IEA Bioenergy

Task 42 Biorefining

Australia Task 42 Update
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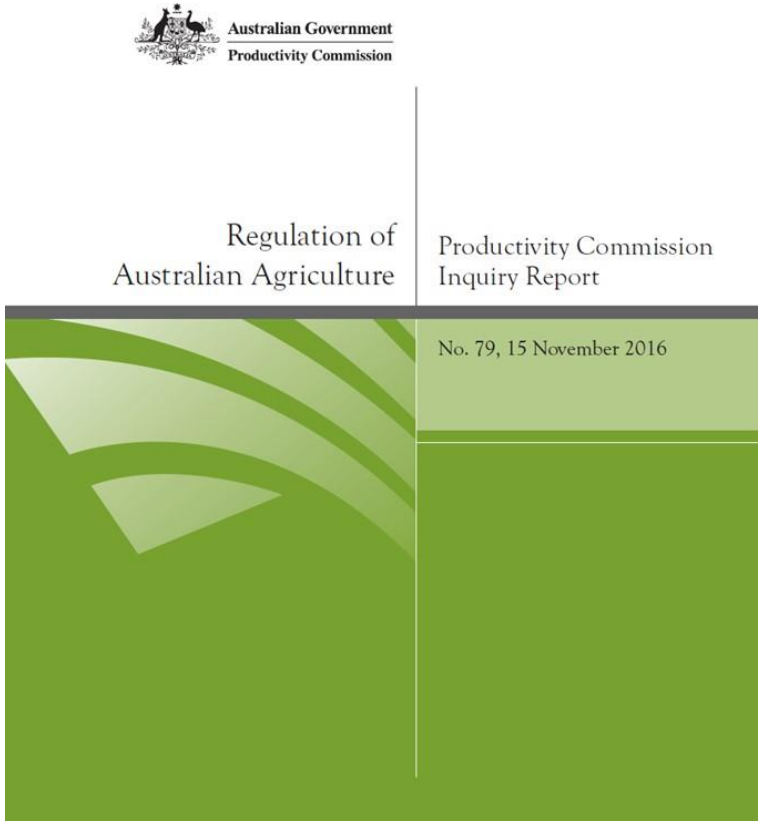
Australian Federal Government – Productivity Commission Report

- On March 28, 2017, the Regulation of Agriculture, Productivity Commission Inquiry Report was released
- The report is over 700 pages long and is an important document that influences Government policy
- The key task of the document is to “Identify regulations that impose an unnecessary (and therefore avoidable) burden on farm businesses”



What the Commission was asked to do…

The terms of reference for this inquiry (set out at the beginning of this report) ask the Commission to:

- identify specific areas of regulation that are unnecessarily burdensome, complex or redundant
- identify unnecessary restrictions on competition
- assess whether the current level at which matters are regulated is appropriate and if better coordination across governments would reduce unnecessary overlap
- have particular regard to areas where there is greatest scope to reduce unnecessary regulatory burden and pursue regulatory objectives in a more efficient (least cost) way
- identify priority areas for regulatory reform
- provide recommendations to alleviate regulatory burdens identified.

Selected key discussion points in the Inquiry Report (1)

Biofuel support can increase fuel costs and may not help the environment

Assessments of the New South Wales biofuel mandate showed that:

- retailers cut the supply of regular unleaded petrol to meet the biofuel sales target
- the mandate reduced consumer choice and increased the price consumers paid for petrol because they substituted to premium fuels
- the mandate affected the competitive dynamic between retailers by reducing the availability of regular unleaded petrol at many retail sites (ACCC 2013b, sub. DR121; IPART 2015).

The extent to which farm businesses are affected by biofuel mandates depends on whether they are able (and willing) to switch to biofuel blends. Quality control issues for biodiesel have led to some apprehension over its use in heavy vehicles (Australian Institute of Petroleum 2015), which means that some farm businesses might avoid (or prefer to avoid) blended products.

Selected key discussion points in the Inquiry Report (2)

Biofuels may significantly increase carbon emissions

Also, the extent to which biofuels offer carbon emissions savings depends on how they are produced. If native vegetation is cleared in order for the land to be used in biofuel production (or to replace agricultural land diverted to biofuel production), this can lead to several times more carbon emissions being released than the fossil fuels they displace (Fargione et al. 2008).

Tariffs for ethanol also reduce the use of ethanol imports, thus reducing the net carbon abatement benefits which could have been gained by using imports that have lower greenhouse gas emissions (such as from Brazil which is regarded as one of the world's most advanced ethanol producers) (de Gorter, Just and Tan 2009; UN-Energy Knowledge Network 2011) — even though the emissions reductions benefits of imported ethanol may be partially offset by the emissions associated with its transport (Australian Sugar Milling Council, sub. 234).

Selected key discussion points in the Inquiry Report (3)

Biofuel mandates have limited benefits for farmers

A viable domestic biofuel market remains elusive after decades of support

As the Queensland Department of Energy and Water Supply noted, the biofuel mandate aims to provide an alternative market for primary producers (QDEWS 2015). The Queensland Government believes that a biofuel mandate would stimulate the biofuel market in Queensland which has 'remained relatively static for the last several years' (sub. DR154, p. 3).

However, in spite of various government support programs in Australia since 1980, they have been ineffective in developing a viable domestic biofuel market (ANAO 2015).

Selected key discussion points in the Inquiry Report (4)

Biofuels could lift feed prices and reduce feed availability

Several stakeholders expressed concern that demand from biofuel producers could result in additional competition for feedstock. Australian Pork Limited (sub. DR282), for example, raised concerns about the impact of ethanol mandates on pig producers, particularly during dry periods when feed grains can represent up to 80 per cent of cost of pig production. Australian Dairy Farmers also said that:

> … anything which artificially increases the cost of a production input (such as mandated and subsidised ethanol production) disadvantages the thousands of individual dairy producers across the country. (sub. DR218, p. 5)

Selected key discussion points in the Inquiry Report (5)

Biofuel industry outcomes should be market driven

Some participants (including Ag Institute Australia (sub. DR182) and the Australian Lot Feeders' Association (sub. DR294)) supported the removal of biofuel support policies. The latter considered that the mandates distort the development of more advanced biofuel technologies, including second generation ethanol production technologies:

> … [the Queensland's mandate would] lead to a misallocation of resources towards a small number of ethanol producers in the state who have demonstrated over time to be unviable without such assistance [and foster] reliance on Government support and further 'rent seeking' behaviour into the future. (sub. DR294, pp. 15–16)

Cotton Australia also argued that, while 'bio-fuels have been proven to be technically feasible [it] should be up to the market to determine their up-take' (sub. DR262, p. 14).

Productivity Commission Recommendation

RECOMMENDATION 9.6

Arrangements to support the biofuel industry — including excise arrangements and ethanol mandates — deliver negligible environmental benefits and impose unnecessary costs on farmers and the community. The Australian, New South Wales and Queensland Governments should remove these arrangements by the end of 2018.

What the report failed to discuss (1)… (Biofuel support can increase fuel costs and may not help the environment)

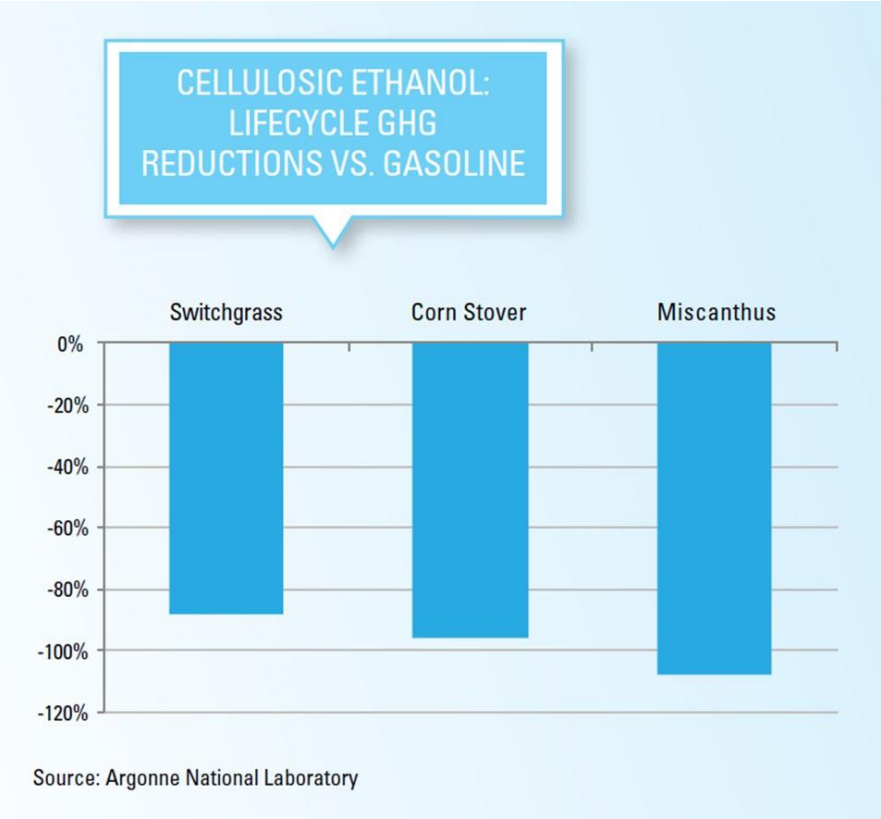
Biofuels are low cost and more recent research demonstrates environmental benefits

E10 is typically cheaper than regular gasoline

- E10 "should be marginally cheaper than standard unleaded"
  Source NRMA Jan 11 2016

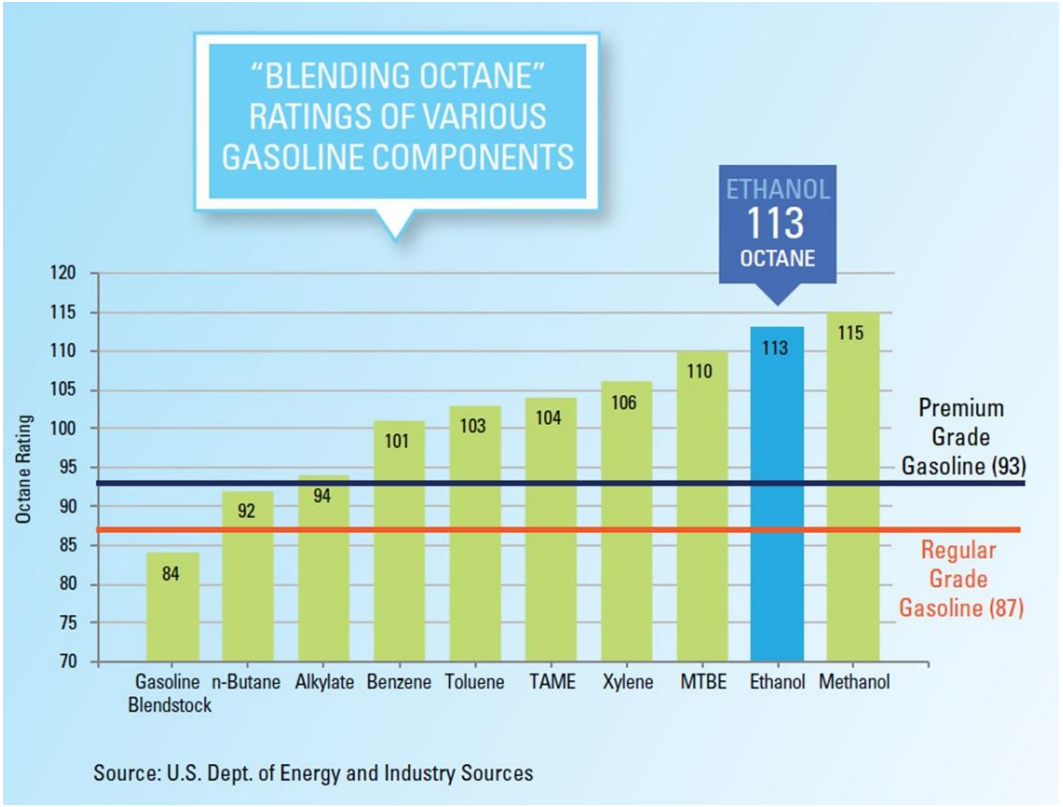
Bioethanol has significant environmental benefits

- "On a life cycle analysis basis, GHG emissions are reduced on average by 40% with corn-based ethanol produced from dry mills, and up to 108% if cellulosic feedstocks are used" - USDA – Alternative Fuels Data Centre: ttp://www.afdc.energy.gov/fuels/ethanol_benefits.html



What the report failed to discuss (2)… (Biofuels may significantly increase carbon emissions)

- "Higher octane is necessary for better engine efficiency. It (ethanol) is a proven low-cost enabler to lower CO2". General Motors. Source: RFA
- Plans being developed in Queensland for large scale ethanol production are based on sugar cane – no land clearing.
- RDA Pentland Project: Based on irrigated sugar cane from land already cleared and currently used for cattle grazing. Estimated 35% improvement in CO2 per unit of production against the comparable stages in the GREET model. Source RDA
- North Queensland Bio-Energy Corp Project: Utilising sugar cane that is already produced in the Herbert River District. Additional plant feed to come from fallow crops such as sweet sorghum, timber cut-offs and council green waste.
  Source: North Queensland Bio-Energy Corporation



What the report failed to discuss (3)… (Biofuels mandates have limited benefits for farmers)

- **The RDA Pentland Project** is expected to lead to 200 permanent operational jobs and 600 indirect jobs in a predominantly farming district

- Stage 1a deliver 190ML per annum (p.a.) of 1st Generation fuel grade ethanol to the domestic and international markets
- Construction of a 16MW cogeneration plant to be fired using bagasse as a primary feedstock:
  - Entirely energy self sufficient; will not require electricity to be delivered from the NEM
  - Will generate 128,000 Large Scale Renewable Energy Certificates as a by-product of electricity generation
- Ready access to existing infrastructure, water and irrigable land suited for sugar cane production
- 500 Construction Jobs
- 200 Operational Jobs
- 600 Indirect Jobs

- **The NQBE Project** will reduce farmers' dependency on a single product, allow equity participation, increase local employment and slow or stop families leaving the district

Project Benefits.

The possible and potential benefits flowing from this project include:

- **Multiple products:** Removal of the dependency by feed stock producers on a single product (sugar crystal) for financial viability.
- **Equity participation:** The opportunity for feed stock producers and the supporting community to participate in equity in the project
- **Employment opportunities:** Local employment opportunities will be increased during the 52 weeks of the year. Current milling operations are traditionally seasonal based.
- **Local population stability:** Decrease in number of families seeking to leave the district because of lack of full time employment opportunities, thereby helping sustain the local economy.

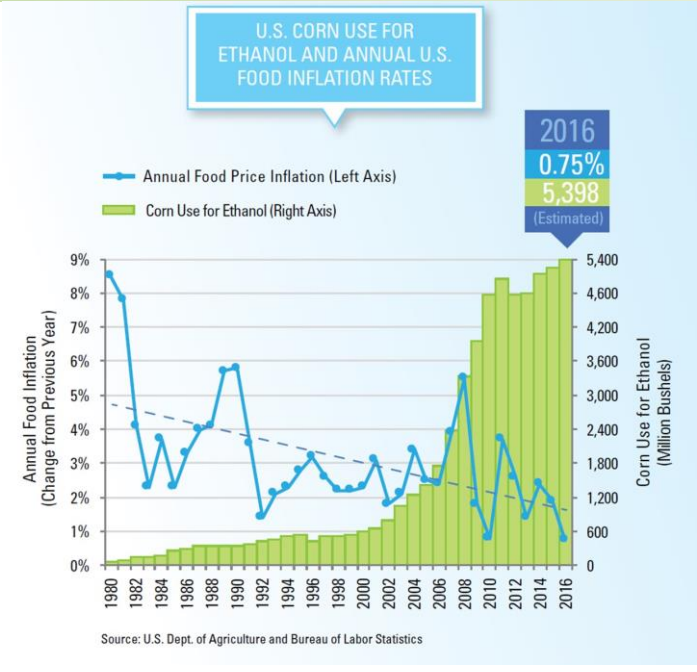
What the report failed to discuss (4)… (Biofuels could lift feed prices and reduce feed availability)

- Only 20% of Australia's current bio-ethanol is produced from feed.
- Of the 20% feed utilised, 30% is returned to farmers as a protein enhanced distillers grain product

One-third of every bushel of grain that enters the ethanol process is enhanced and returned to the feed market, most often in the form of distillers grains, corn gluten feed and corn gluten meal. Only the starch portion of the grain is made into ethanol; the remaining protein, fat and fiber pass through the process. These nutrient-dense co-products are fed to livestock, poultry and fish around the world.

Source: RFA

- There is no historical relationship between food price inflation and ethanol production
- All major new bioethanol proposals for Queensland are based on sugar cane and thus there is no impact on feed markets or availability



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What the report failed to discuss (5)… (Biofuel industry outcomes should be market driven)

Reasons why biofuel should be supported

- Australia now imports most of its liquid fuels. Ethanol can help reverse this. Increase security.
- Northern Australia has a competitive advantage in biofuels and could be a major exporter.
- Ethanol is clean burning. Not carcinogenic like the toluene, alkanes and benzenes it replaces
- Incumbent fuel companies appear to have limited the access of clean biofuels into the market e.g. mislabeling.
- High octane rating means ethanol can help supply the required octane in high compression engines.
- Significantly reduces CO2 and expected to reduce CO2 even more over time with new projects

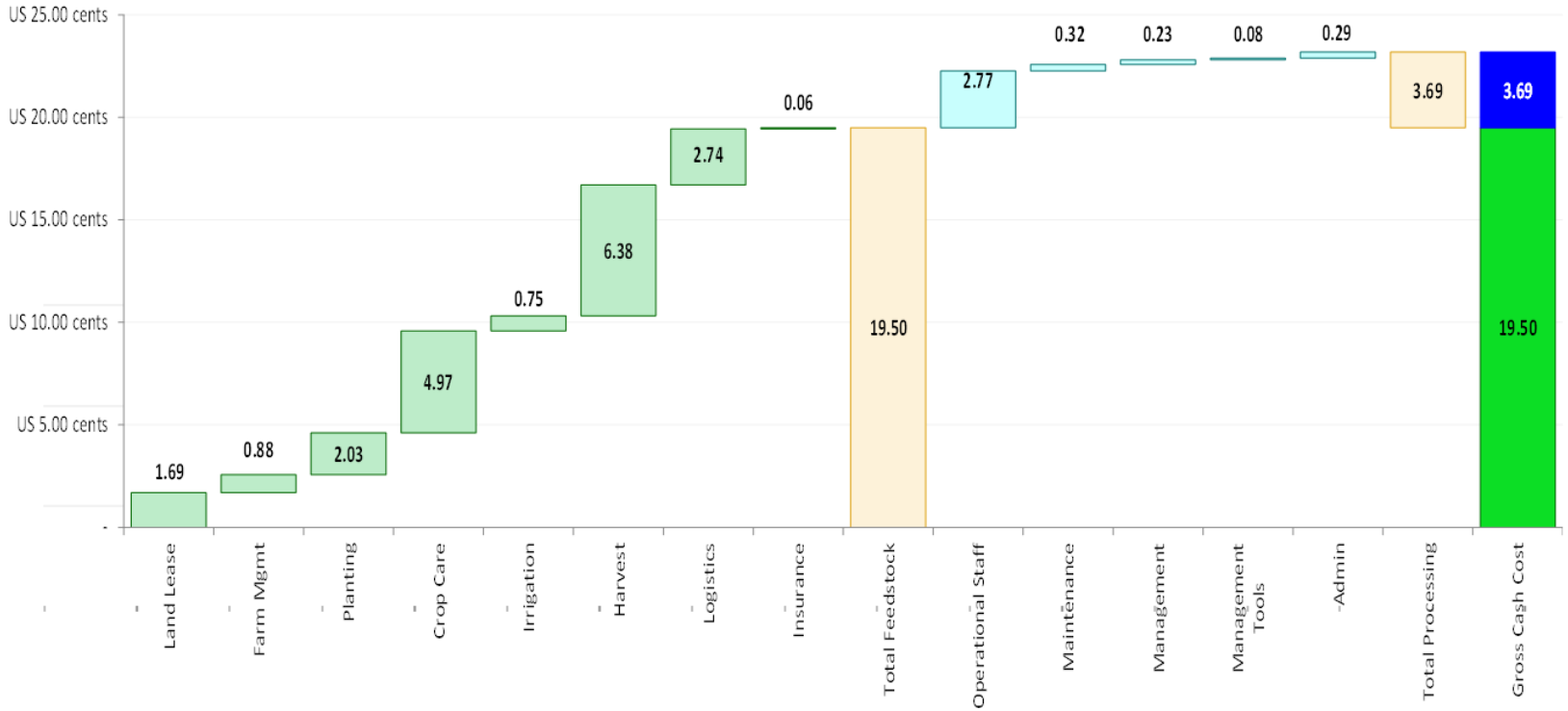
New labelling required Govt. intervention

Old labelling →

Update from the Pentland Project – Gen I project costs

6 Operating Costs 1st Generation

The Project benefits from vertical integration and controls the cost of feedstock delivered to the processing facility. The vertical integration enables the Project to be globally competitive and in the lowest cost quartile of global production

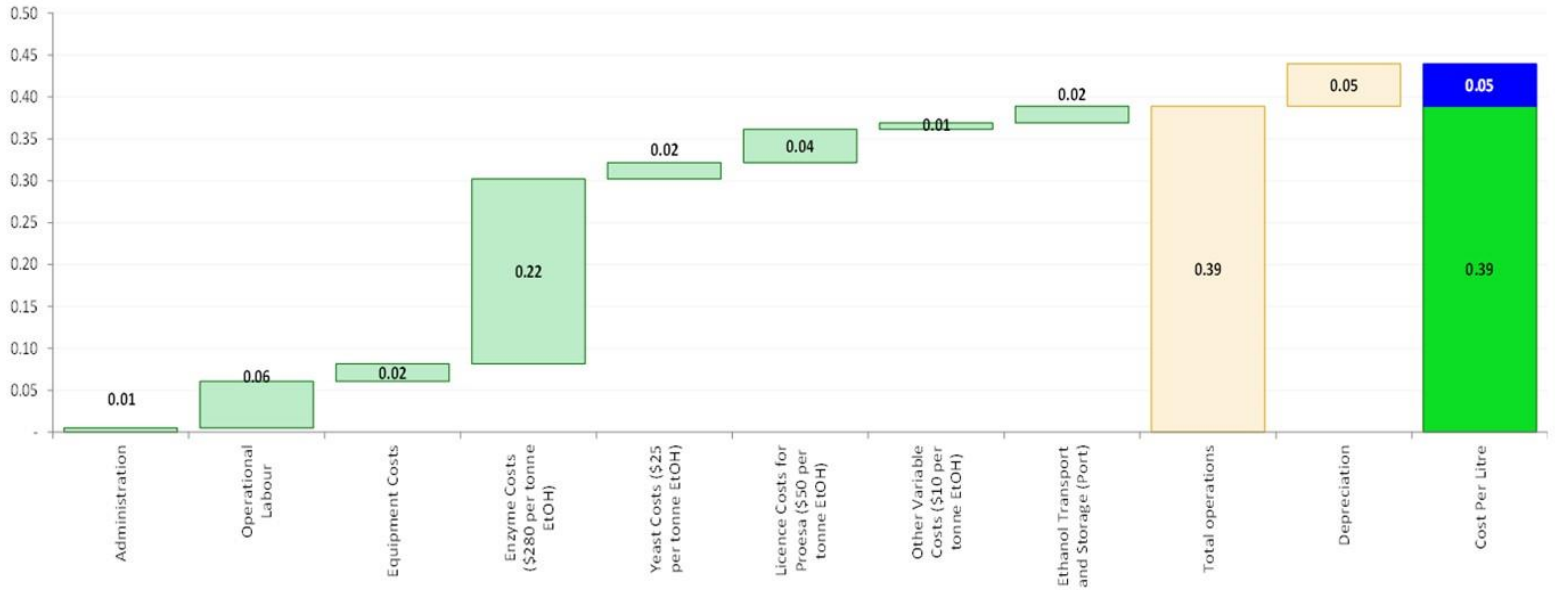


Update from the Pentland Project – Gen II project costs

7 Cost Analysis 2nd Generation Production

2nd Generation ethanol plants have a very high operational costs due to costs of enzymes compared to 1st Generation Plants even though the vale of the biomass is transferred at zero cost.

The average costs when 1st & 2nd generation plants are integrated is approximately US$33 cents per litre and is still market competitive.



Update from the Pentland Project – New Model

2 The New Model - Expand & Diversify the Industry

Creating an inland Cane & Sweet Sorghum Industry.

- Developing a fully integrated project produces the lowest cash cost product
- Huge Tracts of Land available to be developed
- Through detailed modelling and Trial growing we have shown that irrigation can be reduced to 4ML/Ha.
- Using sugar cane & Sweet Sorghum a variety of products can be produced:
  - Sugar
  - 1st Generation Ethanol
  - 2nd Generation Ethanol
  - Biomass Pellets for Renewable Energy co-firing of coal fired power plant
  - Bioplastics
  - Renewable Jet Fuels
- Stage 1a & 1b of the Pentland Bioenergy project can produce 344 million litres of ethanol P/A
- Valuing ethanol at AU$0.88, export earnings for the State would be AU$300 million P/A
- On land acquired to date by RDA this project can be repeated 4 times.