

WMLIG Agri-Innovation Precinct – Organic Waste Circular Economy Pilot

COUNCIL NAME

Murray River Council

WEB ADDRESS

<https://www.murrayriver.nsw.gov.au/Home>

SIZE

11,865 square
kilometres

POPULATION

12,000

Overview of the project

In 2020, Murray River Council (MRC) developed an [Adverse Event Plan](#) (AEP) via input from the local community to prepare for and recover from the impact of adverse events – be it drought, flood, fire or pandemic. To support the AEP, Western Murray Land Improvement Group (WMLIG) has developed a WMLIG Agri-Innovation Precinct – Organic Waste Circular Economy Pilot supported by Murray River Council's (MRC) [Building Our Communities in Advance Project](#), via funding from Local Government NSW.

The project builds on resilience principles and strategies of the AEP, 'support continuous learning and improvement', and prepare for a 'community led recovery' by 'building resilience with adaptive methods' and 'diversify the economy and capture value at home'.

WMLIG has developed an [Agri-innovation Precinct Proposal](#) in line with MRC's priority to 'grow, strengthen and sustain agriculture' over the next 20 years and beyond to support local business to access or develop and introduce advanced technologies.

Aligning to the Agri-innovation Precinct Proposal, WMLIG has applied the concepts to a pilot circular economy concept funding application through the [One Basin CRC](#) (1BCRC). MRC and WMLIG has provided in principle sponsorship of \$10K each to be Tier 3 partners in the 1BCRC. WMLIG has also contributed \$1,700 via MRC's Building Our Communities in Advance Project to a private business, Impact Innovation for design and development of a 1BCRC QuickStart Project Proposal titled "Producing novel biological products to increase production and reduce environmental impacts". This proposal was used for the final 1BCRC proposal titled 'Organic Waste Conversion – Generating useful products and inputs for agriculture and food and fibre manufacturing industries'.

How the project was carried out

A literature review was conducted to inform the Agri-innovation Precinct Proposal indicating alignment to priority strategic focus areas identified by CSIRO, DPIE, WMLIG and MRC.

WMLIG and MRC are using the proposal as a reference document to leverage funding opportunities in the future.

Outcomes now and in the future

Current opportunity:

To date the project has supported involvement in a 1BCRC proposal for a collaborative organic waste circular economy pilot proposal (review due 25 March 2022). This project is the result of a biochar cluster group being formed via funding from the [Murray Darling Basin Economic Development Program](#). The program has funded cluster group support as well as two organic waste to biochar pyrolysis trials that will commence in April 2022. One pyrolysis (char maker) trial is being conducted by [Earth Systems](#) in Melbourne which will convert rice straw to biochar (the stubble is generally burnt in paddock creating smoke and particulate matter (PM25 & PM10) emissions) and conduct a chemical analysis on outputs (biochar, syngas emissions, wood vinegar). The other trial involves the hire of a pyrolysis unit in the MRC area to convert waste feed stock such as red gum timber waste to biochar. WMLIG has received interest from businesses requiring biochar and wood vinegar product outputs to on-sell and meet client demands.

The project is seeking funding for a collaboration on different phases of project deliverables in the future to produce economic, social, cultural and environmental outcomes which is summarised in Table 1.

Biochar has potential to provide long term (>100 years) soil carbon sequestration and agricultural productivity benefits. Globally, consumers are becoming more discerning about the impact of food production on climate change and the origins of products and their production back-story. This process has huge potential to sequester and offset carbon to earn carbon credits, reduce resource use, and leverage



REFERENCES

Refer to WMLIG Community Energy Scoping Document

NSW DPIE Report, Western Enabling Regional Adaptation

additional value for local produce from niche markets willing to pay for a healthy and sustainable food production system

Table 1 - Description of organic waste circular economy project pilot objectives and expected outcomes

Project Purpose(s)	Value Delivered (potential outcome)	Targeted user/customer
Creation of a regional innovation ecosystem transferrable to other regions.	Establishment of place-based research partnerships and cross-industry networks that collaborate for technological and innovative solutions. Build resilience by adaptive measures, educate community and instil an “Institutional Innovation” mindset.	Food and fibre producers (MDB producers) Basin Leaders
Reduce financial costs for food and fibre producers; demonstrate potential for new business opportunities, while addressing climate change/resilience-building initiatives and reducing waste.	Improve environmental outcomes. Increase \$/ML water returns (reduce inputs, provide income from carbon economy, value add agricultural wastes). Provide additional income to primary producers. Create new industries (diversification), jobs (including Indigenous employment – fuel reduction). Reduce waste streams.	MDB producers WMLIG Local Government (LG) Western Murray region (WM) producers
Create an agri-innovation demonstration site and leverage regional produce branding opportunities	Position region as leader in sustainability and innovation. Provide self-supporting income to Western Murray Land Improvement Group (WMLIG) to deliver NRM, ag productivity and community capacity building outcomes (a virtuous cycle model). Involvement in New Carbon Economy. Provide niche high value product and tourism market.	WM Producers LG WMLIG
Assist food and energy security	Reduced sovereign risk by reducing reliance on imported products. Alignment to National Bioenergy Roadmap	MDB producers Australian Government

Opportunities moving forward:

This project assists the capacity for communities, government and industries to respond to emerging climate, water and related changes in business and planning decisions.

Primary producers and MRC have an opportunity to value-add waste organic products (e.g. Municipal wood waste) via a new value-add income stream that provides a buffer against commodity price cycles. The outputs from the project will assist producers here and in other parts of the country (via knowledge sharing) to use waste organics as biofertilisers to improve soil health (nutrient cycling, improve soil carbon / water holding capacity), reduce dependence on imported chemicals, and help the community become more self-reliant. First Nations people have an opportunity to work On Country to process excessive woody debris via pyrolysis prior to cultural burning activities. WMLIG could re-invest income generated from the sale of outputs for community capacity building outcomes, including future agricultural trail work, and assist businesses with climate change adaptation.

The project requires engineering infrastructure solutions regarding different elements of the project. Some off the shelf proprietary solutions exist such as pyrolysis units, however the project is seeking to scope a range of other options. Independent technical advice is needed from researchers and other experienced



Funded by the NSW Government in association with Local Government NSW

partners to analyse concepts and provide visibility from salesman and existing IP. The community would welcome infrastructure co-investment opportunities pending further business plan development (hopefully via the 1BCRC).

Benefits and lessons learned

The organic waste circular economy pilot provides the opportunity to reduce financial costs for food and fibre producers; reduces waste, demonstrates potential for new business opportunities, while addressing climate change/resilience-building initiatives. The potential value of the project being proposed is not unique to the region and any lessons learned can be transferable to other regions facing similar challenges.

More information

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