



BIOENERGY INDUSTRY DEVELOPMENT IN SOUTH AUSTRALIA

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

Yorke and Mid North Bioenergy Forum

Balaklava Golf Club

21st September, 2018

Mary Lewitzka

Bioenergy Resources Project Officer



INTRODUCTION

Why Bioenergy?
Bioenergy Industry Development
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

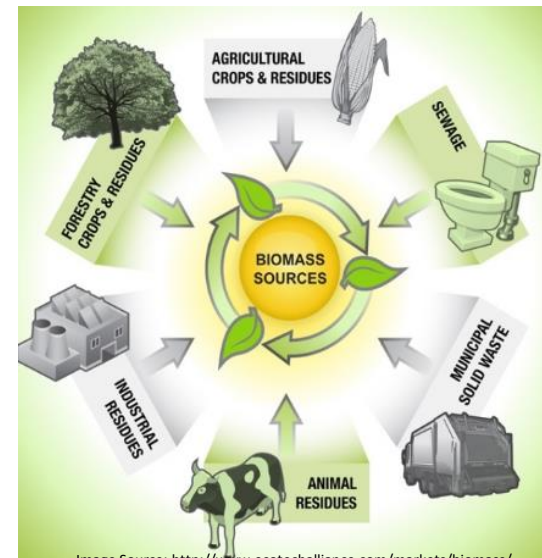


Image Source: <http://www.ecotechalliance.com/markets/biomass/>

Bioenergy Technology

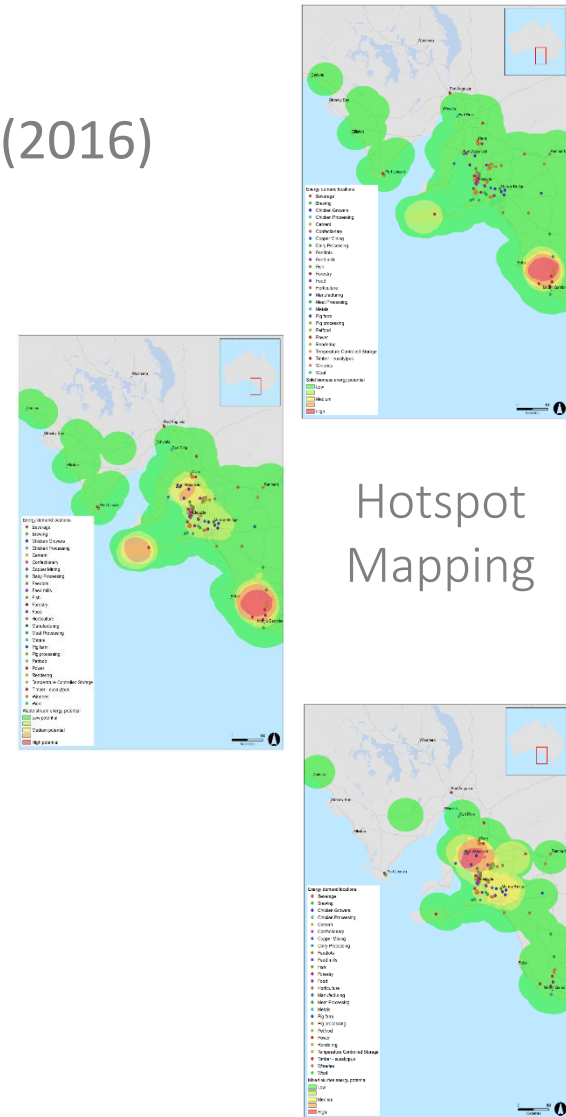
- Combustion of waste crop material, purpose grown crop material, municipal and commercial wastes to produce heat and electricity
- Digestion of wastes to produce gas for heating, conversion to electricity or injection into gas reticulation systems
- Conversion of biomass to produce bio-fuels
- Capture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



In South Australia the capture of gas from decomposing wastes is the more typical application.

Bioenergy Industry Development

- Bioenergy Roadmap for South Australia Report (2016)
- Identifies hotspot areas:
 - Sufficient feedstock quantities
 - Matched demand for heat and electricity with conversion technologies
 - Logistical issues: e.g. transport costs, energy infrastructure
- GIS data loaded onto web-based application



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

Feasibility Funding and Grants



ABBA

Australian Biomass for Bioenergy Assessment

- 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

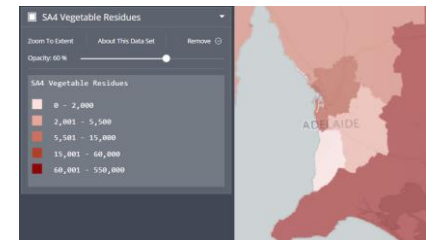
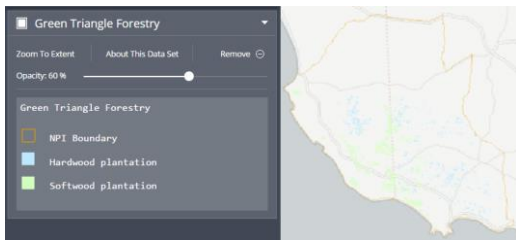
AREMI

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

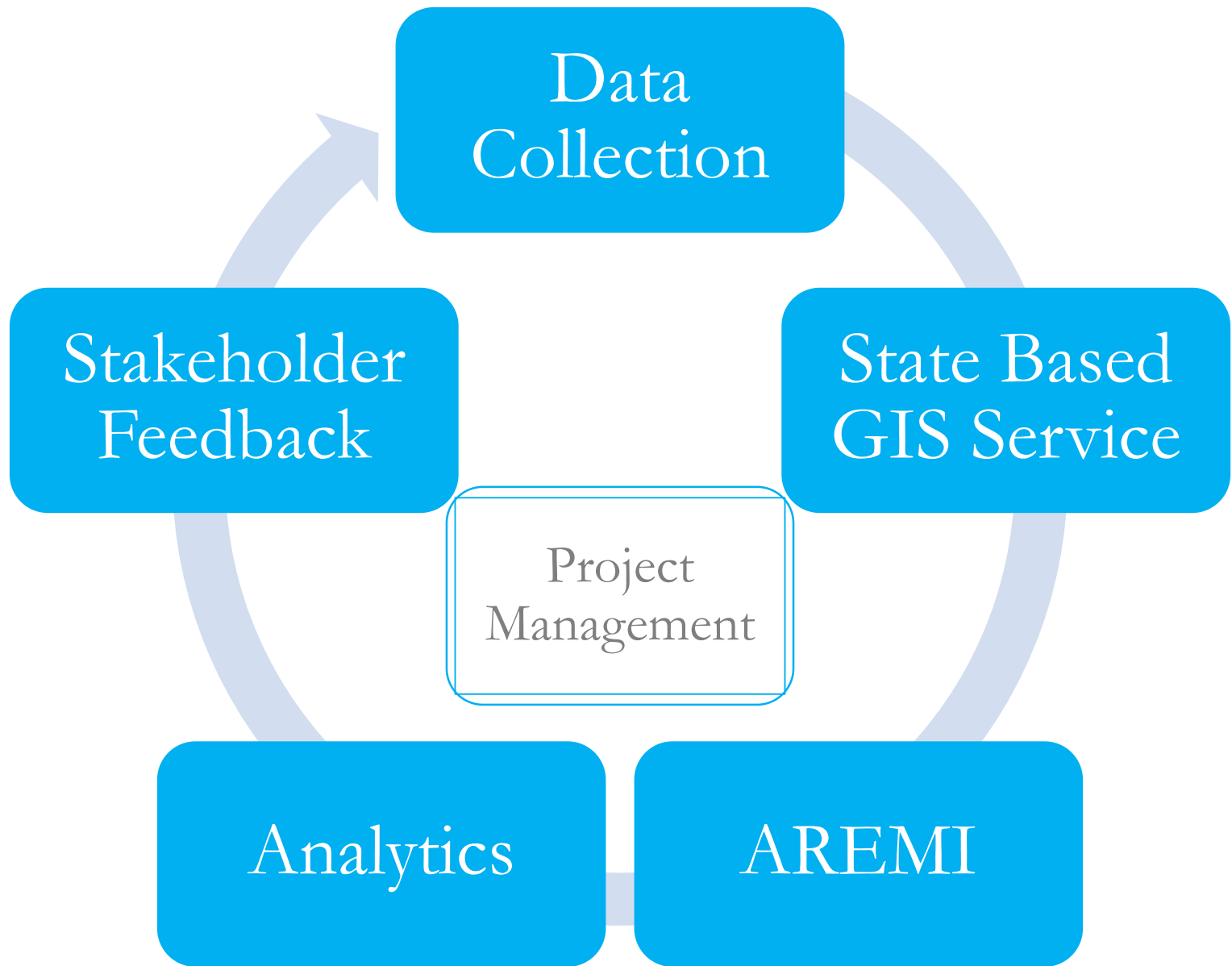
Type	Project
Title	Electricity, fertiliser and 100 megalitres of water saved from pig waste
Latitude	-34.924386
Longitude	117.79086
Biomass group	Piggery waste
Biomass type	Piggery waste
Market	
Summary	With over 20,000 pigs in 2011, the Berrybank Farm piggery collects methane from the piggery waste 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:	Using 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

	Crop residue
	Animal waste
	Tree residue
	Crops
	Piggery waste
	Trees



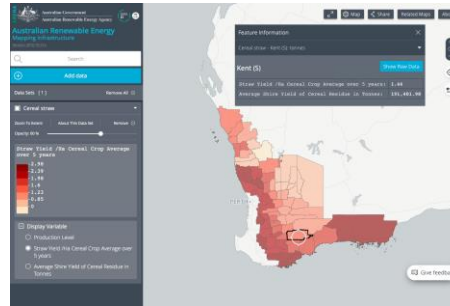


Spatial Data Layers

Biomass Feedstocks mapped - 2018

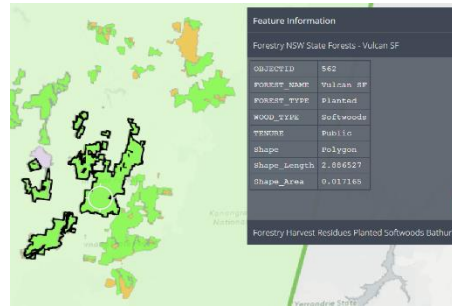
WA

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

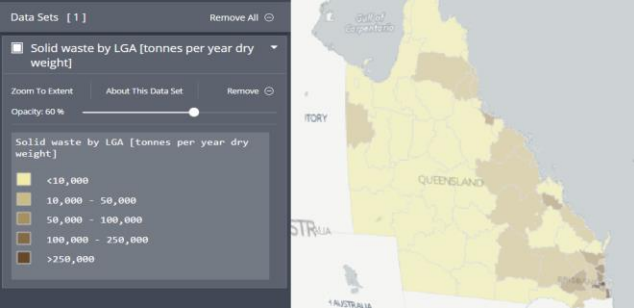
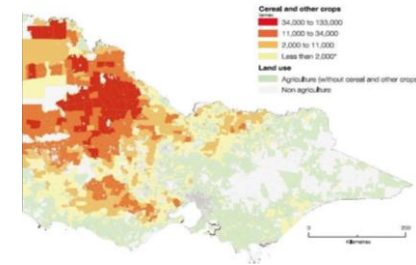
TAS

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



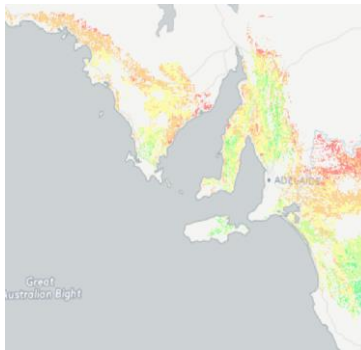
VIC

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



South Australian data

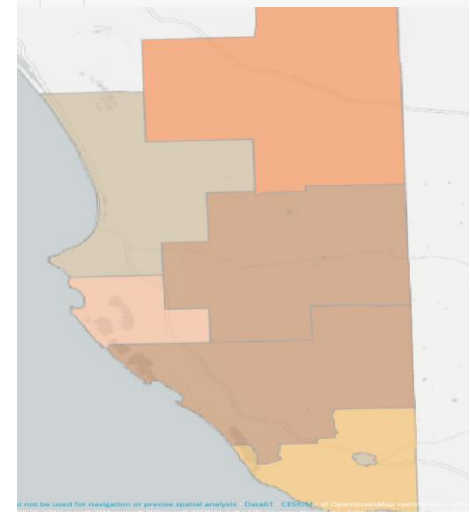
- Horticulture
- Livestock
- Cropping Residues
- Simulated Residual Straw
- Green Triangle, KI and Mt Lofty Ranges Forestry production
- SE SA Biomass Mapping



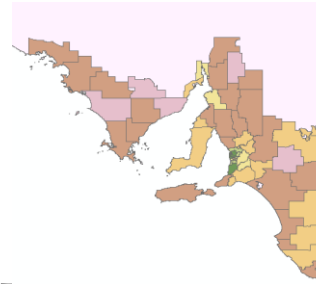
LGA South East SA BIOMASS - Grant	
OBJECTID	5
REGION TYPE	Local Government Area - LGA
REGION NAME	Grant
RESIDUE TYPE	South East South Australia R
RESIDUE UNIT	Tonnes pa
BIOMASS DESCRIPTION	Locations and aggregate amou Australia
TIMEFRAME	2014
TOTAL RESIDUES	2,986,951
MINIMUM	2,000,000
MAXIMUM	4,000,000
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



And...

Livestock – Piggeries (National dataset)

Winery and Vineyard Residues (National dataset)



ANALYTIC TOOLS

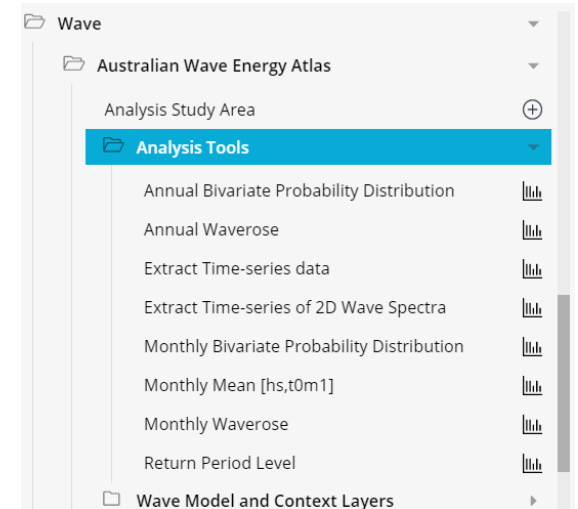
Queensland University of
Technology

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



UPDATES AND CONTINUITY


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





Australian Renewable Energy Mapping Infrastructure
Version: 2017-05-30b

Search

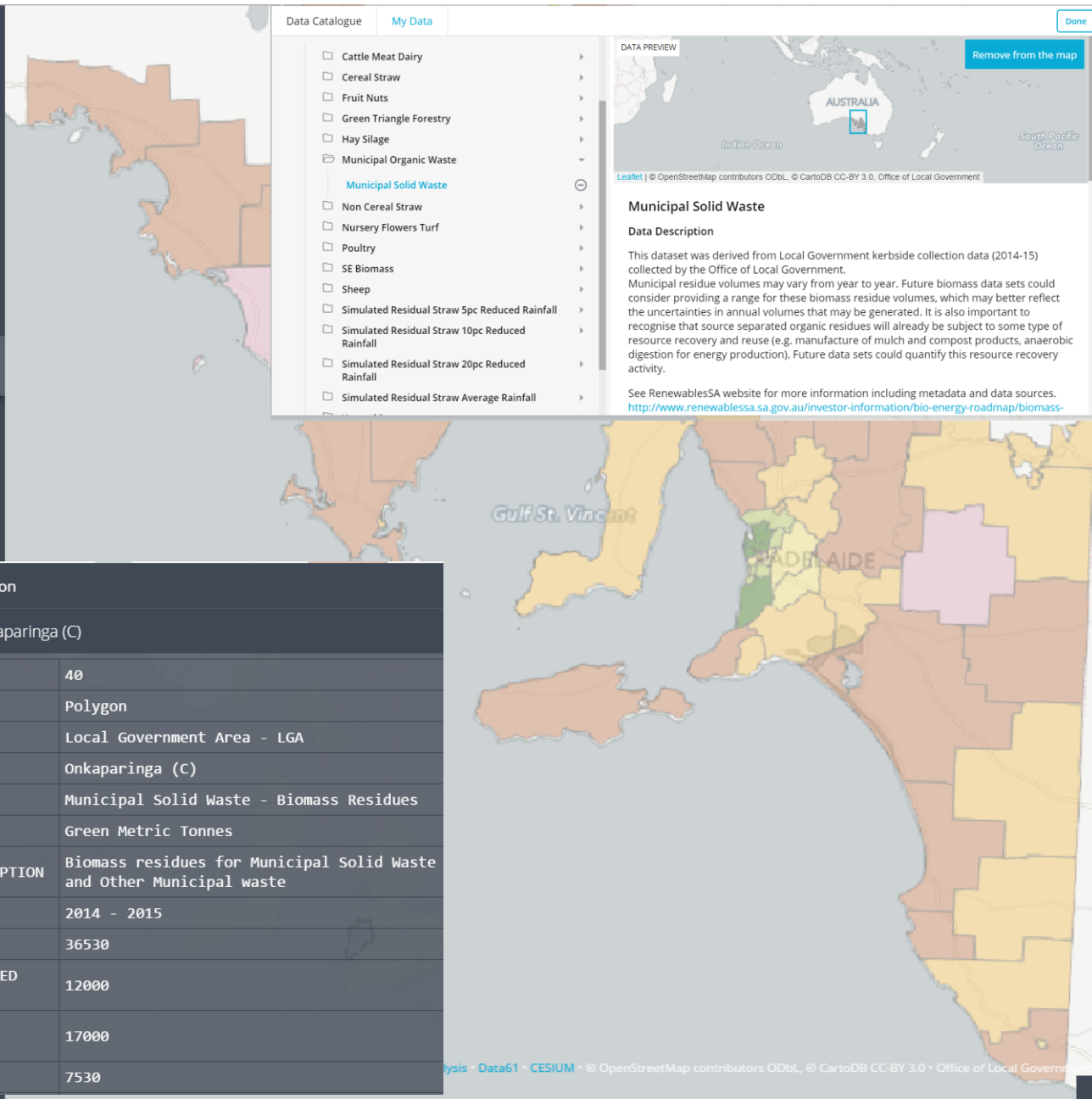
Add data

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

DATA PREVIEW



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

Biomass Feedstocks – South Australia

Cropping – Livestock - Horticulture
 Simulated Residual Straw
 Forestry
 MSW

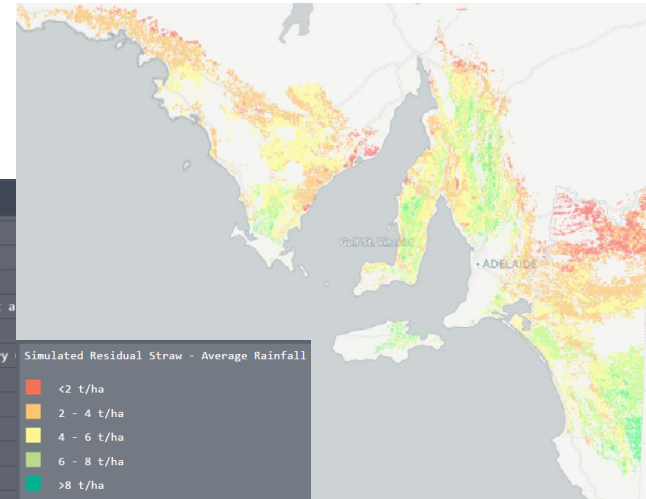
Feature Information

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

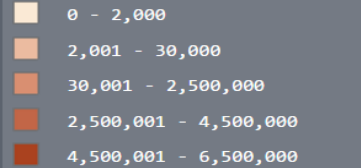
OBJECT ID	1
REGION TYPE	ASGS 2011 - ABS SA4
REGION NAME	Adelaide - Central and Hills
RESIDUE TYPE	Manure volumes per annum from Meat and Dairy
RESIDUE UNIT	Tonnes
BIOMASS DESCRIPTION	Manure residues from Meat and Dairy
TIMEFRAME	2014 - 2015
TOTAL RESIDUES	468,176
MINIMUM - Excluding Field Manure	51,386
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



Cereal Straw - Landuse

Cereal Straw - Landuse

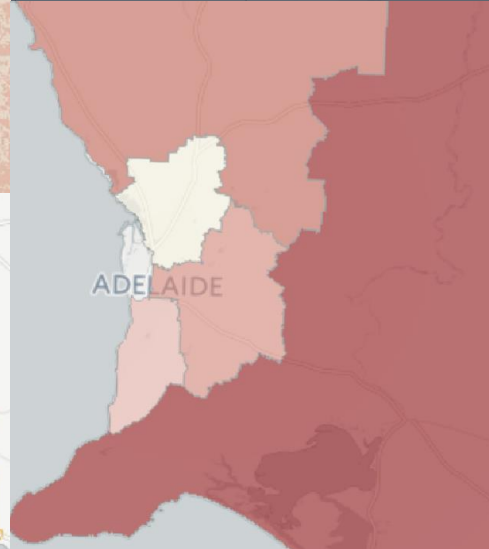
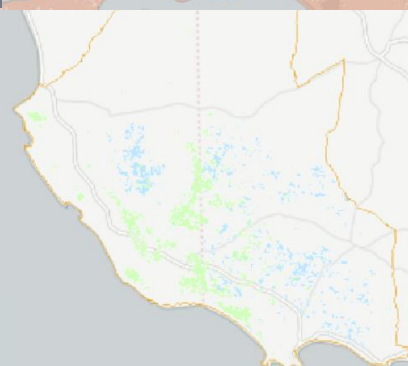
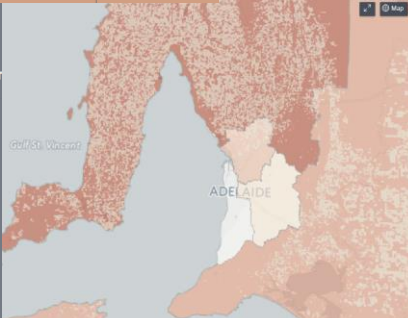
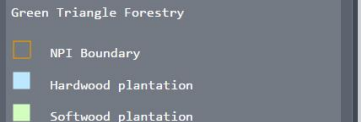
SA4 Total Cereal Straw Residues



Green Triangle Forestry

Zoom To Extent About This Data Set Remove

Opacity: 100%



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

OBJECT ID	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 Solid Waste/Construction & Industry	1,000 10,000

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

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