



GPI

GP International LTD

## **Submission for Productivity Commission Low Emissions Economy**

Because of competing priorities for our time, the submission is of necessity abbreviated. It really deserves to have a lot more time put into it but submitting a submission in summarised form is preferable to trying to spend a lot of time on it and missing out on the deadline.

### **Key points.**

#### *Renewable diesel fuel*

1. GP International Limited (GPI) has access to commercially proven technology from the USA that allows renewable diesel fuel (RDF) to be made from a range of feedstocks. At present, we are focusing entirely on cellulosic feedstocks. It should be noted that RDF is **not** biodiesel but is a direct substitute for mineral diesel, being a product that meets and in many cases better the New Zealand specifications for diesel.
2. A co-product of the process is high quality biochar which has a wide variety of uses including plant growth enhancement, filtration, an additive to bitumen that makes roads last longer, and potentially agricultural use for reduction in greenhouse gas (GHG) emissions from livestock. (See Item 11 and following). Graphene is another potential co-product of this process.
3. Production of RDF within NZ has obvious economic and GHG emissions benefits. These include:
  - Reduction of NZ's expenditure on purchase of crude oil and direct diesel imports.
  - Better fuel security as a result of domestic RDF production and freedom from having fuel price dictated by the international crude oil price.
  - The ability to have domestic RDF costs independent of the USD/NZD conversion rate.
  - A change from a GHG emitting (carbon positive) fuel to a fuel that is carbon negative.
  - The ability to have a diesel price going into the future that is fixed, being indexed only to NZ inflation.
  - Enhanced regional development by having RDF production plants (18 million litres per plant) established near to where the feedstock is produced and where the diesel will be used.
  - Stimulation of the NZ forest industry by providing an alternative outlet for forest industry processing residues and low quality logs, particularly where there is currently no market for such low quality logs.

- Boosting of NZ agriculture by providing an alternative and reliably-priced crop - Miscanthus (see below) - that can be grown specifically to be a feedstock for the production of RDF – complementing the use of forest industry processing residues.

### ***Miscanthus***

4. GPI also has access through an associate company Miscanthus New Zealand Limited (MNZ) to a new crop called Miscanthus which is beginning to be grown throughout NZ for a wide variety of uses. The NZ Miscanthus industry is developing particularly quickly now and in addition to a list of practical agricultural uses, Miscanthus can also provide benefits to New Zealand by being directly substituted for fossil fuels such as coal.
5. Fonterra already appreciates this possibility and is working with MNZ to test the suitability of Miscanthus for use in their existing boiler systems to replace some of the coal that is currently burned. Miscanthus is widely used for this purpose internationally.
6. Other boiler operators are also showing interest and with most industries, there are potential commercial synergies as well as being clear environmental and GHG benefits.
7. Miscanthus is a deep-rooted perennial and helps to stabilise the soil. At the same time, its production is boosted by rainfall or application of irrigation.
8. Miscanthus also has a unique ability to pick up nutrients from the soil profile and prevent them from being leached. International research has shown this to be the case and research by Fonterra in Canterbury has confirmed this. Fonterra's research has shown that even with nitrogen-rich dairy factory effluent being spray irrigated onto a Miscanthus stand, the amount of nitrogen leaching to the water table is less than 5% of the amount of nitrogen leaching from pine forest that is receiving only rainfall.
9. Miscanthus is a crop that could be established on land adjoining industries that have nutrient rich effluent disposal issues and that also require heat from boilers. If Miscanthus were established adjoining such an industrial plant, it would provide a safe effluent disposal site while growing a product that is GHG/environmentally friendly and that could be a GHG neutral fuel for the industry's boiler.
10. The same could be applied to use of Miscanthus for land-based local body sewage disposal systems and a proposal for exactly this has already been put to the Tararua District Council for consideration. The outcome of this sort of approach will be environmentally safe cost-effective land-based disposal of sewage effluent, which would result in production of a GHG neutral fuel for industry while improving the quality of waterways.

### ***Biochar and stock***

11. A small amount of research by some internationally respected Australian scientists has suggested that addition of small amounts of biochar to stock feed has the ability to enhance growth of cattle by 25% while at the same time reducing methane emissions by 22%.
12. Work is being done in several parts of the world to evaluate this and GPI has a proposal from a large NZ veterinary business to carry out a formal and significant sized trial as soon as GPI can get access to the requisite quantity of biochar - essentially a container load.

13. If either of those values was even half what has been published, the results for NZ would be quite significant. An increase in cattle growth can be measured in dollars by simply calculating the value of the extra weight gain. At the same time, a decrease in methane production by such stock can also be directly valued as long as the benefits can be included within the NZ Emissions Trading Scheme.

It seems clear to us that the multiple benefits that will arise from stimulating a NZ Miscanthus industry, allied to starting and expanding the production of renewable diesel, go considerably beyond anything that has been considered by officialdom to date. This is because officialdom is in general completely ignorant of these possibilities.

A key staff member representing GPI and/or MNZ would be happy to meet with the commission to provide more information and evidence.



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29 September 2017