

Biochar and Energy from Trees Research (BETR) Project

'Towards Sustainable Landscapes: Harnessing bioenergy markets to build resilient landscapes'



Image: Ripple Multimedia



Biomass collection



Air drying



Gasification



Biochar

The Challenge

Much of the past and current wealth from regional Australia has been based on the removal of our original native vegetation and replacing it with crops and improved pastures.

This has created great agricultural and pastoral industries, but also greatly altered our rural landscapes, contributing to erosion, salinity and loss of wildlife. We have spent a lot of time over the last two decades of Landcare fixing these symptoms of over-clearing, but there is still a long way to go.

A major barrier to doing more is that restoring native vegetation is expensive and it reduces the potential to derive an income from the land involved.

What would happen if a diversity of native vegetation were to become a profit centre? That is exactly what this project is working on, new opportunities to tap into emerging markets based on the services provided by native vegetation – what we have called 'Bio-4' - **Biodiversity, Bioenergy, Biosequestration and Biochar.**

The Opportunity

What sets this project apart is that we are looking at the *BIO4's* as an integrated package. We aim to consolidate the new market opportunities into the one package to showcase its potential for 21st Century agriculture – its people and places.

This practical project is on the ground at a critical time. Our flora and fauna continue to disappear, salinity and erosion persists, and the impact of climate change adds a whole new layer of uncertainty and risk.

This is a massive task, and Greening Australia cannot do this pioneering work alone.

We are privileged to have support from Alcoa, our innovation partner of nearly 30 years. This partnership brings complementary skills and networks to deliver project outcomes across industry, government and regional community sectors.

Biodiversity the diversity of plant and animal life in a particular habitat

Biosequestration the capture and storage of atmospheric carbon by biological processes

Biochar a fine-grained charcoal produced in an oxygen-depleted environment (pyrolysis) and is commonly used as a soil enhancer rather than as a fuel.

Bioenergy renewable energy derived from biological sources



An initiative of Greening Australia and the Alcoa Foundation

Glossary

What we are doing

This project is providing information to landholders about the new opportunities to incorporate Bio-4 services from native vegetation into their existing rural enterprises. Through the project we are discovering:

- How much native vegetation we need to put back into the landscape in key places and shapes, to ensure that all the ecosystems and the species they contain will persist into the future;
- Growth rates and the energy produced from known-age plantings of locally native trees to inform future land use decisions across western Victoria. We are also examining how much Biochar these plants produce and the effect it has on soil health and productivity;
- Landholders attitudes towards these opportunities and the possibilities they see to integrate some of these once-in-a-generation opportunities into their farms to create resilient and profitable 21st century agricultural enterprises.

How we are doing it

We are bringing together leading farmer groups and landholders with academic researchers and industry to investigate the establishment of a mixed native species bioenergy industry. Already we have:

- Established three replicated field trials investigating the effect of biochar on the growth and survival of native trees and shrubs;
- Mapped potential bioenergy configurations to achieve multiple environmental outcomes;
- Undertaken an inventory of native bioenergy species;
- Determined the energy potential of a number native species.

Where we are doing it

Creating a restored 21st century agricultural landscape is a massive task and can't be done all at once, so we have to make some decisions about where we go first. We have to determine where the maximum return on investment can be reached.

Great ideas start small and are tested region by region. We're starting in the region we call Habitat 141°, an area that straddles the SA-Vic border from the coast to southern NSW.

This is one of Australia's biodiversity hotspots, one of the few places where you can travel from coastal heathlands and tall forests north to the woodlands of the stunning Grampians and on to the vast tracts of mallee in parks and reserves surrounded by highly productive agricultural landscapes.

The challenge is to restore key parts of these landscapes with a diversity of native plants that provide critical ecosystem services including habitat connectivity and protection of prime agricultural land from salinity and erosion. The key to large scale revegetation, in the right places, is to provide market-based incentives to farmers to turbo-charge Landcare well into the 21st century.

Further Information

For detailed information on the **BIO4 Project** or for information on our other projects around Victoria please visit www.greeningaustralia.org.au

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