

A Biodiesel Accreditation Scheme for New Zealand

2 December 2010

1. Introduction

A country-wide accreditation scheme for the New Zealand biodiesel industry would enhance the reputation of biodiesel as a reliable and sustainable vehicle fuel. A biodiesel accreditation scheme would have a recognised label that shows a company meets a set of predetermined quality and sustainability criteria. A biodiesel accreditation scheme would assist in clarifying confusion and misconceptions that may be present due to mixed information on biodiesel from international media. The scheme could cover production, retail, non-retail (commercial) and potentially the distribution, of biodiesel.

An accreditation scheme could also cover bioethanol production, distribution and sale of blends in New Zealand, and thus be considered a biofuels accreditation scheme.

This note focuses on the design, development and implementation options for a biodiesel accreditation scheme. This could be a first phase of a potential biofuels accreditation scheme.

The Bioenergy Association of New Zealand (BANZ) represents the main producers of biofuels in New Zealand. Given its position in the New Zealand bioenergy industry and the work it currently carries out on liquid biofuels, it is the view of BANZ that a biodiesel accreditation scheme would be of value to New Zealand and proposes that BANZ develops and administers such a scheme.

This note presents a set of desirable criteria for a scheme in the New Zealand context, information about international biodiesel accreditation schemes and relevant national activities. BANZ assesses whether it would make sense to adopt one of the international schemes or alternatively to develop a scheme for New Zealand.

Finally, BANZ presents a recommendation for a New Zealand biodiesel accreditation scheme that would be simple and cost effective to administer and would give confidence to customers about the quality of biofuels in New Zealand. BANZ considers that a biodiesel accreditation scheme would ideally cover producers, distributors, non-retail sellers and retailers of biodiesel, the immediate priority being producers.

2. Background

BANZ has been established to promote and coordinate the development of a bioenergy industry in New Zealand. BANZ provides a central focus point for liaison with Government agencies, the dissemination of information amongst the industry and long-term positioning of bioenergy in New Zealand's energy system. BANZ is a not-for-profit organisation.

The BANZ Liquid Biofuels Interest Group represents the majority of the producers and sellers of liquid biofuels in New Zealand.

As an industry association, BANZ supports the principle of an accreditation scheme for the biodiesel industry to help give assurance to potential customers that biodiesel available in New Zealand is a quality product. BANZ also notes that the scheme needs to be cost effective and recognise the limitations of small players in the New Zealand market to manage the costs of administration and audits of a scheme. BANZ considers that there are merits to be gained from a scheme that is fit for purpose, does not impose excessive costs on producers and successfully communicates to potential buyers that the producer and/or seller supplies biodiesel that meets quality specifications. It also communicates that throughout the supply chain there are systems in place to ensure biodiesel available is of good quality.

BANZ recognises that while a scheme cannot guarantee the quality of biodiesel, it should indicate that each accredited company has standardised processes and procedures that aim to deliver a quality product. Accreditation should establish a reputation for reliable quality and sustainably sourced feedstocks.

BANZ notes that there are a small number of players in the commercial New Zealand biodiesel industry. The producers vary in size and scale. They use a range of feedstocks and differing production techniques. The retail biodiesel market is very new in New Zealand. A small number of producers sell biodiesel direct to customers (non-retail); some distributors are also selling biodiesel to customers.

3. Current Schemes - Details

3.1 BQ 9000

BQ-9000 is the American National Biodiesel Accreditation Program. It is a cooperative scheme and a voluntary program for the accreditation of producers and marketers of biodiesel. The program is a unique combination of the ASTM standard for biodiesel, ASTM D6751, and a quality systems program that includes storage, sampling, testing, blending, shipping, distribution, and fuel management practices. The program aims to promote the commercial success and public acceptance of biodiesel.

Certification under the BQ 9000 program is open to all companies in the United States or Canada actively producing, distributing or marketing, or planning to produce, distribute or market, biodiesel either in neat form or in a blend with petroleum diesel (or similar fuel).

To receive accreditation, companies must pass a rigorous review and inspection of their quality control processes by an independent auditor.

Accreditation has three categories – Producer, Marketer (aka Retailer) and Lab (a lab approved to undertake the tests).

- **BQ-9000 PRODUCER** - This category is for companies that produce biodiesel. Biodiesel must meet the ASTM D6751 standard to be legally defined as biodiesel in the United States or Canada. The program ensures a producer is using an appropriate system to monitor the quality of their biodiesel, including:
 - Sampling
 - Testing
 - Storage
 - Retain Sample
 - Shipping
- **BQ-9000 MARKETER** - This category is for distribution companies who sell biodiesel and biodiesel blends. This is an important designation, because proper handling of biodiesel is as critical to fuel quality as proper production.
- **BQ-9000 LAB** - This category is for commercial laboratories engaged in the analysis of biodiesel and biodiesel blends. Laboratories operated by BQ-9000 Producers and Marketers are also eligible to seek this certification.

The scheme provides all details on its website. Details of training courses on implementing the standard and for training internal auditors are also available.

3.2 AGQM

The AGQM¹ Programme is of German/Austrian origin and has been in operation since 1999. AGQM was founded with the objective to provide quality management for leading biodiesel producers and traders. AGQM offers services covering all relevant issues from production to application including quality management.

AGQM membership is open to all German biodiesel producers and trading companies as well as to enterprises (associations, additive producers, engineering and construction companies) which are connected with the biodiesel industry.

¹ AGQM - (Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V.)

In order to also enable foreign producers to participate in the program, AGQM developed the BPAC (Biodiesel Production AGQM® Certified) system. AGQM's laboratories check biodiesel quality against the European Standard EN 14214.

AGQM advise that the BPAC is the avenue for foreign biodiesel producers who wish to become certified under the AGQM. International standards and guidelines are considered for some requirements should they differ from those in Germany for certification under AGQM program.

There is an agent for AGQM in Australia who could act as a contact for New Zealand. Samples would be sent to Europe for testing every couple of months to check the quality against European Standard EN 14214. This arrangement would most likely involve New Zealand, Australian and European costs. Costs would be influenced by exchange rates and the number of plants that would be part of the scheme.

3.3 Other Schemes and Activities

While not an accreditation scheme *per se*, the now defunct EECA Labelling Scheme and associated 'in-house activities' were directed at managing the quality of biodiesel. It was taken up by a number of companies engaged in biofuels in New Zealand at the time. EECA's Biodiesel Grants Scheme also encompasses elements of quality that are highlighted below. In addition, EECA's Sustainability Information web page is noted as it communicates key sustainability information. Sustainability should be a component of a potential accreditation scheme.

EECA Labelling Scheme – The EECA 'labelling' scheme dates back to 2005, it was retailer specific and is no longer in use. The scheme was voluntary and encouraged biofuel retailers to prove compliance with voluntary quality standards in order to use the EECA Biofuels Label. The label promoted to consumers to "only use biofuel blends with a biofuels label". A criticism of the scheme at the time was that industry members experienced a lack of clarity about who was to use the label and where it was to be displayed. Another challenging aspect was that sellers, on behalf of applicants, had to sign to say they guaranteed all equipment using the fuel.

In house Schemes – BANZ is aware that oil companies and other players in the fuel distribution market may be using or considering other accreditation standards to demonstrate the quality of their product. In these cases it's likely that they are adopting quality standard approaches already used for diesel and using them for biodiesel. Current legislation requires them to sell fuel that meets the Engine Fuels Specifications Regulations.

BANZ is also aware that leading commercial biodiesel producers will have sought independent audit of their quality management systems including frequent testing of fuel samples against New Zealand or other quality standards. Though not a 'scheme' as such, these producers are already undertaking the key activities that an accreditation scheme would require of them.

Biodiesel Grants Scheme – BANZ understands that as a participant in the EECA Biodiesel Grants Scheme, New Zealand biodiesel producers are encouraged to have an audited quality management system (QMS) and are required to supply biodiesel that meets Schedule 3 of the Engine Fuel Specifications Regulations 2008.

EECA Sustainability Information web page - EECA has established a framework which allows biodiesel producers and retailers to report on the environmental credentials of their products. EECA presents a table of the reduction in greenhouse gas emissions compared to petrol or diesel for each producer and retailer (available here - <http://www.eeca.govt.nz/node/8082>).

Lifecycle emissions from biofuels are compared with typical lifecycle emissions from mineral diesel or petrol. The lifecycle emissions from biofuels are calculated from data voluntarily provided to EECA by biofuel producers and retailers, which is independently checked.

Ministry of Consumer Affairs (MAPSS²) - MAPSS primary role is to administer and enforce fuel quality specifications prescribed in the *Engine Fuel Specifications Regulations 2008*. MAPSS surveillance of fuel quality is conducted on the basis of largely unannounced, random sampling and testing of fuel. The frequency and focus of this sampling is proportional to the detected non-compliance rate and the consistent quality of the analysed fuel. MAPSS sampling is intended to give a ‘snap-shot’ of compliance. It is not a substitute for a biodiesel producer’s due diligence, quality management system or regular ongoing testing to maintain confidence in fuel quality.

4. Desirable criteria for a biodiesel accreditation scheme in New Zealand

This section presents desirable criteria for a scheme in the New Zealand context, before considering international schemes and relevant activities in New Zealand:

- ***A Quality Management System.*** A Quality Management System (QMS) should be a requirement of the scheme. BANZ recognises that the key players in the New Zealand biodiesel industry are different in scale, size and process and an accreditation scheme needs to set out the criteria for accreditation yet be flexible enough to cover different processes and capabilities.

Accreditation would require appropriate confirmation of product quality conformity with the Engine Fuels Specifications Regulations 2008 for all biodiesel and biodiesel blends.

² MAPSS - Measurement and Product Safety Service

- ***A sole means of communication on quality and sustainability.*** The scheme should provide assurance to potential customers without their having to seek quality assurance information elsewhere, and avoid the need for producers to have to provide individual test reports to each customer. A recognisable label should be the sole means of communicating this information, backed by the credibility of the accrediting body.
- ***Requirements for Accreditation.*** The quality management system should have the following minimum requirements:
 - a. Quality Management processes.
 - i. Acceptable existing schemes e.g. BQ9000
The producer will have a quality management scheme in place. While companies will have varying degrees of sophistication in their QMS, it must meet the minimum requirements for accreditation.
 - ii. Testing Regime:
 - 1. Sample requirements and acceptable results (specific to biofuel type)
 - 2. Sampling frequency and method
 - 3. Sample spot checks
 - 4. Data from tests

The frequency of fuel sample testing may be based on existing testing that producers undertake. If possible, existing testing history would be made available to the scheme administrator. The administrator would also require copies of a sample of test reports and may wish to take its own random samples for testing.

Labs would need to be accredited under the scheme and an agreed portfolio of regular and periodic tests would need to be agreed.
 - iii. Review
The Quality Management System must be reviewed at regular intervals in order to ensure its continuing suitability and effectiveness. Adequate records of the reviews should be kept by producers.
 - iv. Staff training
Each producer would need to include a staff training regime within their Quality Management System.
 - b. Sustainability statement

The ability to demonstrate that biodiesel sold and made in New Zealand is sustainable is important to customers especially in the tourism sector. The minimum sustainability requirement should be participation in the EECA Sustainability Information web page.

- c. Record keeping
All documentation relating to accredited bodies is to be kept and stored securely for a minimum period of two years. All records relating to their QMS should be available on request. It could also be required that these records be peer reviewed by a suitable expert.
 - d. Audit
An audit regime would be required which would be made up of annual and adhoc audits by the administrator or agent.
 - e. Currency of QMS processes
A requirement to notify the administrator if material aspects of the QMS change, after initial accreditation.
 - f. Ethical behaviour
A code of ethical behaviour should be developed for scheme participants.
- ***Accreditation Scheme Governance***
The administrator should from time to time hold a quality workshop, attendance at which is mandatory.
 - ***Complaints process***
A complaints process would be required.
 - ***Documentation of the Application Process***
Documentation for accreditation including an application form would be published on the administrator's website. This would ensure the criteria are transparent.
 - ***Annual laboratory quality check (annual and random) to ensure confidence in the testing authority.***
Criteria for acceptable testing authorities will need to be established.
 - ***Accreditation Fees***
It would be ideal if the cost of taking part in the accreditation scheme were based on cost recovery.

- ***Award of accredited status and accredited 'badge'***
The administrator would award accredited status once it is satisfied that the company has met all minimum requirements. The company would then have the right to display the accreditation label.
- ***Conditions of display***
Protocols for how and when accreditation labelling can be displayed will need to be developed.
- ***Period of accreditation***
It is recommended that the period of accreditation would be for a period of 2 years.
- ***Scheme Promotion***
The administrator, and other relevant organisations in New Zealand such as EECA, would promote the scheme to existing and potential users of biodiesel to give assurance that biodiesel available from accredited suppliers is of high quality.

In addition consideration should be given to the following aspects:

- ***Accessibility of the scheme*** – the design of the scheme needs to be accessible to all parties involved in production, sale and distribution. It needs also to be accessible to a diverse range of commercial producers and feedstock types.
- ***Cost to implement and participate*** – recognising New Zealand's relatively small market, an accreditation scheme should not impose unnecessary costs, without compromising on credibility. It should make use of existing procedures and activities where possible.
- ***Documentation required*** – Documentation will be needed to apply for accreditation and to keep relevant records. Requirements for documentation should be kept to a reasonable minimum.
- ***Scheme ownership*** – There is merit for the scheme to be managed in New Zealand. It creates an opportunity for national organisations to learn and improve their skills. It could include provision for other recognised standards, for example EN 14214. There is significant international experience and literature to draw on. Additionally, it is important to draw on international material given that New Zealand's international reputation is important to existing and future biodiesel customers. Therefore, the scheme will need to be comparable to international schemes, in particular regarding testing, evidence of quality management processes and assurance of sustainable practices. While participation by New Zealand firms in international schemes might give

a heightened level of recognition to international customers, New Zealand's immediate focus is on its use nationally and not for exports.

- **Biodiesel Quality** – the scheme adopted would need to focus on the national specification for biodiesel in New Zealand, Schedule 3 of the Engine Fuel Specifications Regulations 2008.
- **Industry support** – the scheme would need to have the support and participation of industry in New Zealand to be viable. Discussions with the industry indicate that some support the use of one of the international schemes while others support the development of a national scheme. Of key interest to industry is the minimisation of costs and time along with the promotion of confidence in biodiesel in New Zealand.

5. Options and Evaluation

After a review of international accreditation schemes and current activities in New Zealand, BANZ considers there are three main options for the introduction of a scheme in New Zealand:

1. Adopt the BQ-9000 Scheme for use in New Zealand.
2. Adopt the AGQM Scheme for use in New Zealand through an agent to access the scheme.
3. Develop our own New Zealand specific scheme that would build on current activities and existing international schemes.

The criteria that would be desirable in an accreditation scheme have been presented in section 3. These three options are considered with these criteria in mind. The results are presented in the following table.

The following criteria are considered for each scheme:

Feature/Criterion	BQ-9000	AGQM	New Scheme
Regular testing - Sample testing regimes and laboratory requirements.	Fully documented; labs become accredited under the scheme. Assume US testing labs.	Samples would be sent to Europe for testing.	Develop a testing regime. NZ labs and leading University Chemistry departments who are already testing under the grants scheme and EFSR Schedule 3 testing would be acceptable.
A Quality Management System - Accreditation process where the type and frequency of audits is to firstly achieve certification and secondly to ensure the quality standard is maintained.	Recertification every three years.	Regular sample testing	A QMS would be required as part of the scheme. Testing frequency and conditions to be agreed.
Consideration of sustainability / evidence	Not addressed	Not addressed	Could incorporate existing EECA Sustainability Information web page.
Sole Means of communication re quality / sustainability	Quality covered in a label.	Quality covered in a label.	Both quality and sustainability information would be covered/addressed in a new label
Accessibility of scheme (coverage of scheme (for example producers, retailers, distributors, storage operations))	At present it appears that the scheme may be accessible in US and Canada only; possible to use as a model.	Has international access. Samples would need to be sent internationally for testing.	Can be designed to be accessible to all in New Zealand (at least at a minimum level). Could be designed to cover all aspects of production, retail, distribution and testing. Initial focus on producer/retailer operations.
Cost to implement and costs to participants	Costs are provided on the website in US dollars and are extensive http://www.bq-9000.org/costs/ Application fee of \$1,000 plus audit fee of \$2,000 plus auditor travel expenses for one production location, for multiple audits - each additional audit beyond the	Testing in international laboratories would be too much of an additional expense for the smaller players in the New Zealand market.	Costs to implement at this stage are unknown. Application fees would be required. Costs associated with monitoring tests would be minimal as QMS testing would be used where

	<p>base audit will require an audit fee of \$1,500 plus auditor travel fees. Or Audit fee of \$3,750 plus auditor travel expenses; multiple audits are an additional \$1,500 plus auditor travel fees. Also Recertification Fee of \$2,000 plus auditor travel fees (every three years) Administrative Fee of \$250 for a name change request.</p> <p>These sorts of fees would be outside the reach of most NZ players.</p>		<p>practical. The aim would be to impose minimal additional testing or auditing costs. Costs would also be associated with receiving and checking reports against scheme criteria and issuing a label and general scheme administration.</p>
Documentation required	Application Process - typical	Application Process - typical	Standard documentation, enough to be credible but not to impose costs on a small market and a small number of players.
Quality management and training needs	Difficult to say at present as training has a US/Canada focus.	Difficult to say with limited information. Training and seminars appear to be available as part of the scheme but unlikely to be outside Europe.	Could be covered using independent NZ experts and dedicated BANZ events and workshops to ensure ongoing training.
Criteria that should be mandatory and additional voluntary criteria	The scheme aspects are mandatory.	tbc	Scheme could cover both. Minimum required for accreditation under the scheme.
Scheme ownership and learning opportunities	USA owned; external experts and limited or no opportunity for NZ based skill development.	German owned; external experts and limited or no opportunity for NZ based skill development.	Has the potential to be NZ owned and maximise the potential for national skill development. Able to be extended to cover bioethanol blends.
Standards	US Biodiesel Standard	EU Biodiesel Standard and NZ standards could be included.	Engine Fuel Specifications Regulations 2008 – Schedule 3 for biodiesel and Schedule 4 for bioethanol.
Industry support	Some NZ industry participants have	Some NZ industry participants	Some NZ industry participants have

	<p>indicated their preference for this kind of scheme.</p> <p>Likely to be beyond what a market of NZ size requires.</p>	<p>have indicated their preference for this kind of scheme.</p> <p>Likely to be beyond what a market of NZ size requires.</p>	<p>indicated support for a BANZ administered scheme.</p> <p>Some participants are already engaged in a number of activities consistent with an accreditation scheme.</p> <p>A new label could be developed or the previous EECA Biofuels Label could also be used with modification.</p>
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6. Discussion

The New Zealand biodiesel market is small by international standards with production volumes reported in 2008 and 2009 as 1.2 and 0.9 million litres respectively. An accreditation scheme in New Zealand would give potential customers greater confidence that biofuels sold by accredited suppliers are of high quality and meet sustainability standards. This would increase overall sales of biofuels in New Zealand. While evidence of satisfied customers is already available, taking active steps to ensure customer confidence is essential if sales are to grow. A visible 'label' to certify quality and communicate sustainability credentials is a key part of this process.

A brief review of current international accreditation schemes and national activities that work towards the delivery of a quality fuel have been reviewed and presented in this document.

Criteria that would form the key elements of a scheme were noted as follows:

- Quality Management Processes
 - Acceptance of existing schemes
 - Sample testing regimes and laboratory requirements
 - Process review
 - Staff training
- Consideration of feedstock sustainability information
- Documentation required
- Accreditation process and the type and frequency of audits to firstly achieve certification and secondly to ensure the quality standard is maintained
- Currency of QMS processes
- Accessibility of scheme (coverage of scheme (for example producers, retailers, distributors, storage operations))
- Ethical behaviour

The BQ9000 Scheme is not available in New Zealand and while it is a model that could be followed it is too comprehensive and expensive for the New Zealand market. The AGQM Scheme is potentially accessible but like the BQ9000 Scheme may be more comprehensive than New Zealand needs. The cost of implementation of both schemes is also likely to be a barrier.

Players in the New Zealand biodiesel market have different processes, capabilities and abilities to pay for compliance with an accreditation scheme. A single scheme has the ability to normalise processes and procedures relating to quality. It would bring a sense of commitment from players in the market to work together to support a scheme which works towards a clear message to the public about the fuel they produce. A New Zealand scheme could largely be based on current activities, for example, sustainability information reporting, and with the

addition of an agreed Quality Management System and a requirement for regular product sample tests.

It is important once again to emphasise that no scheme can guarantee quality. Not even mineral diesel or petrol quality can be guaranteed. What a scheme can do, however, is communicate a message to consumers that producers and other participants in the scheme are subject to independent quality checks and adhere to an agreed set of procedures to ensure quality fuel gets produced. Most producers, retailers and distributors of biodiesel operate with good quality management procedures (including audit procedures). In many respects, those involved in the industry don't need a scheme to encourage them to observe quality practices because it makes good business sense to do so. However, an accreditation scheme has the added benefit of being a communication tool to consumers.

Finally, BANZ recognises that some companies have their own processes and procedures in place and may be considering how to formalise them. BANZ believes that to be credible a scheme must have universal support. Larger players in the market will be better able to implement their practices, to seek overseas assistance and to consider options for accreditation but this is not an option for most of the smaller players. A New Zealand scheme would incorporate different approaches through the need to achieve minimum compliance.

7. Conclusion and Recommendation

This report presents the reasons for the introduction of an accreditation scheme in the New Zealand market. Above all there is a need to assure the public that biofuels are of a high quality and are safe to use.

Three main options have been reviewed for the implementation of a biodiesel accreditation scheme in New Zealand. It is recognised that the New Zealand market is small and while such a scheme needs to be credible in its requirements, it should not be too cumbersome or costly. BANZ recommends – ***Option 3 – the development of a 'New Zealand Specific Scheme'*** that pulls together many activities that are currently in place and would make some of these mandatory. It is proposed that BANZ would administer the scheme.

Accreditation as a Biodiesel Producer under the scheme would require the following:

1. ***A Quality Management System (QMS)*** – All fuel producers would be required to formalise their procedures and would be externally audited. A commitment to training would also be part of the QMS.
2. ***Regular testing and reporting of testing history (minimum of 12 tests per year)*** – Regular testing and the requirement to publicise test results also sends a clear message

to producer and customer of the reproducibility of quality fuel. This should be stipulated in the QMS.

3. **A sustainability statement** – Sustainability is one of the key selling attributes of New Zealand fuel whether made locally or imported. Providing a sustainability statement is already something that the leading producers have done. EECA presents this Sustainability Information on its website. Making the provision of this information mandatory, formalises the requirement as part of an accreditation scheme.
4. **A sole means of communicating quality and sustainability** – A common label of compliance that complements individual producer and retailer brands to provide consistent information to the public, minimise label confusion and by repetition, would reinforce the generic message that biodiesel from accredited companies is a quality fuel.

A New Zealand scheme can be focused on the New Zealand market. It can refer to the fuel requirements in the *Engine Fuel Specifications Regulations 2008*, focus on measures relating to quality and sustainability. It would develop its procedures and processes that meet the needs of a small but growing market. BANZ envisages the scheme would be a step beyond the minimum activities undertaken currently especially in relation to the frequency of fuel quality testing.

In terms of the next steps BANZ proposes the following:

- Seek the support of other parties, e.g. fuel retailers.
- Set out the requirements, conditions and required documentation (with an initial focus on producers).
- Develop the label and a protocol for its use.
- Develop the requirements for retailers and distributors (who are non producers).
- Promote the scheme.

Appendix 1: Labelling

The label would need to be simple and informative and ultimately should be able to cover biodiesel and bioethanol blends. The key information it would convey is that the holder is accredited under the New Zealand Biodiesel Accreditation Scheme and that users can be assured of both quality and sustainability. The label should be able to be put on fuel pumps and on-site storage tanks. It should have impact from a distance so would have few details.

Most importantly it should not conflict with the producer or retailer's brand labelling.

Consideration may be given to using the current EECA sustainability label for the purpose of an accreditation label. The label below is an existing EECA label originally used as part of the EECA 'labelling' scheme and in its original form dates back to 2005. This label was retailer specific and strictly speaking is no longer in use. Despite this, it is used currently by at least two leading players in the industry (one producer and one retailer). With slight amendment to this label, BANZ believes that it would satisfy the needs of the majority of producers or retailers as a first step.

With an amendment to the link, interested parties could find out more about what displaying the label means and on what basis it is awarded.

