Investigating biochar as a novel biological product to increase agricultural production and reduce environmental impacts

Western Murray Land Improvement Group

What is Biochar?

Biochar is a charcoal-like product made by heating any form of organic matter in a controlled process with limited oxygen, called pyrolysis.

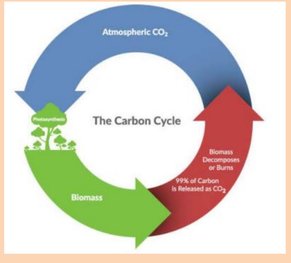
Biochar is characterised by distinct properties that can have **positive effects** on physical and biochemical processes.

It is a non-fossil source of carbon that can be used for many soil and nonsoil applications to **store carbon** in a durable form.

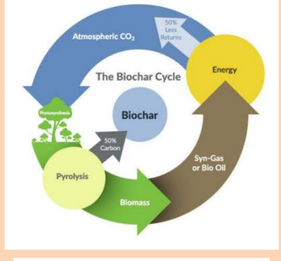
Over 50 million tonnes a year of wasted organic matter are being **under-utilised** by being burnt or going to landfill.

Biochar provides Australia with an important economic, social and environmental opportunity if scaled correctly across the Basin.

Carbon cycle vs Biochar cycle



Over 99% of CO_2 captured by biomass re-enters our atmosphere as part of the natural carbon cycle.



Pyrolysing wasted plant biomass into biochar **intercepts the cycle** and converts carbon into a form that is typically stable for **centuries to millennia**.

Project overview

Utilising a co-design process, WMLIG is establishing a working group to evaluate the technological and innovative solutions for the circular economy provision of organic waste streams and creation of a regional innovation ecosystem.

This project aims to address the problems of repurposing agricultural and forest waste to create useable biochar products and renewable energy source for companion industries and the local Basin community.

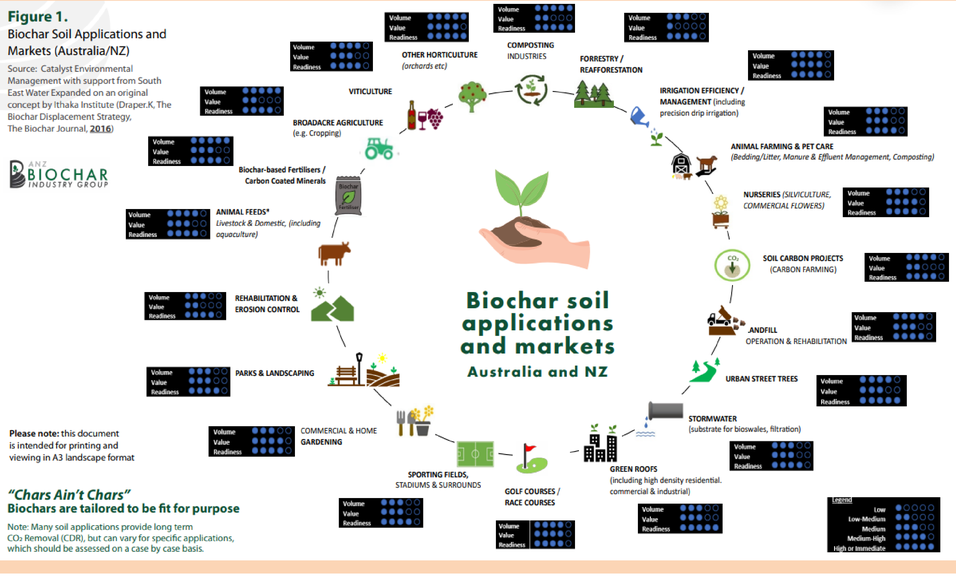
The working group will investigate the pathway to regional innovation scalable across Basin communities to develop employment opportunities for First nations on country, community wealth building, carbon credits for farmers and improvement of air quality through lowering GHG emissions.

Biochar markets

The Australian biochar industry includes valuable co-products such as bio-oils, renewable energy and wood vinegar as well as circular economy opportunity for agricultural Basin communities to develop supply chain logistics, carbon credits and value add products for end use customers.

Figure 1.
Biochar Soil Applications and Markets (Australia/NZ)

Source: Catalyst Environmental Management with support from South East Water Expanded on an original concept by Ithaka Institute (Draper.K, The Biochar Displacement Strategy, The Biochar Journal, 2016)



Opportunity

"Recent estimates indicate that biochar could mitigate up to 6.6 Billion tonnes of CO_2 globally by 2050" *(IPCC 6th Assessment Report, March 2022)*

"For every 1 per cent you increase the soil carbon, you increase the water holding capacity by 10 to 30 tonnes per hectare"
(Melissa Rebbeck, Environmental Scientist, 2022)

"Australian biochar can contribute to many of the world's climate and sustainability objectives, including many of the UN Sustainable Development Goals" *(UNSDG, 2015)*

For more information

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