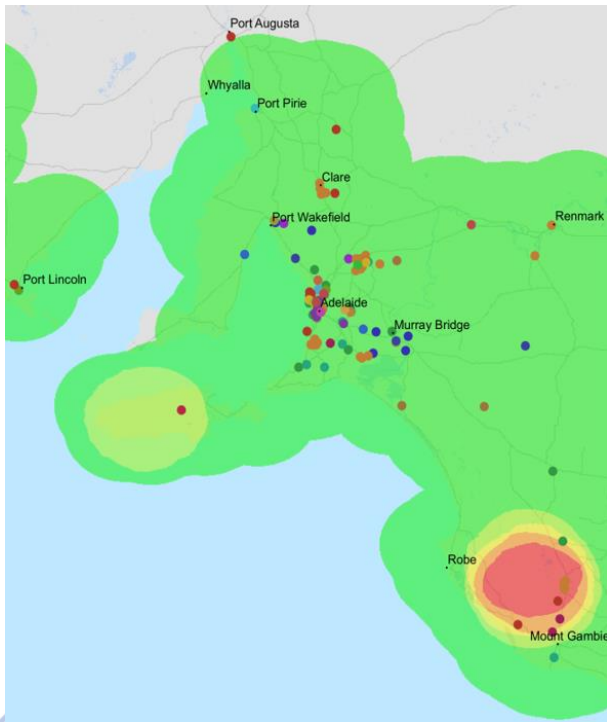
Resource map for existing sources



Waste stream energy potential



Solid biomass energy potential



Hot Spot Maps

Bioenergy Roadmap for SA

Identified in SA:

- Tapped and untapped existing sources of biomass - geographically
- 'Hotspots' – considers biomass generation and energy use
- Feasibility had not been identified in Roadmap
- Next steps
 - Consult with stakeholders
 - Identify barriers
 - Look at economics incl. value of unconverted biomass



Image Source: <http://www.ecotechalliance.com/markets/biomass/>

Potential Bioenergy Opportunities



Bioenergy Industry Development

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
- Support for pre-feasibility and feasibility



Bioenergy Roadmap Forum - Mt Gambier - Mary Lewitzka
6 views • 2 months ago



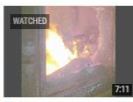
Bioenergy Roadmap Forum - Mt Gambier - Panel Discussion
9 views • 2 months ago



Bioenergy Roadmap Forum - Mt Gambier - David Ford
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Bioenergy Roadmap Forum - Mt Gambier - Terry Kallis
17 views • 2 months ago

Bioenergy Industry Development

Roadblocks and Logistics – Cost, Govt. Policy, distance, economies of scale

Risks – funding, feedstock supply, changing markets

Benefits – waste, energy costs , environment

Policy – incentives, support, red tape

Support – financial,



Bioenergy Connect (Department for Energy and Mining DEM & RDA)

Grid Scale Storage Fund (DEM)

South Australian Demand Management Trials Program (DEM)

Energy Efficiency - (DEM)

Business Sustainability Program Green Industries SA (GISA)

Regional Growth Fund - Primary Industries & Regions SA (PIRSA)

Advancing Renewables Program -Australian Renewable Energy Agency (ARENA)

Research and Development - (ARENA)

Innovation Fund – Clean Energy Finance Corporation (CEFC)

Australian Bioenergy Fund (ABF) - CEFC

Bioenergy and waste management - CEFC

Regional Growth Fund – Australian Government (DIRDC)

Business.gov.au – Australian Government

**STATE AND
COMMONWEALTH
FUNDING
OPPORTUNITIES**



Bioenergy Connect

- 20 pre-feasibility studies supported so far
- Also several feasibility studies
- Provides a low-risk service for participants by filling the knowledge gap at the beginning of the innovation cycle
- Builds SA consultancy expertise
- Establishing and coordinating cross government, industry and regional networks



ABBA

Australian Biomass for Bioenergy Assessment

- National database of biomass resources across Australia to..
- Catalyse investment in the renewable energy sector
- Engagement with industry to validate and provide feedback
- Continuity plan for usefulness & longevity project
- Advocacy and awareness raising in the community
 - e.g. Bioenergy Forums
 - Pre-feasibility grants



ABBA

- 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 AgriFutures

ARENA



Australian Government
Australian Renewable Energy Agency



GOVERNMENT OF
WESTERN AUSTRALIA

QUT

Queensland
University
of Technology



SOUTH
AUSTRALIA



University of the
Sunshine Coast



Tasmanian
Government

DATA
61



VICTORIA

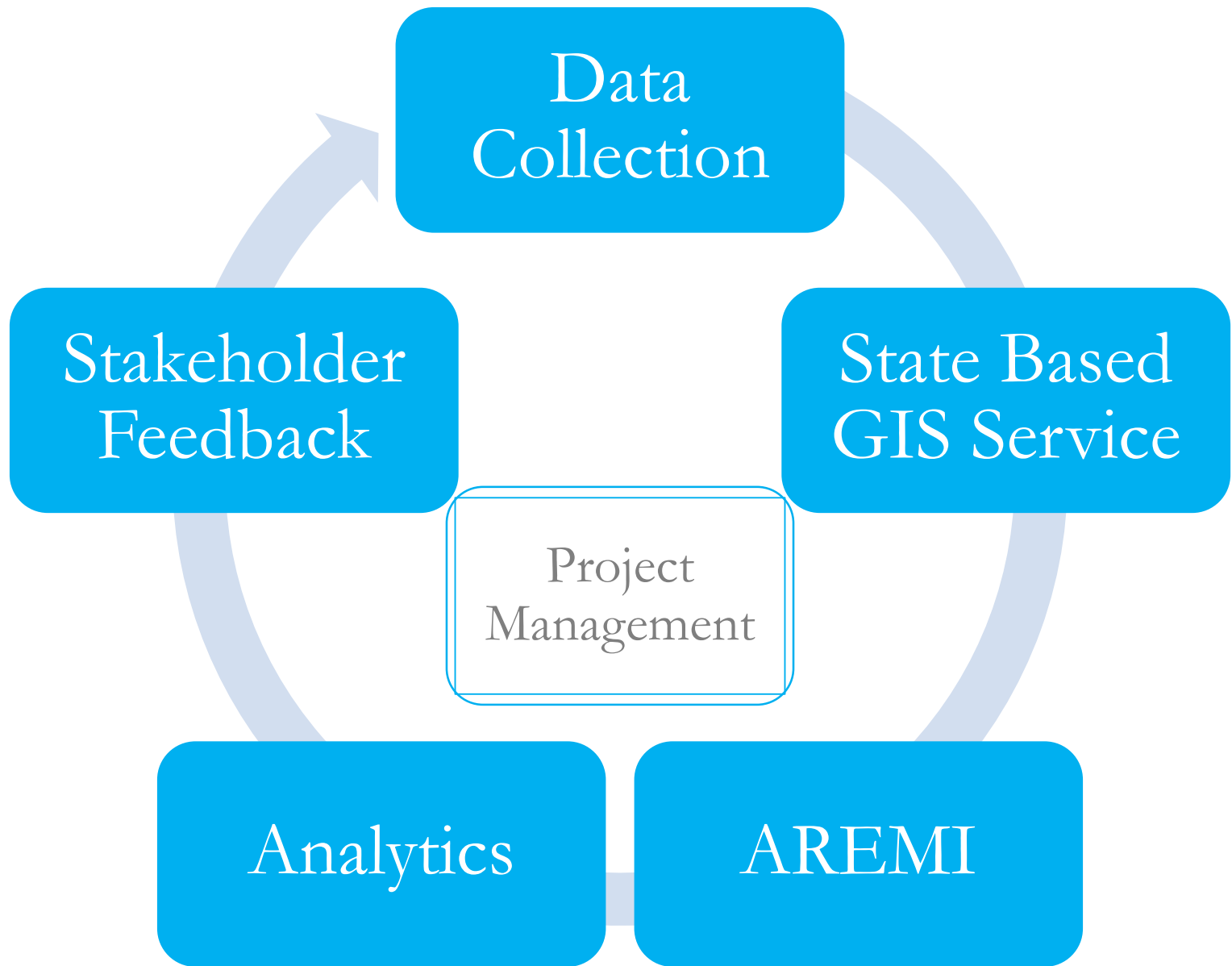


Queensland
Government



NSW
GOVERNMENT

Representative states: Western Australia, South Australia, Tasmania, Victoria, New South Wales and Queensland



ABBA 2

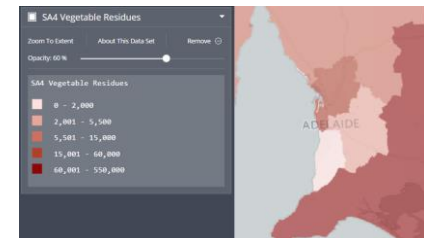
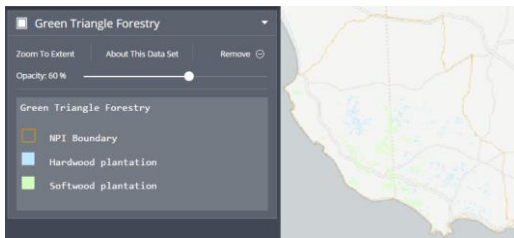
- Spatial data accuracy and currency
- State strategies – policy, support
- Market drivers – collaborate and consult
- Lessons learned e.g. pre-feasibility studies
- Networks and relationships



AREMI

Australian Renewable Energy Mapping Infrastructure

- Part of the ‘National Map’
- 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.

ARENA, 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](#)

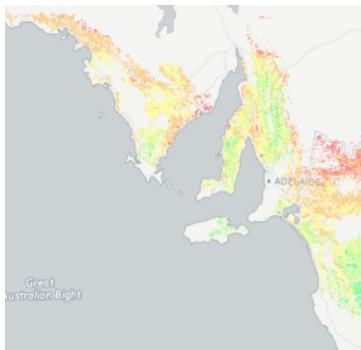
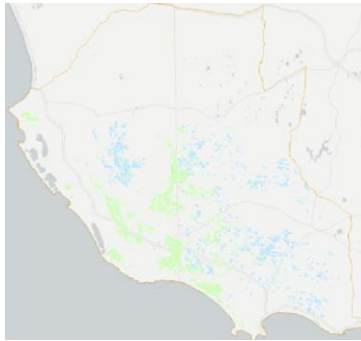
Biomass group

| | |
|--------|---------------|
| Red | Crop residue |
| Blue | Animal waste |
| Green | Tree residue |
| Purple | Crops |
| Orange | Piggery waste |
| Yellow | Trees |



South Australian data

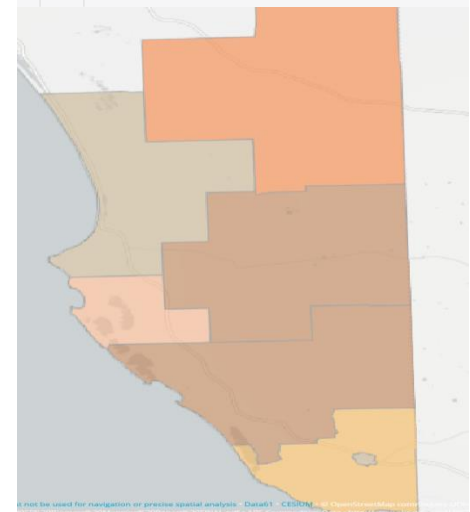
- Horticulture
- Livestock
- Cropping Residues
- Simulated Residual Straw
- Green Triangle, KI and Mt Lofty Ranges Forestry production
- SE SA Biomass Mapping



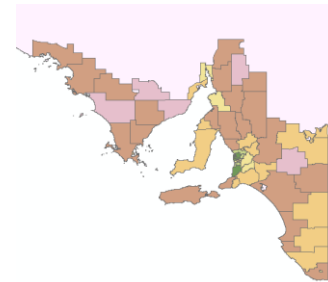
| LGA South East SA BIOMASS - Grant | |
|---|---|
| OBJECTID | 5 |
| REGION TYPE | Local Government Area - LGA |
| REGION NAME | Grant |
| RESIDUE TYPE | South East South Australia R |
| RESIDUE UNIT | Tonnes pa |
| BIOMASS DESCRIPTION | Locations and aggregate amou Australia |
| TIMEFRAME | 2014 |
| 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



SA data contd.....



Municipal Solid & Liquid Waste
Construction & Demolition
Commercial & Industrial



National datasets

Livestock – Piggeries

Winery and Vineyard Residues

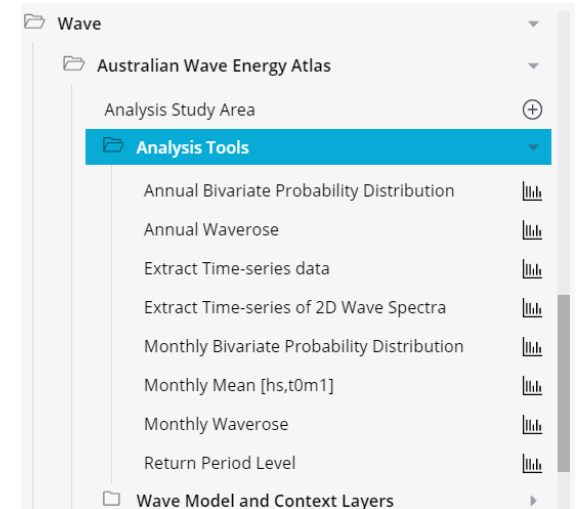


ANALYTIC TOOLS

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






Surveyed stakeholders to measure preferences for different types of assessments

e.g. transport distances and costs



DEMONSTRATION

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

Australian Renewable Energy Mapping Infrastructure
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 Done

- 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

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 Legend

- 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



THANK YOU



Contacts

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Disclaimer

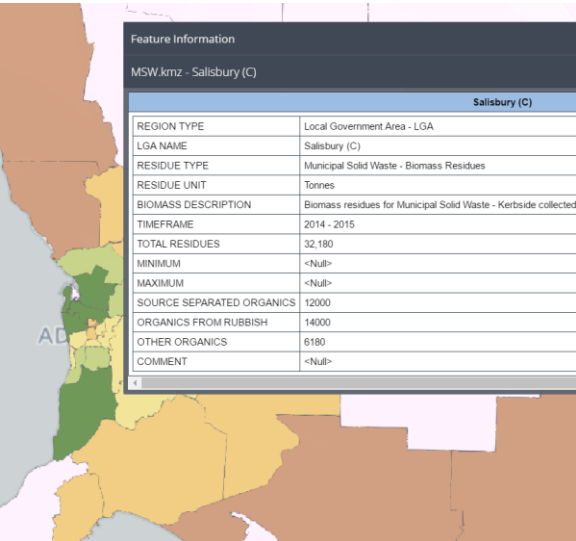
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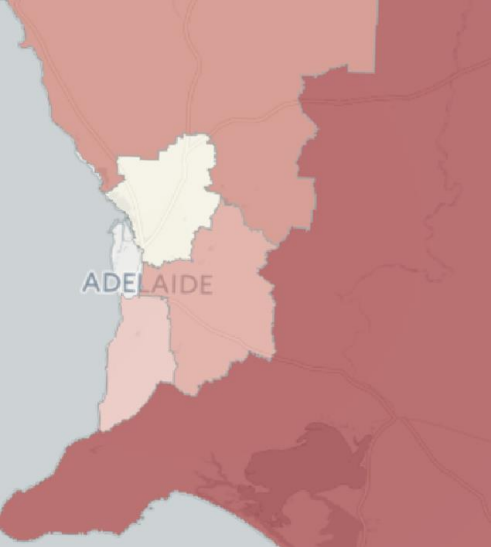
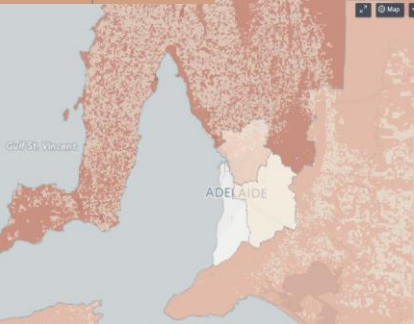
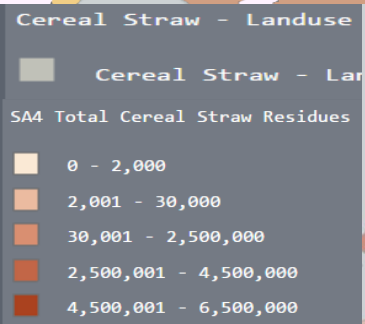
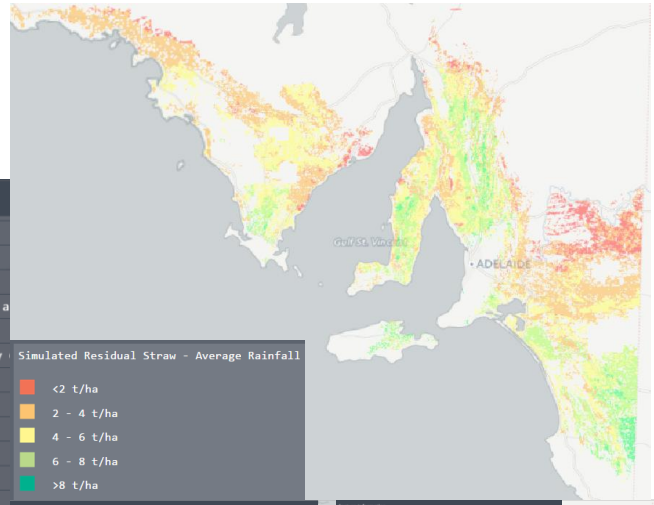


Biomass Feedstocks – South Australia

Cropping – Livestock - Horticulture
 Simulated Residual Straw
 Forestry
 MSW



| 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%

LGA South East SA BIOMASS

- 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

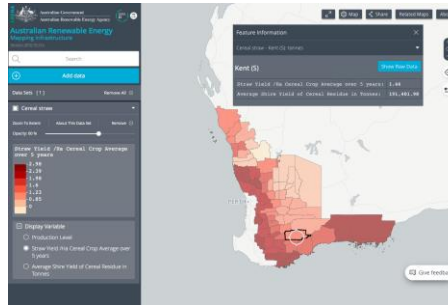
| Feature Information | |
|---|--|
| LGA South East SA BIOMASS - Mouse Clicked | |
| OBJECTID | 8 |
| REGION TYPE | Local Government Area - LGA |
| REGION NAME | Mount Gambier |
| RESIDUE TYPE | South East South Australia Region |
| RESIDUE UNIT | Tonnes per |
| BIOMASS DESCRIPTION | Locations and aggregate 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 |

Spatial Data Layers

Biomass Feedstocks mapped - 2018

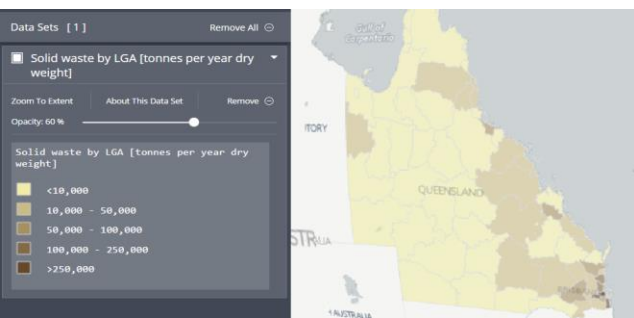
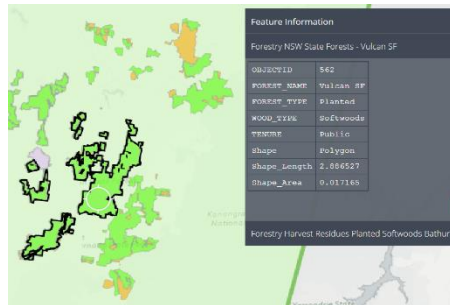
WA

- Cereal Straw
- Grape Marc
- Seaweed Wrack
- Plantations
- Dairy Effluent
- Feedlot Waste
- Broiler Litter Production
- Oil Mallee plantings



NSW

- Agriculture
- Forestry
- Livestock
- Urban Waste

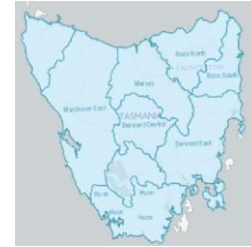


QLD

- Forestry
- Agriculture
- Livestock
- Urban Waste
- Horticulture
- Food Processing

TAS

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



VIC

- Agriculture
- Horticulture
- Forestry
- Urban Waste
- Livestock
- Food Processing
- Waste Management

