BioForest Ltd
BioEnergy Australia Ltd

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Sustainable Project

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The report contains the opinion of BioEnergy as to the potential for developing plantations of specialty and bioenergy species. Nothing in the report is, or should be relied upon as, a promise by BioEnergy as to future growth, yields, costs or returns.

BioEnergy Australia Ltd

Cliff Peiffer
Managing Director

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Introduction

BioEnergy Australia Limited (BioEnergy) proposes to raise approximately $15 million through a private funding arrangement to develop plantations, purchase land, and for working capital.

BioEnergy is also planning a major capital raising via an Initial Public Offering (IPO) to develop up to 9000 hectares of plantations and fund their share in a joint venture bioenergy power station to be built in the South West of Western Australia. The IPO is scheduled for the end of the 2003 financial year.

BioEnergy has multi-million dollar long-term supply contracts pending to supply biomass for both medium density fibreboard (MDF) and charcoal production.

The Project

The land use is complementary to existing agricultural production and will enhance the sustainability of production with environmentally sound practices.

The project incorporates the following features:

- Australian native mixed species plantation incorporating two high valued timber species for sawn wood and veneer production. Quality stable sawn timber can be produced in as little as ten years and high quality veneer in less than fifteen years.
- The third species to be incorporated within the plantation is a Casuarina hybrid for biomass production to be utilised as a renewable energy resource, and/or charcoal production and/or raw material for MDF manufacture. This component involves harvesting biomass on a three-year rotation. The high biomass productivity and high calorific value of this biomass species enables this unique forestry project to develop a cash flow within three years.
- Development of co-firing opportunities or a bioenergy power station fuelled by BioEnergy's low cost biomass, generation of renewable energy and Renewable Energy Certificates.

Objectives

The primary objectives of BioEnergy are to:

- Generate early income from bioenergy and biomass products within 3 years;
- Generate added value income from supply of quality biomass for composite board manufacture and production of charcoal and activated carbon;
- Generate income benefits from Renewable Energy Certificates;
- Generate medium term income from high-value species for solid wood markets within 10 to 15 years.

Background

An essential element of the BioEnergy model is to grow renewable energy crops that meet the strict requirements set down in the Regulations of the Renewable Energy (Electricity) Act.

In 2000 the Australian Federal Government passed the Renewable Energy (Electricity) Act and associated Regulations. This Act sets mandatory targets for the generation of electricity from renewable sources. These targets increase annually for the next 10 years.

The Act creates Renewable Energy Certificates that can be traded to allow electricity suppliers to meet their targets under the Act. If a supplier fails to meet the target set, a fine equivalent to AUS$40/MWh must be paid. As taxes are not considered a business expense, the real cost (at 30% company tax rate) is $57/MWh. The Act creates a major financial incentive for the production of biofuel and allows biofuel to be competitive with fossil fuels such as coal.

BioEnergy has adopted a multi-species approach where thinnings are to be used for bioenergy and later thinning and the final crop will be used for veneer and sawn timber production. The BioEnergy approach provides early cash flow from bioenergy, biomass supply for MDF and charcoal production and long-term cash flow from high-value timber species.

Research and Development

Over the past two years directors of BioEnergy have completed a Research and Development (R & D) program to support the development of these unique plantations. Extensive independent reporting and verification support the research.

The two year R & D program has identified a number of fast growing, drought tolerant, native species from the eastern states of Australia that when planted in the Western Australian conditions have unique and advantageous timber properties.

These timber properties include:

- early maturity
- stability of timber at a young age
- lighter colour and texture

Veneer trial

Most importantly, the research indicates that quality stable sawn timber can be produced in as little as ten years and a high quality veneer in less than fifteen years.

BioEnergy continues to subject the selected timber species to extensive research to support the Quality Control required to enter into substantial contracts with bioenergy power stations for the delivery of “green” biomass, and to ensure production is continuous and sustainable.

High Valued Timber Species

The two high-valued end product species have historic markets in Australia, the U.S., Asia and Europe. Due to excessive logging and the reservation of most of the forests as National Parks, the supplies of these species from Australian forests are now virtually non-existent. Current market prices for the product attract a substantial premium. Industry proponents have also indicated a very broad market appeal for both species. As part of an extensive R&D program BioEnergy has undertaken sawing, milling, veneering and drying trials from plantation-grown material and has confirmed that the products (both veneer and sawn timber) meet market expectations and compare well with products grown from native forests.

Furniture manufactured from locally grown 10, 13 & 15 year old trees

Biomass Species

The biomass component of the project comes from growing a short-rotation crop between the high-value trees. The high-valued species needs to be widely spaced to encourage diameter growth and avoid the problems of allelopathy (inability of the species to grow in close proximity). Mutual shelter between trees assists in growing tall, straight trees. In this project, shelter will be provided by a crop that will be removed over time to ensure that the high-valued component develops as required.

The short-rotation crop species is a hybrid that is known to coppice readily and fix nitrogen. Recent advances in biomass to bioenergy technology and the renewable energy legislation now make biomass to bioenergy potentially competitive with fossil fuels.

BioEnergy has harvested crops of similar species (the hybrid is not yet available commercially) and determined such factors as calorific values, moisture content and ash content. The results of co-firing 5% of the material with coal showed no problems with use of this material and suggested that a mixture of up to 40% would be acceptable. BioEnergy proposes to develop a bioenergy gasification power station powered by renewable biomass.

BioEnergy in collaboration with industry experts has also conducted extensive trials of the biomass and determined its suitability for both MDF manufacture and charcoal production.

3 year old Billet to MDF

Biomass to Bioenergy

Mass production of inexpensive biomass is one of the prime prerequisites in developing a biomass to bioenergy system. The Company's R&D program has identified a biomass species that possesses not only excellent biomass and fuel wood properties but is in fact considered to be the best fuel wood in the world.

Biomass has long been identified as a sustainable source of renewable energy. Recent advances in biomass to bioenergy technology and the Federal Government's renewable energy legislation now make biomass to bioenergy commercial.

Australia's Response to Climate Change included mandatory targets for electricity retailers and large electricity purchasers to source an additional 2% of their electricity from renewable energy sources by 2010 or else pay an additional $40/MWh ($0.04/kWh) above the then current price as a tax. The legislated 2% renewable target has imposed on electricity suppliers a strong need to develop 'Green Power' from renewable energy sources.

Retail premiums for 'Green Power' are estimated at 3 to 4cents/kWh above current grid-electricity prices.

Under the additional 2% renewable target, approximately 9,500 GWh/year of electricity will be required from renewable energy sources in 2010. This represents an increase of over 55% in renewable energy electricity production from the 1996-97 levels. The potential increase in renewable capacity from using current identified renewable sources is estimated to be insufficient to reach the 2% target, so more new investment in renewable sources will be required.

Example of Bioenergy Power Station
Photo courtesy of Dr Stephen Schuck

Why BioEnergy's Project is Sustainable

Reduce reliance on fossil fuels

1) Reduce carbon emissions through the replacement of fossil fuels with renewable biomass for energy generation.
2) Reduce carbon emissions through the replacement of fossil fuels for silicon smelting industry with biomass as carbon source.

Reduce native forest logging for charcoal manufacture

Reduce reliance on native forest resource for charcoal manufacture in silicon and iron smelting industries with biomass as a carbon source.

Reduce native forest logging for wood products

Reduce reliance on logging of native forest resources which will be replaced with harvests of high valued timber species for sawnwood and veneer production from plantations.

Reduce nutrient loading

Reduce movement of nutrients and phosphorous from the Swan Coastal Plain into the Peel Harvey Estuary, Lake Clifton and Koombana Bay water bodies through the process of nutrient stripping from regular harvests of biomass.

Reduce offshore disposal of waste water

Re-use of waste water through the development of waste water irrigated plantations and transporting of nutrient load off site through regular harvests of biomass.

Reduce salinity

The biomass species is salt tolerant and can thus be planted in areas of the Swan Coastal Plain that are becoming or at the risk of becoming saline.

Reduce flooding

Dense plantings of the biomass species combined with low stocking levels of the high valued timber species will assist in de-watering areas of the Swan Coastal Plain and reduce reliance on the extensive channel system to remove excess water from the system that drains high phosphorous loads into the environmentally sensitive Peel Harvey Estuary, Lake Clifton and Koombana Bay water bodies.