SolidStandards

Enhancing the implementation of quality and sustainability standards and certification schemes for solid biofuels (EIE/11/218)

D5.2a

Case studies of sustainably certified solid biomass supply chains – *Green Gold Label*

Co-funded by the Intelligent Energy Europe Programme of the European Union

The SolidStandards project

The SolidStandards project addresses on-going and recent developments related to solid biofuel quality and sustainability issues, in particular the development of related standards and certification systems. In the SolidStandards project, solid biofuel industry players will be informed and trained in the field of standards and certification and their feedback will be collected and provided to the related standardization committees and policy makers.

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About this document

This document is the report on “Case studies of sustainably certified solid biomass supply chains – Green Gold Label” for **Work Package 5.2** of the SolidStandards project. This document was prepared in **March 2013** by:

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1. Introduction

1.1. General introduction

As of January 2013, national sustainability requirements for solid biomass exist in Belgium and the UK, and their introduction is debated in e.g. the Netherlands. Also, voluntary industry standards are also developed by various organizations. As part of the Solidstandards project (and especially regarding the work on sustainability certification), four existing different solid biomass supply chains using voluntary sustainability standards are investigated in detail, including all steps from sourcing the raw material (e.g. wood chips from the forest or sawdust), all pre-processing steps (e.g. pelletisation) to the end-user (medium-to large scale consumers).

The specific aim is to explore different types of case studies, i.e. to investigate different supply chains in terms of:

- Size of the end-user: from medium-sized installations of >= 1 MW capacity to (very) large consumers such as utilities with capacities of >= 100 MW
- Geographical boundaries, i.e. regional, national and international supply chains (including one chain originating outside the EU-27)
- Type of biomass: e.g. wood chips, wood pellets, or other solid biomass
- Each case study will investigate *applicability*, *barriers*, *costs*, *time efforts*, etc. associated with the actual implementation of sustainability certification of solid biomass.

Originally, it was also intended to analyse the implications of the EC decision on possible mandatory solid biofuel sustainability criteria. However, at the time of writing (January 2013), the commission has not yet published a decision. Nevertheless, the case studies of sustainably certified solid biomass chains will provide valuable experiences to other market actors, but also to national governments which still may decide to implement mandatory criteria on a national level.

1.2. Aims and scope

This case study focuses on the sustainability scheme used by large biomass consumers, namely the **Green Gold Label (GGL) programme**. This study aims to investigate and analyse concepts, introduction and implementation experience, current status and on-going development of GGL, by taking the supply chain of **British Columbia (Canada) to Europe** as a case study. The scope of this study concerns views and experience of different stakeholders along the supply chain, and provides up-to-date information.

2. Description of the Green Gold Label programme (GGL)

2.1. General description

The Green Gold Label programme is a certification system for sustainable biomass. It covers production, processing, transport and final energy transformation. Green Gold Label (GGL) provides standards for specific parts of the supply chain, as well as standards for tracking & tracing the origin of the biomass.

Green Gold Label was established in 2002 by Dutch energy company Essent (now RWE) and Skall International (now Control Union Certifications). In other words, this system was initiated by the end-user. It was fully implemented since 2003 / 2004. GGL was created as the result of a number of research programmes initiated by Essent in cooperation with Utrecht University under the name of Fair Bio Trade. The objective of this research was to develop protocols for the importation of sustainable biomass. These studies also investigated the technical, environmental and economic aspects of conversion of clean biomass into sustainable energy.

GGL is currently registered and owned by the independent Green Gold Label Foundation. See Section 2.4 for more details on governance and management.

2.2. Coverage and target groups

GGL has been operational since 2002 as a global certificate for sustainable biomass. With more than 8 million tonnes of biomass certified with the Green Gold Label in 10 years' time, GGL labels itself as a leading, accredited certification system in the market. Green Gold Label is committed to supporting the development of sustainable biomass for energy, power production and chemical purposes. The scope of the Green Gold Label scheme includes the entire chain of biomass/biofuel/bio-liquids for energy production and biofuel conversion starting at the primary production. It concerns all products, by-products, residues remains and derivatives of vegetable origin from agriculture and/or landscape and environment management that are eligible for energy production. GGL involves tracing from source to power generation: It covers production, processing, transport and final energy transformation. It provides standards for specific parts of the supply chain, as well as standards for tracking & tracing the origin of the biomass. Figure 2-1 shows the application of GGL standards along the supply chain. It offers two programmes:

I. Green Gold Label (GGL) (for sustainable biomass (covering production, processing, transport and final energy transformation): A mass balance calculation is used to derive the total amount of GGL material. Only an accredited, independent third party inspection body can issue Green Gold Label certification. There are various GGL standards that apply at different points in the biomass supply chain, each of the following steps is outlined in more detail in each standards (see Figure 2-1):

A) Supply of raw material – external forestry or agricultural standard or GGL 2, 5 or 7 - for raw material sourcing if other external standards have not yet been met.

B) Production/trading of wood pellets – GGL1; and Transport and storage - GGL4 - for sourcing, process and transport. Producers, traders as well as each consignment must meet specific GGL requirements.

C) Use at power plant - GGL6 – for power plants to prove that the power generated is the product of processed GGL certified biomass (introduction in 2011).

D) Greenhouse gases and energy balance calculation – GGL8 - for Greenhouse Gas Balance was developed in anticipation of the Dutch NTA 8080 (starting in 2011). The calculation method is based on the Renewable Energy Directive (RED) and covers the whole supply chain.

Notes: GGL3 is not included here because the foundation is still waiting for the decision from the RED. The structure of GGL 3 is similar to GGL 1 with the exception that within this scope the criteria of the RED are included.

II. Clean Raw Material (CRM): a specific clean wood certificate for pre-treated biomass, based on the Dutch standard NTA 8003 "Classification of biomass for energy production" codes 101-169:

A) Chain of custody and processing standards – CRM1

CRM is the counterpart of GGL1 for CRM material. Where GGL focuses on sustainability, CRM is used to prove that clean wood is used for the production of e.g. torrefied material. Due to the nature of this material, certain GGL1 requirements do not apply (such as the mass balance calculation). This new standard requires the material not to contain more than 3% binding agents, which also have to be of biomass origin.

B) Transaction Certificate – CRM2

CRM2 is the counterpart of GGL4 for CRM material, covering a specifically described amount of clean wood, leading to a CRM Transaction Certificate.

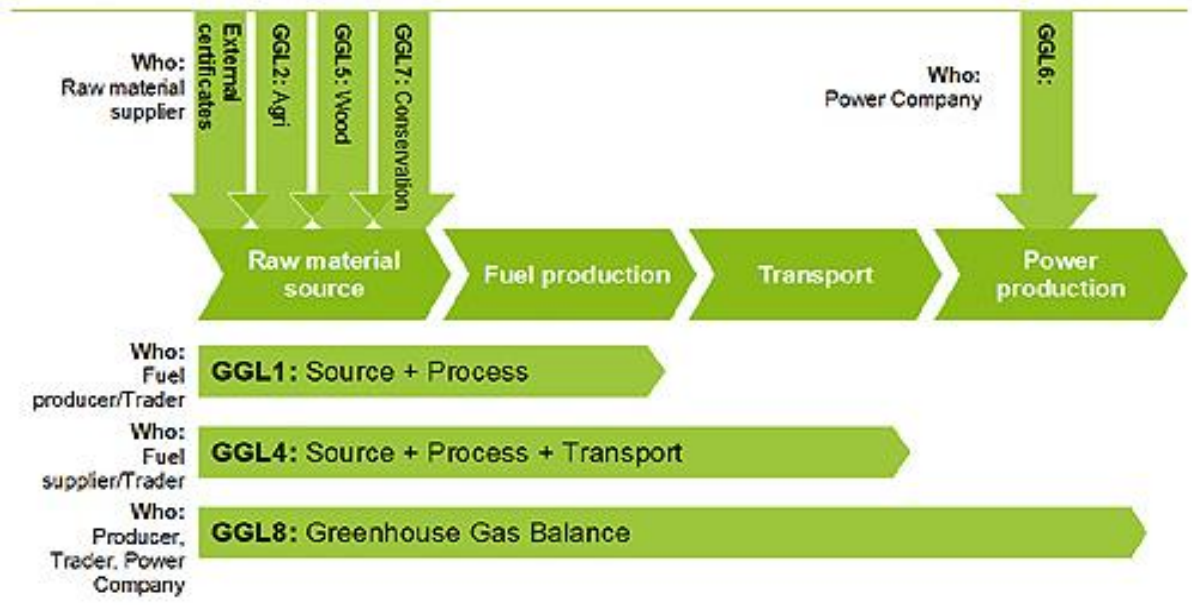

Figure 2-1 Application of GGL standards along the supply chain

Table 2-1 shows the target groups of different GGL standards. Currently over 25 biomass suppliers are GGL certified producers/traders (from Canada, USA, Portugal, Russia, Baltic States), as verified by Control Union Certifications, an accredited certification body. The major consumers of GGL pellets are based in the Netherlands and the UK.

Table 2-1 Target groups of GGL

Target group	Standards
Producer of agricultural / forestry (residual) products	GGLS1 Chain of Custody and Processing Standards;
Supplier of agricultural (residual) products (producer)	GGLS2 Agricultural Source Criteria;
First Entry Point, Traders and Conversion units for RED Compliant biomass/-liquids/-fuels	GGLS3 RED Compliance
Supplier of products and residual- by- and derived products from vegetable origin from forestry and/or landscape- and nature maintenance (producer)	GGLS5 Forest Management Criteria
Producer of agricultural/forestry (residual) products	CRM1 Chain of Custody and Processing Standards,
Operators and/or administrators that want to convert, restore and maintain an agricultural or forestry area to a non-agricultural or a non-forestry area with higher conservation values	GGL7 Conversation Stewardship

2.3. Recognitions

The GGL accepts certification under the following current schemes: Forest Stewardship Council (FSC), Pan European Forest Certification (PEFC), Sustainable Forestry Initiative (SFI), the Canadian Standards Association's Sustainable Forest Management (CSA) and the Finnish Forest Certification System (FFCS).

In 2012, the English Office of the Gas and Electricity Markets (Ofgem) has benchmarked the newly developed GGL – RED standard under the Renewable Obligations Orders (ROO). Forestry management certification systems such as FSC were also part of the benchmark. As of January 2013, the GGL - RED standard is the only voluntary system that has been approved by Ofgem

2.4. Governance and management

The GGL Foundation is responsible for the standards criteria and for communication with stakeholders. The member base is multi-stakeholder. Standard setters, primary producers, traders, end-users and NGO's are all welcome to join the initiative. An annual subscription fee is charged based on the membership type. Furthermore, a fee is applicable based on the quantity of traded sustainable biomass.

The most important governance bodies within the GGL Foundation are the Executive Board, the Advisory Board and the Technical Committee. The member base is multi-stakeholder. Standard setters, primary producers, traders, end users and NGO's are all welcome to join the initiative. An annual subscription fee is charged based on the membership type. Furthermore, a fee is applicable based on the quantity of traded sustainable biomass.

The Executive Board is responsible for strategic decision making and is ultimately responsible for the initiative. New board members are elected by existing members based on experience, knowledge and impartiality. The Chairman of the Executive Board is

independent. This is assessed by using clear criteria for independence. The following stakeholders should ideally be represented in the Executive Board:

- Primary producers
- Traders
- End users
- NGOs

The Advisory Board advises the Executive Board in its strategic decision-making process. This includes the structure and targets, the practical implementation as well as the applicability of the Green Gold Label Programme. The Chairman of the Advisory Board is independent. All stakeholders in Green Gold Label should be evenly represented in the Advisory Board. As a rule, the Executive Board will follow the advice of the Advisory Board, unless there are substantial interests not to do so.

The Technical Committee has a specific responsibility; they are responsible for 'control' approvals. Members of this Committee must have concrete technical expertise. The Committee is made up of multi-stakeholders including standard setters, primary producers, traders, end users and NGOs. Its members are chosen by the members of Green Gold Label.

Green Gold Label creates various Working Groups where specific topics are addressed, for example the development of the Green Gold Label standards, accreditation procedures, communication, engagement with governments etc. The Working Groups are multi-stakeholder governing bodies.

More information is available in Solidstandards Work Package Deliverable 5.1a and 5.1b; or refers to GGL website http://www.greengoldcertified.org/

3. Case study setting

3.1. Supply chain

For this case study, the supply chains of wood pellets produced in British Columbia (BC), Canada and used for power generation in the Netherlands and the UK are investigated. Figure 3-1 shows the general supply chain: from raw material (raw wood to saw dust, barks, etc.), conversion process (pelletisation), traded product (industrial wood pellets), and finally to end-users (power plants). Saw dust is still the main source for wood pellets in Canada, although in US round wood is also being used in recent years. These materials are processed and pelletized by different processors, and finally combusted in power plants. Three major GGL users in BC are Premium Pellet, Pinnacle Pellet and Pacific Bioenergy.

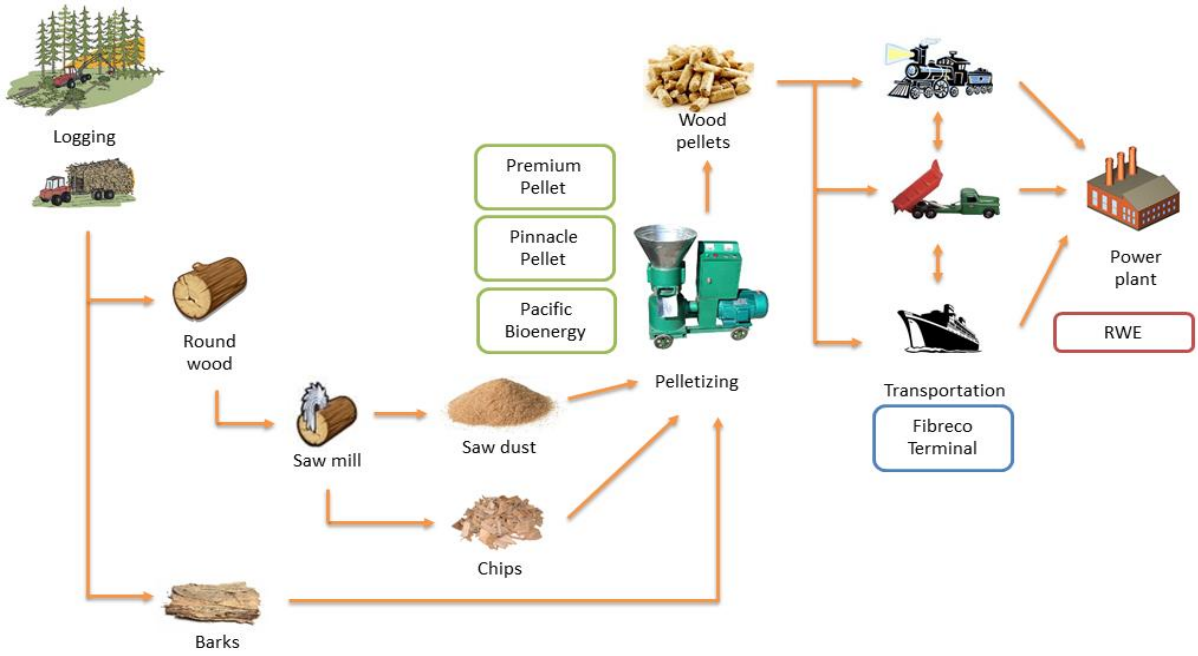

Figure 3-1 Industrial wood pellets supply chain from BC (Canada) to Europe

Table 3-1 End-users of GGL certified pellets

Users	Apply GGL since	Power plants	Consumption in 2012
The Netherlands	2002 (First audit in 2003)	- Amer power plant (Electricity generating capacity: 1,245 MW; Heat generating capacity: 600 MW) - Cuijk (Electricity generating capacity: 27 MW)	1.2 MT
UK	2011	Tilbury (Electricity generating capacity: 750 MW)	1.8 MT

RWE Essent (The Netherlands) and RWE npower (UK) are the two major consumers of GGL certified pellets. Table 3-1 shows the details of consumption in these two countries. On the other hand, Table 3-2 provides details of producers in different countries. To date, GGL is applied for wood pellets produced in BC (Canada), Georgia (USA), Portugal and the Baltic States. Different types of woody biomass are used as raw materials. Saw dust, chips and bark are common raw materials used in all supply chains. Round wood from plantation forests are used in the USA. Trucks, trains and ships are used to transport wood pellets to

their final destination, i.e. the Netherlands and the UK. Sourcing and supply of wood pellets are managed by RWE trading in Geneva. In Tilbury, RWE npower does not store wood pellets. Wood pellets are either directly shipped to Tilbury from producers, e.g. from North America; or materials were transported by small coastal freighters backward and forward from RWE's storage, in Amsterdam, Rotterdam and Antwerp.

Table 3-2 Producers of GGL certified pellets

Producers	GGL applied since	Raw material	Raw materials producers	Processors / Refiners	Production in 2012
BC, Canada	**2003**	Sawdust, trees, chips, bark	- Forests - Wood processing companies	- From few big pellet plants - Collect from several medium or small pellet plants	1.2 MT
Georgia, USA	**2011**	Sawdust, trees, chips, bark		- RWE owned pellet plants - From few big pellet plants - Collect from several medium or small pellet plants	1.5 MT
Portugal	**2008**	Sawdust, chips, bark	- Wood processing companies	- From few big pellet plants - Collect from several medium or small pellet plants	0.2 MT
Baltic states	**2005**				0.1 MT

3.2. Product specifications

A set of harmonized technical specifications is proposed to be used by the International Wood Pellet Buyers Initiative (IWPB, a scheme integrating GGL and other industrial verification initiatives such as Laborelec label) in the near future. One of the main goals of IWPB is to standardize technical specifications and sustainability requirements for wood pellets. The details of technical specifications is available here http://www.laborelec.be/ENG/initiative-wood-pellet-buyers-iwpb/

3.3. The actors

GGL system is a system initiated by the wood pellets end-user, i.e. Essent (now RWE). There are 6 groups of actors along the chain: producers, logistics companies, end-users, the certification body, certifiers and the NGOs. Figure 3-1 shows the map of British Columbia to help the readers understand where the producers are located.

3.3.1. The producers

Premium Pellet Ltd.: Premium Pellet Ltd. is based in Vanderhoof, British Columbia, Canada. The company manufactures high quality wood pellets from sawmill sawdust, planer shavings, and chip fines (white wood waste). It is a subsidiary of L&M Lumber Ltd. and Nechako Lumber Co Ltd. L&M Lumber and Nechako Lumber Co Ltd. bring over 25 years of forest industry experience. Locally owned and operated since 1974, L&M Lumber and Nechako Lumber Co Ltd. have become the one of the leaders in Canadian wood fibre utilization and environmental policy. The annual production capacity is 185 ktonnes.

Pacific BioEnergy: Pacific BioEnergy is a private company established in 1994 with corporate offices located in Vancouver, BC and operations in the heart of British Columbia's forest region. It is one of the leading wood pellet fuel producers in North America. It operates a world-scale pellet fuel processing facility in Prince George, BC and has a number of development projects underway in other major forestry regions of the province. The company is planning to grow production significantly through an expansion of its Prince George facility and by adding new facilities. Each of the facilities is designed to process a broad variety of forestry derived raw materials, from sawmill residuals to forest residuals and whole logs.

Pinnacle Renewable Energy Group: Pinnacle is a private company founded by the Swaan family of Quesnel, and has been in operation for over twenty years and is the longest established pellet producer in Western Canada. It is located in the heart of the lumber industry in central B.C., Canada. Pinnacle produces a variety of products including softwood pellet fuel, animal bedding and natural sorbent. A large portion of their production is for the bulk domestic and overseas market. Today, the company operates six pellet plants across BC with a production capacity well over 1 million tonnes annually (including 100% of its partner plant in Houston BC). They are located in an arc centred on Prince George, with Burns Lake and Houston on the western arm and Meadowbank, Quesnel, Williams Lake and Armstrong going south through the Cariboo.

Figure 3-1 British Columbia, Canada[1]

[1] Source: http://www.th.gov.bc.ca/popular-topics/distances/images/Distance_Calculator_Map.jpg

3.3.2. The logistics companies / terminals

Fibreco Export Inc.: The 30-year-old international wood-fibre marketing and export terminal company was originally launched by independent mills and is now a private enterprise. So far in 2011, it has handled 100% of British Columbia's pellet exports, although its next-door neighbour, Kinder Morgan, handled some of Pinnacle Pellet's shipments up until 2010. Pinnacle also has unused storage capacity at Port of Prince Rupert, where it has loaded ships through Ridley Terminals[2].

3.3.3. The end-users (the initiator)

RWE Essent (the Netherlands): RWE Essent is the largest energy company in the Netherlands, with its headquarter in 's-Hertogenbosch. RWE Essent provides private and business customers with gas, electricity, heat and energy services. RWE Essent (including its predecessors) has over 90 years' experience of generating, trading, transmitting and supplying electricity. It has also been in the business of supplying gas for 150 years. Principally RWE Essent is a biomass end-user, but it also expanded to upstream, i.e. production, processing and trading. Wood pellets are consumed in Amer and Cuijk power plant in the Netherlands.

RWE npower (UK): RWE npower is a leading integrated UK energy company and is part of the RWE Group, one of Europe's leading electricity and gas companies. It serves around 6.5 million customer accounts and produce around 10% of the electricity used in Great Britain. It supplies electricity and gas to residential and business customers. RWE npower operates and manages a flexible portfolio of coal, oil, biomass and gas-fired power stations, as well as a portfolio of cogeneration plant. Npower started co-firing a range of biomass such as olive residues and shea meal, since 10 years ago but only at very low level. At the end of 2010, npower started to convert a power station (Tilbury B power station) from coal to 100% dedicated biomass. In the 4th quarter of 2011, the conversion was completed and a 750 MW of power station powered by wood pellets and limited amount of supporting liquid biofuels was created.

RWE Trading (Geneva): Its dedicated biofuels desk, Global Green Commodities, is active globally across a range of fuels, predominantly wood pellets but also woodchips and agricultural by-products. It is responsible for the short-term and long-term international supply of all biofuels to the RWE Group. They also work with a wide and varied base of third-party customers around the world.

3.3.4. The certification body

Green Gold Label foundation: The GGL Foundation is responsible for the standards criteria and for communication with stakeholders. See Section 2.4 for more details.

3.3.5. The certifiers

Peterson Control Union Group: The PCU Group is a network of independently operating service companies that mainly operates under the trade names Peterson and Control Union. The specialist activities of the group's companies comprise of inspection and certification of

[2]Source:http://www.canadianbiomassmagazine.ca/index.php?option=com_content&task=view&id=2899&Itemid=132

food, animal feed, textiles, minerals, forest products, biomass, biofuels and oil and gas related equipment, as well as integrated 4PL logistics for these markets. The company, headquartered in Rotterdam, Netherlands, with an office in Vancouver, plays a key role in the supply chain of getting pellets from Canada to Europe. The company certifies product as sustainable using programs such as PEFC, FSC, SFI and Green Gold Label and certifies product quality. They also perform ship inspections before they are loaded and sample cargo, testing pellets for calorific value, ash content and chemical composition. In Europe, Control Union also supervises unloading of ships as well as monitoring the condition of cargo while in storage for off-gassing and self-heating and organizes trans-shipping of pellets between various European terminals and utility companies.

3.3.6. The NGOs

SOMO: As a representative of the NGO's, the Centre for Research on Multinational Corporations (SOMO) was selected. SOMO is an independent, non-profit research and network organisation working on social, ecological and economic issues related to sustainable development. SOMO's multi-year project on 'energy chains' focuses on transparency, sustainability and due diligence practices by the various actors within the value chains of electricity feedstock such as coal, solid biomass, and uranium.

4. Method and data collection

This study largely depends on publicly available information. It draws on data collected in several ways:

1) Data were collected from questionnaire surveys and interviews with market actors. Table 2-1 presents the list of interviewees and other direct sources of information. We conducted intensive individual interviews with a small number of respondents.
2) The data collection was complemented by a thorough contextual literature search whenever required.

Interview transcripts are attached in the appendices.

Table 2-1 Direct sources of information

Interviewee lists	Interview transcript
Peter-Paul Schouwenberg, RWE Essent, the Netherlands	Appendix I
Duncan Robinson, RWE npower, UK	Appendix II
Robert Tarcon, Premium Pellets, BC, Canada	Appendix III
Vaughan Bassett, Pinnacle Pellets, BC, Canada	Appendix IV
Bas Verkerk, Secretary of GGL, The Netherlands	Appendix V
Mieke Vandewal, Peterson Control Union Group, The Netherlands	Appendix VI
Joseph Wilde, SOMO, The Netherlands	Appendix VII
Johan Maris, Peterson Control Union Group, The Netherlands	Appendix VIII

Note: All the above information was collected in the period of August 2012 – January 2013

5. Results and discussion

Initiating the system: Why certification scheme?

Ten years ago (2002), RWE Essent has made a ***commitment to biomass as a large part of its sustainable energy plan*** in its long-term strategy to adapt low carbon economy which is growing globally. While the industry was familiar with fossil fuels, biomass was still something new to the public in general and employees of Essent. At that time, Peter-Paul Schouwenberg, now the Project Manager Biobased Economy in RWE Essent, has envisioned the need to prove the sustainability of biomass. He has proposed to develop a certification scheme for solid biomass which is deemed as a way to prove the sustainability of biomass energy that helps to ***promote social acceptance of biomass energy***. This decision has led to the establishment of Green Gold Label in 2002 by Essent (a Dutch energy company which is now part of RWE) and Skall International (now Control Union Certifications). The objective was to develop ***protocols for the importation of sustainable biomass***, covering the technical, environmental and economic aspects of conversion of clean biomass into sustainable energy.

Ten years later (2012), this vision seems to become true. To ensure sustainability of solid biomass used or produced within the EU, the EC has recommended adapting the sustainability criteria for liquid biofuels on solid biomass. In the current absence of mandatory EU-wide sustainability criteria for solid biomass, UK as the forerunner has developed a set of sustainability requirements. As from April 2011, the English Office of the Gas and Electricity Markets (Ofgem) obliged the UK energy generators to ***report against sustainability criteria for solid biomass*** under the Renewables Obligation. From October 2013 onwards, solid biomass will need to meet the sustainability criteria to be eligible to receive ROCs[3]. Ofgem has benchmarked the newly upgraded GGL scheme, namely GGL-RED standard under the Renewable Obligations Orders (ROO). At the time of writing, the GGL-RED standard is the only voluntary system that has been approved by Ofgem. Duncan Robinson, Corporate Responsibility Manager at RWE npower in UK, indicated that there are significant benefits to operators in using Ofgem approved sustainability schemes for any wood pellets that will be burned. Currently, wood pellets are still more expensive than coal. Governmental support is the pushing force to using biomass.

On the other hand, it is quite likely that a number of other individual member states unilaterally will also develop (further) sustainability criteria, while others maintain the status quo. Energy generators were given two years of transition period. The Netherlands has also been considering the implementation of a reporting system for sustainable certified solid biomass, and therefore developed the Dutch Biomass Protocol. It will be most likely accepting schemes that based on the existing RED criteria too. Those aforementioned policies and legislations could be regarded among the strictest worldwide of their kind. Duncan Robinson stressed that it is therefore part of RWE's development strategy to ***promote the use of the highest sustainability standard on biomass for energy***. They have envisaged the long-term values to invest in a competent sustainability system.

[3] DECC (2012) Biomass Electricity & Combined Heat & Power plants – ensuring sustainability and affordability. Available at: http://www.decc.gov.uk/assets/decc/11/consultation/ro-banding/6339-consultation-on-biomass-electricity--combined-hea.pdf

From the point of view of the producers, the motivation for certification is relatively simple – it is an end-user demand. They participate in GGL certification to ***ensures market access in countries with (forthcoming) mandatory requirement***, particularly the European market. The growing demands for bioenergy in Europe motivates the production of biomass in BC. The producers see GGL as a tool to provide verifiable evidence for sustainability to enter the European market.

Start-up: How was the scheme set-up?

Since the beginning until now, forest biomass, especially wood pellet is the most important type of solid biofuels in the scope of GGL. GGL is actually a certification scheme that is closely linked to sustainable forest management schemes (SFMs). It recognizes a range of SFMs such as FSC and PEFC. Peter-Paul Schouwenberg mentioned that the idea is to ***develop the scheme based on the existing SFMs*** instead of starting from scratch. For example, the GGL accepts certification under the FSC, PEFC, SFI, CSA, and FFCS. In addition to recognition of existing SFMs, GGL itself has also developed GGL 5 which is a standard that covers sustainability criteria for forestry. However, according to Mieke Vandewal, GGL Account Manager at Control Union, the GGL 5 is rarely used because the existing SFMs already fit perfectly within the framework. In other words, most of the biomass certified by GGL has a SFMs certificate, even though for residues, it is necessary to obtain SFM certificates from the lumber producers.

The actual certification system was ***developed by a big pellet user with an experienced certification company***, i.e. RWE Essent and Control Union. Control Union is a certification company familiar with inspection and certification of food, animal feed, textiles, minerals, forest products and etc. To make the system independent, they constructed ***an independent foundation with a multi-stakeholders governance structure***, i.e. the GGL foundation which is the owner of the scheme. The groups of people involved in the chain were defined accordingly. Each group should then have a seat in the board of the foundation, i.e. producers, users, traders, NGOs. However, there are still lack of information of the board members, particularly the representatives of producers and NGOs, available to the public.

Introduction and implementation: Overcoming the challenges

In British Columbia, according to Peter-Paul Schouwenberg, Premium Pellets is the first producer that participated in the GGL scheme (also the first participant in global), followed by Pacific Bioenergy and Pinnacle Pellets. As one of the scheme initiators, Peter-Paul Schouwenberg said that one of the biggest challenges at the beginning is to ***educate the market actors about sustainability certification of biomass for energy purpose***. Besides the producers, Peter-Paul Schouwenberg pinpointed that in principal all actors involved along the chain, including the power consumers (general public) should be educated.

First of all, RWE Essent ***proposed concepts and theories by working with the university***. Peter-Paul Schouwenberg emphasized that people have to understand the theories first before translating the ideas into practices. Indeed, GGL was created as a result of a number of research programmes initiated by Essent in cooperation with Utrecht University under the name “Fair Bio Trade”. The objective of this research was to develop protocols for the importation of sustainable biomass. These studies also investigated the technical, environmental and economic aspects of conversion of clean biomass into sustainable energy.

Next, the initiators ***introduced the concepts to the market actors***, i.e. wood traders, saw mills, pellet producers, and then the logistics companies, warehouses, utilities, and other market actors. In the past ten years, Control Union has been carrying out the education on-site and off-site. The producers are only familiar with the SFMs which are not designed for energy use of biomass. Besides that, they also have to comply with various local laws and regulations related to forest. Mieke Vandewal has also shared her view that some of the producers may consider that making an additional certification for forestry biomass has limited add-on value to the existing forest governance systems. Mieke Vandewal pointed out that more communication is always needed to ***overcome the 'cultural difference' between different regions (localities)*** in terms of forest management and biomass harvesting. According to Peter-Paul Schouwenberg, to ensure good understanding and ability to follow the scheme, ***the producers were given a period of time for learning***. They are allowed to have a one- to two-year transition period to get their products certified after they sign the contract. From the point of the producers' view, Rob Tarcon, General Manager at Premium Pellet, and also Vaughan Bassett, Vice President Sales & Logistics at Pinnacle Pellet, said that GGL is indeed technically feasible. The biomass producers are familiar with SFMs which are in practice for a much longer period of time. Through the supplier claims, GGL is able to ***link the existing SFMs certifications with its requirements***. This has greatly reduced the learning time. Correspondingly, from the perspective of the power companies, they have made a 10-years time scale to gradually increase the percentage of certified biomass up to 95%. By setting learning curve for both production and consumption side, the balance between supply and demand is secured. Until 2012, they managed to achieve the target accordingly.

In the meantime, the GGL foundation also initiated discussion with the NGOs. Peter-Paul Schouwenberg expressed that it is important to ***prepare a road map to raise the confidence of consumers and NGOs***.

Lastly, the GGL foundation ***provides training to the pellet producers and traders on the actual procedures of certification***. In Pinnacle Pellet, some changes were made to comply with the requirement of GGL, such as substituting gas to biomass as fuel for drying, using larger vessel sizes for ocean transport, and utilizing hydro-electric power in the plant wherever possible (such as grinding). On the other hand, there were no changes in Premium Pellet. The general reaction of the producers are quite uniform. The ***main concern of the producers is the additional cost incurred***. This extra cost comes from extra work in making procedures, handbooks, and other administrative work. According to Peter-Paul Schouwenberg, this cost is roughly about 10 cent per tonne of biomass, which could be significant to the margin made by the producers. Robert Tarcon said that the additional cost comes from certification should be paid by the buyers. This is included in their current contract obligation that they have negotiated with the buyers. Robert Tarcon stressed that they are not willing to share the cost with the buyers. However, another producer, Vaughan Bassett indicated that they bear the additional cost themselves. The cost distribution may vary with bilateral contracts based on volumes, period and other conditions. Representing the buyers, Peter-Paul Schouwenberg echoed that the additional cost is minimal with good and efficient management work. He said that as of next year, the producers may have to share the cost.

On-going development: Opportunities and challenges ahead

In view of the rapid development in policies, especially in the Netherlands and UK, Bas Verkerk, Secretary of the GGL foundation, expressed his views that ***the current challenges***

mainly lies within the process of translation of legislation to the actual situation in the field or vice versa. He claimed that certain changes in legislation has big implications for the production side of the chain. The biggest discussion is how to cover those criteria, what changes need to be put in place and how the market actors adjust their ways of working. Peter-Paul Schouwenberg pointed out that they have to upgrade GGL to comply with the new criteria (which are closely related to the RED criteria for liquid biofuels) implemented in UK and possibly in the EU in the future. The upgraded standard, namely GGL-RED, is still waiting for approval from the EC. For the case of UK, Peter-Paul Schouwenberg expected that the requirements will be less strict than what they would have expected, i.e. it will not follow the RED criteria completely. He stressed that if the RED criteria is followed completely, it will cause a huge discussion on biomass produced from Canadian forests[4], and the import of Canadian biomass may be diminished. Indeed, ***sustainability requirements gives impact on the biomass supply***. For example, RWE has stopped sourcing wood pellets from one of the Russian pellet plant due to the GHG emission reduction requirements, which their pellets do not meet.

Basically, an all-decisive factor will be whether the European Commission will introduce mandatory sustainability criteria for solid biomass, and if so, what these criteria will include. If EU-wide criteria are introduced, they will supersede all regulations on national level. This uncertainty has led to many discussion and has caused different policies changes in some Member States. From the perspective of producers, Robert Tarcon indicated that there are a lot of changes in GGL recently due to the rapid development in the European market especially the policies. Although he said that these changes are durable, Robert Tarcon pointed out that ***a more frequent communication between the users and producers on the new changes is needed***. Bas Verkerk responded that the communication deficiency is mainly due to the fact that only small resources is available because the GGL foundation is a small organization. To improve and tighten the connection with the producers, the foundation has ***included a representative of producers in the meeting of advisory board***. Bas said that this also helps to facilitate discussion on the application of sustainability criteria in a wider scale.

More importantly, according to Peter-Paul Schouwenberg, they will ***make the system completely independent***. That is the idea of setting up an independent foundation since the beginning. Besides involving all stakeholders in the governance of the foundation, a separate entity which is not related to PCU group should be hired to carry out the education task. Currently, education and certification are both performed by companies under the PCU group. He stressed that on long term this is not acceptable because both entities are related.

On the other hand, the European utilities are also working together to ***make a harmonized scheme using GGL as the based system***. Besides GGL, many different sustainability

[4] In the Canadian context, the application of the EU proposed sustainability criteria such as “Biomass shall not be sourced from primary forests” is not straightforward; estimates of the proportion of Canadian primary forests may range from 56 to over 90% of the forest landbase depending on the operational definition used. Moreover, there appears to be a large variability in the way individual countries interpret and operationally apply definitions such as ‘primary forests’ for their own forest assessment reporting, which may have effects on how overall sustainability of biomass supply chains is assessed and perceived by importing countries. It is also unclear how forest certification systems compare with the intended sustainability criteria in the RED. The consequences of non-alignment between the operational reality of local forest conditions and existing certification schemes and RED sustainability principles may create non-tariff barriers for export and create hurdles and possibly conflicts in trade flows of forest biomass. (Source: Thiffault and Schouwenberg, 2012. Project proposal for IEA Bioenergy)

initiatives also exist. Most of the existing schemes are designed primarily for their own companies, such as Laborelec Label for Electrabel. At the first sight, this may create a potential trade barrier. Incompatibility between schemes designed at the same level in a supply chain may reduce flexibility in logistics. Due to technical and cost considerations, horizontal trading between large biomass power plants has become essential; however incompatibilities between systems has become one factor that restricts the trading of wood pellets between power plants. Besides that, as certification is a highly administrative process, accommodating different systems in the same supply chain could be time consuming and costly. As a producer, Rob Tarcon strongly supported the use of a single harmonized scheme using GGL as the base scheme. To address these problems, the power companies have initiated Initiatives wood pellet buyers (IWPB), which is a working panel that works on a harmonized approach in the sustainability principles applicable to wood pellets/woody biomass sourcing and trading based on existing systems, i.e. GGL, Drax Sustainability Principles, Vattenfall agreement with the Senate of Berlin, and the verification procedure developed by Laborelec and SGS in Belgium. The IWPB brings together GDF SUEZ, RWE, E.On, Vattenfall, Drax Plc., and Dong, as well as certifying companies SGS, Inspectorate, and Control Union. According to Peter-Paul Schouwenberg, a new scheme label from IWPB that can be used by all utilities should be ready by October 2013.

Nevertheless, Duncan Robinson said that it is also very challenging to make a harmonized scheme. The ***challenges to bring each scheme into conformity mainly comes from the disparity in sustainability requirement among the Member States***. Currently the UK has very stringent sustainability requirements compared to the other member countries. He indicated that timing is one of the most important factors, saying that if they would want to have a harmonized scheme now, they would like to make it at the highest standard. On the other hand, as a Canadian biomass producer, Vaughan Bassett voiced his opinion that ***the requirements should take into account the local conditions, laws and regulations in Canada***. He suggested that Canada should be granted a “low-risk region” status with its relatively sound forest management tradition.

In addition to forest biomass, GGL also includes a standard, i.e. GGL2 which focuses on agricultural biomass, particularly the residues or by-products. However, Mieke Vandewal said that at the moment still no agricultural biomass is certified yet. Interestingly, Peter-Paul Schouwenberg has envisioned that agricultural biomass will be an important biomass source in the near future. This implies that the ***application of GGL may be expanded to agricultural biomass***.

Lastly, Peter-Paul Schouwenberg also mentioned that ***the financial institution (the investors) should be informed exactly the opportunities and challenges to the industry*** brought by sustainability certification.

Conclusion: Is GGL a success? How can it be improved?

Representing the foundation, Bas Verkerk regarded GGL as a successful system because it's ***the only initiative that become a widely used certification program for wood pellets***, and it has been running for quite some years with a large number of certifications issued. Bas highlighted that not every program is a certification program – mostly remain as verification programs. As a biomass producer, Rob Tarcon gave a very high rating to GGL. In his opinion, GGL has encompassed the very best system. They are very comfortable with the system because ***it is very easy to use and follow***. But another producer, Vaughan Bassett also warned that ***restrictive practices which are administratively impossible should be***

avoided - the certification scheme needs to be practical. He also suggested that to improve the system, people should consider Canada as a “low risk” region and reduce compliance documentation.

Bas Verkerk and Mieke Vandewal both also added that the GGL system has been growing exponentially, especially is still evolving rapidly. As a completely new industry, new challenges are arising from ongoing changes in policies and regulations in different countries. Ultimately, ***the scheme should evolve in such a way that it will be accepted by all relevant authorities***.

On the other hand, a representative of NGOs, Joseph Wilde from SOMO, has pointed out that a certification standard such as the GGL ***should stipulate a high degree of transparency on the origin of the biomass*** so that conditions can be checked by external third parties and civil society organizations. He stressed that transparency is crucial for civil society to help monitor (and eventually improve) social and environmental conditions in the supply chain. Joseph Wilde expressed that they currently see a very low degree of transparency in the biomass chain, compared to the other industries, for example, the garment/textile and electronics industries, with only a very few examples of power companies willing to publicly identify their suppliers of biomass. Johan Maris, the Managing Director of Peterson Control Union, explained that the sensitivity of confidential information is always related to time of publication as well as the details. In certification they are obliged to publish the names of those who are certified, which means in that sense it is very transparent. He explained that they cannot publish business related information, such as who is buying form each other at what volumes, periods, prices and so on, because such information can influence future deals. He indicated that ***publishing information in a larger scale or with a delay of a year***, avoids these kind of problems. Examples are ‘x tonnages shipped from BC, Canada’, this kind of information can be published as long you can’t make up a conclusion of the questions I formulated earlier. On the other hand, the authors also noted that the Bio-based Economy Magazine has reported that in October 2012, the biomass users have signed the a Green Deal, namely "Sustainability Solid Biomass for Energy” [5] . The participating companies will ***report annually to the government the amounts of biomass they use and how sustainability is demonstrated via certification or verification systems***. Peter-Paul Schouwenberg expected that the report for 2012 should be ready by May 2013. However, the level of details of this reporting system will only be revealed when the report is published.

[5] Source: http://www.biobasedeconomymagazine.nl/Nieuws/Opnieuw_biobased_Green_Deal.html

6. Appendices

6.1. Appendix I

Interviewee: Peter-Paul Schouwenberg

Position: Senior Officer Regulatory Affairs and Project Manager Biobased Economy

Organization: RWE Essent, The Netherlands

Date: (i) August 2012; (ii) 29 November 2012

Location: (i) Emails; (ii) Vancouver, Canada

Description: Peter-Paul Schouwenberg has a legal and business administration background. Previously Peter-Paul was Vice-President Biofuels & Development within Essent Trading International SA in Geneva, and for more than 10 years responsible for the sourcing, trading and development of biomass (solids and liquids) on a global scale. Due to his leadership Essent became one of the authorities in the biomass market. He developed furthermore an unique track and trace system (Green Gold Label), which can be used worldwide in the discussions regarding the sustainability of biomass.

Introduction:

Essent principally is a biomass user (mainly wood pellets at this moment), but it also expanded to upstream i.e. production, processing and trading. Its head quarter is at ‘s-Hertogenbosch, and its electricity or heat production sites are at Geertruidenberg and Cuijk.

Note: Peter-Paul provided most of the information in Section 3.1.

Topic: Setting up the GGL system

In 2002 Peter-Paul started to set up the GGL system. He envisioned that people have to prove something for using biomass in the future. He indicated that everybody was used to fossil fuels, and people know exactly what is the administrative work as well as issues regading health in using coal. But when they started showing up something with biomass, in the beginning people don't know whether biomass is “clean” or not. Since they were using forest products, they need to prove that they are doing a good job. That was the reason to develop a scheme for biomass, but Peter-Paul stressed that they should not develop something new, but should be based on existing schemes such as FSC, SFI, Canadian standards, and etc.. At that time, they didn’t refer to liquid biofuels sustainability criteria (which are now recommended by the EC to apply on solid biomass), because their base is forestry products.

Peter-Paul explained how he started this idea with the producers. At the beginning the producers didn't know anything about sustainability certification of biomass for energy purpose, but only the forest management systems. The first step is to educate them. That's also a reason that Essent puts in the contract a clause which said that the producers have to be certified within one year after they sign the contract, instead of doing it immediately. If they are not certified within the period, Essent can terminate the contract. However, at the beginning they allow 2 years for this because it is more important to get these producers educated. Peter-Paul then explained that in terms of the internal policy, they have a time scale to gradually increase the percentage of certified biomass up to 95% in 10 years. In the

mean time they are able to secure the supply and slowly help / educate the producers to certified their products.

RWE Essent started the setting up of the certification scheme with Control Union because they are familiar with ceritifcation schemes for textiles, forests, and etc.. They are experienced people. To make the system independent, they constructed a governance structure, i.e. the GGL foundation which is the owner of the scheme, and an advisory board. They defined groups of people involved in the chain. Each group should then have a seat in the board, i.e. 1 producer, 1 trader, 1 NGO, 1 forest, and etc..

Topic: Introduction of the GGL system

Peter-Paul said that they first started with Premium Pellets in BC, Canada, and also Henifex at the East coast of Canada. After that they also introduced the system to Pacific Bioenergy and Pinnacle Pellets in BC, Canada. The reaction of the producers at the beginning is that this would cost them extra time and effort. These extra work includes making procedures, handbooks, and other administrative work. This has then led to extra cost. But Peter-Paul stressed that if people have good management system, they will be more efficient. He said that this is only extra administrative work, but if they have that in place, they spend less hours and become more efficient, and naturally cost lesser.

Peter-Paul also explained how they communicate with the market actors. In principal they have to educate everybody. They started this by working with the university. He indicated that people have to understand the theories first before translating them into practices. Next, they educate the forest industry, i.e. traders that bring wood to the saw mills, saw mills, pellet producers, logistics companies, warehouses, end users - utilities, and other market actors. Control Union carries out the education. They spend a few days on-site to discuss the content. The GGL foundation also makes discussion with the NGOs. Peter-Paul said that the NGOs always ask things happen tomorrow, therefore they need to prepare a road map. Lastly, they educate the pellet traders on the transaction of certificates, so that they can trade the certificates off the cargo. Peter-Paul also mentioned that the financial institution (investors) should be educated to know exactly what are the opportunities come from sustainability.

Peter-Paul said that the price is roughly about 10 cent per tonne of biomass. The producers would like to increase the biomass prices due to the cost. Previously, Essent paid for the certification. As of next year, the producers may have to pay to the foundation, about 5 cent per tonne, could be increased to 10 cent per tonne. It is insignificant to the end-users, but since the producers are not making any margin, extra 5 cent /10 cent would make a loss.

Topic: Ongoing development: Opportunities and challenges

According to Peter-Paul, the next step is making GGL independent from Essent. In addition, they also tried to integrate Laborelec label and Drax scheme into the GGL scheme. IWPB is a follow-up of GGL, which should be ready by next year. Via IWPB, they will implement a principle sort of biomass platform, via a multistakeholder process, that should be finalized by 2014. In the mean time (next year), they will introduce a scheme label as a new version of GGL that can be used by all the utilities. He expect this scheme should start on 1 October 2013.

In addition, Petr-Paul also explained the issue from the perspective of certifiers. He said that Control Union should not do everything - if Control Union is the auditor, it can't be the one doing the education. At the moment, they solve that by putting Peterson in doing the certification and Control Union Consultancy in doing the education. He stressed that on long term this is not acceptable because both entities are related. They will have to let the other companies which are not related to Control Union to do the education.

Peter-Paul also elaborated about upgrading GGL to the RED standard. Within GGL, there are several standards with different purpose, for example for forestry and for agriculture. To comply with the new criteria (closely related to the RED criteria for liquid biofuels) implemented in UK and possibly in the EU, they have to improve the GGL system, namely GGL-RED. Peter-Paul said that the producers are not used to that yet. Indeed, GGL-RED is not used yet because they need approval from the EC. In UK, Ofgem has accepted GGL as a certification scheme for solid biofuels. Ofgem will change the regulation as of April 2013. Currently, there is a consultation. Peter-Paul expected that the requirements will be less strict than what they would have expected, i.e. it will not follow the RED completely. He said that if the RED criteria is followed completely, it will cause a huge discussion about primary forest, because about 80% of Canadian wood are from primary forest. In that case most probably they will not see any wood pellets entering the UK. In Peter-Paul's point of view, they will change the requiremen and accept biomass from the Canadian forests, for e.g. MBK infected forests.

6.2. Appendix II

Interviewee: Duncan Robinson

Position: Corporate Responsibility Manager

Organization: RWE npower, The United Kingdom

Date: 20 July 2012

Location: Telephone

Description: Duncan works as Corporate Responsibility Manager at RWE npower. RWE npower is a leading integrated UK energy company. He provides provision of strategic advice to RWE npower senior management on sustainability issues and their commercial implications. He is also Responsible for sustainability performance management at Tilbury power station (conversion project).

Introduction:

At the end of 2010, RWE npower decided to convert a power station (Tilbury B power station) from coal to 100% dedicated biomass. The conversion took about a year. In the 4th quarter of 2011, they have completed the conversion and created a 750 MW of power station powered by wood pellets and limited amount of supporting liquid biofuels. The amount of wood pellets used depends on market conditions and operation, roughly ranged from 1 to 1.5 million metric tonnes a year in this phase of operation (2011). Tilbury power station will close before 2015 as it is “opted out” of the EU Large Combustion Plant Directive, they intend to run at close to maximum capacity until plant closure. However, they are considering to extend the operation to the mid of 2020s. If they do so, future capacity will be between 1.5 to 2 million metric tonnes per year.

Topic: Application of GGL on biomass for power generation

The sourcing and supply of wood pellets are managed by RWE trading in Geneva. Basically they use 100% of GGL certified pellets with information and additional data to demonstrate that these wood pellets are sustainable. On occasion, they use biomass come from GGL equivalent sources (for e.g. SGS verified materials) to fill the supply gap due to logistical consideration.

For logistics, Duncan explained that they do not store wood pellets in Tilbury. Wood pellets are either directly shipped to Tilbury from producers, for e.g. from North America; or they use small coastal freighters to take materials backward and forward from RWEST’s storage, in Amsterdam, Rotterdam and Antwerp.

Duncan explained that using sustainable biomass is part of the strategy in adapting and developing low carbon business to maintain the profitability and enhance the long term value of the company. To tackle climate change issue, low carbon economy is growing globally and in the UK. They believe that biomass has significant potential as a low carbon source of energy. Currently wood pellets are more expensive than coal. They need government support to develop biomass energy. The government requires energy generators to report against sustainability criteria under the Renewables Obligation. Furthermore, biomass energy has to be acceptable by the society. Certification is a way to proof the sustainability of

biomass energy. They want to guarantee that our sustainability management is of the highest standard.

As from April 2011, the Ofgem sustainability requirement obliged the UK energy generators to report against sustainability criteria for solid biomass under the Renewables Obligation. Energy generators were given two years of transition period. From April 2013 onwards, solid biomass will need to meet the sustainability criteria to be eligible to receive ROCs. Duncan indicated that there are significant benefits to operators in using Ofgem approved sustainability schemes for any wood pellets that will be burned from April 2013.

6.3. Appendix III

Interviewee: Robert Tarcon

Position: General manager

Organization: Premium Pellet Ltd., BC, Canada

Date: 5 December 2012

Location: Telephone

Description:

Introduction:

Production capacity of Premium Pellet mill is 185 ktonnes. About 40% of raw materials comes from L&M Lumber and Nechako Lumber, about 40% comes from Canfor which is 15 km away, and about 20% comes from Connefex which is about 70 km away. The mill exports 125 - 135 ktonnes every year which is 100% GGL certified. RWE is their biggest customer. They also sell pellet to Italy and Japan, but they do not require GGL certification.

Topic: Application of GGL: Opportunities and barriers

Since 6 years ago (2006), Premium Pellet started to use GGL. Control union is the certifier. In Rob's opinion, GGL has encompassed the very best system. They are very comfortable with the system, because it is very easy to use and follow. He will definitely recommend GGL to everyone. Rob said that there is minimal barrier in using GGL. Premium Pellet has not made any changes to its mechanical process only to the tracking of certified and non-certified material. The only problem they have is lack of training. There is limited direction in how to implement new changes of the system. Rob indicated that there are a lot of changes recently but he mentioned that these are durable. In his opinion, this is just a learning curve. Rob also indicated that there is no problem in technical terms. Through the supplier claims, it works nicely to prove SFI, CSA, etc.

With GGL as a better proof for sustainable commodity, Rob said that they gain better access to market. Without having GGL they would have no verifiable evidence for sustainability. That is 100% neccessary to gain market access to the market.

Rob also explained that buyers pay the additional cost comes from certification. Premium Pellet sends invoices to the buyers for any extra cost. This is part of their contract obligation that they have negotiated with the buyers. If the buyers require certification under certain qualification, Premium Pellet will invoice the buyers and therefore no additional cost for Premium Pellet. Rob stressed that they will not share the cost with the buyers. The cost will be 100% for the buyer's account. The actual cost is confidential.

Finally, Rob suggested that the system can be improved by having everyone operates using the same system. Currently they are working with 3 certification systems. However, they would prefer to see 1 certifying body working under 1 set of criteria. Rob recommended GGL as their first choice of sustainability certification system. In terms of the actual procedures, Rob didn't see any needs to change because it is already very solid. Rob would like to see it becomes broader and can be accepted by the other buyers.

6.4. Appendix IV

Interviewee: Vaughan Bassett

Position: Vice President Sales & Logistics

Organization: Pinnacle Pellet, BC, Canada

Date: December 2012

Location: Telephone / E-mails

Description: Vaughan Joined Pinnacle in May 2011. He has an extensive international career in the forest products industry, having spent almost 20 years with a global pulp and paper company. As the executive in charge of their world-wide pulp sales, he was stationed in Hong Kong for 10 years. He has also taught export management and international logistics at a major business school in Toronto as well as starting up his own green business in BC. Vaughan has a BSc from the University of Natal and an MBA from the University of the Witwatersrand, both in South Africa. He is responsible for the pellet marketing, sales, logistics, quality assurance and trading activities of the company.

Introduction: Pinnacle has 6 pellet plants in British Columbia. They produce approximately 1.1 MT of wood pellets from saw milling residues, and most of them (about 95%) are exported to Europe. The production quantity grew rapidly in the past 10 years.

Topic: Application of GGL: Opportunities and barriers

Vaughan indicated that they have been using sustainability systems such as GGL, CSA, SFI, FSC and PEFC since 12 years ago. The application of sustainability system has increased rapidly to 95%, and maintains at this level. About 45% of the wood pellets (about 0.5 MT) are certified with GGL system. All of the GGL certified pellets are sold to RWE. They apply these systems because the customers demand that. With these certifications, they gain more sales. The overall outcome is positive. According to Vaughan, the biggest barrier is the lack of understanding of sustainability in Canadian context. However, at the moment they don't find it difficult to comply with the sustainability criteria provided clear definition of criteria is given. There are also no difficulties in sourcing sustainable raw materials provided saw milling residues is treated as waste or by-products. However, Vaughan indicated that there is some compatibility issues between schemes and Canadian laws and regulations. Other than aforementioned issues, there are no additional barriers. Vaughan said that the additional cost to comply with the sustainability system is time to prepare and to be audited. However, he doesn't consider the total cost related to certification is significant compared tot he value or profit margins of wood pellets. They swallow this additional cost. Vaughan thought that this system can be considered as a success, said that GGL brings opportunities to the producers and expected that its application will continue to expand. But Vaughan also warned that restrictive practices which are administratively impossible should be avoided - the certification scheme needs to be practical. He also suggested that to improve the system, people should consider Canada as a "low risk" region and reduce compliance documentation. In Pinnacle Pellet, some changes were made to comply with the requirement of GGL, such as substituting gas to biomass as fuel for drying, using larger vessel sizes for ocean transport, and utilizing hydro-electric power in the plant wherever possible (such as grinding).

6.5. Appendix V

Interviewee: Bas Verkerk

Position: Secretary

Organization: GreenGold Label Foundation

Date: 12 December 2012

Location: Skype

Description: Bas Verkerk, graduated with a MSc in Sustainable Development; track Energy & Resources from the University of Utrecht, the Netherlands. Upon completion of his study in 2008 he established and managed a certification and inspection office in Vancouver, Canada, focussing on quality control inspections of wood pellet shipments heading to Europe. In addition to this, Bas worked with and learned about programs such as FSC, PEFC, SFI, ISCC and GGL. In mid 2012 Bas returned to the Netherlands and is currently heading a consultancy company named 'Peterson Consultancy' that amongst other functions, serves companies throughout supply chains in their need for sustainability certification. Currently Bas is also the secretary of the GGL foundation. He is a facilitator to streamline communication between the members.

Introduction:

By the end of 2008 Bas started the office in Vancouver. The main purpose of the office is the inspection of wood pellets quality control at the port. At the beginning GGL certification at the wood pellet plants, ports, terminals and the whole supply chain was carried out by people flew from the office in Zwolle, the Netherlands. The auditing process was then handover to the Vancouver office last year (2011).

Topic: Current development and challenges

Bas expressed his views that the difficulties mainly lie within the process of translation of legislation to the actual situation in the field, or vice versa. Certain changes in legislation has big implications for the production side of the chain. The biggest discussion now is how to cover those criteria and what changes need to be in place. This involves the pellet plants and also the forest management, such as how to prove the required sustainability criteria. And then, it goes up to the inspection of whole supply chain. The participants in the supply chain need to learn and adjust the way of working.

The impact of sustainability criteria on administration or field practices depends on which criteria. According to Bas, ultimately, whether a forest is sustainable or not is not really in between something people can determine or adjust. Trees have been growing for 30 – 60 years. Forests do not change suddenly with different practices. It takes a long time to change a forest (Note from the authors: this should exclude extreme practices such as deforestations). Bas indicated that the impact is indeed mainly on the administration, where administrative tools are developed to indicate that certain forests are sustainable. Certain forests probably will be decided as a no-go area and just excluded from the chain.

Bas explained that due to changes in national legislation such as in UK, GGL has to follow that changes as well. Bas said that GGL foundation is a small organization, therefore they only have minimum resources to do everything quickly, including communication, developing the system and etc.. Therefore the connection with the producers might be a little bit loose. However, they are getting a producer in the meeting of advisory board in order to overcome some of those communication deficiency. It also helps to facilitate discussion on the application of sustainability criteria in a wider scale.

Bas also mentioned that the cost is not significant in big picture, but could be significant to the producers (especially small producers) which has a small margin with every cents count.

Finally, Bas regarded GGL as a successful system. It's the only initiative that become a widely used certification program for wood pellets that has been running for quite some years, with a large number of certifications issued. Bas stressed that not every program is a certification program – mostly remain as verification programs. GGL has a third party certification bodies in the whole system and supply chain in a very independent manner. However, Bas also added that the system is still evolving and a lot of improvement is needed. This is due to the fact that wood pellet industry is a completely new industry (Note from the authors: for power generation). Bas said that there are limited resources (money and time) and something practical is really needed, which is what they have been doing. They have set up a foundation and what they have to do now is to fine tune things to make the schemes more comprehensive and more understandable, so that communication are smoother between the foundation, ceritifcation bodies and the participants. Ultimately, the scheme should evolve in such a way that it will be accepted by all relevent authorities.

6.6. Appendix VI

Interviewee: Mieke Vandewal

Position: Account Manager Green Gold Label & Clean Raw Material Standard

Organization: Control Union Certification

Date: 12 December 2012

Location: Rotterdam, The Netherlands

Description: Mieke Vandewal completed a Master's degree and two Bachelor's degrees in the Netherlands, Germany and the UK in International Transport and Logistics. Upon completion of her studies she was with Essent Trading (today RWE), a dutch Utility, where she focused on the logistics of fossil and renewable fuels. She currently is with PCU (since 2009), a company active in Load & Discharge port inspections as well as quality assurance, where she is responsible for Acquisition, Marketing, Business Development and Certifications with a main focus on renewable energy. She is an active member with the Rotterdam Biomass Commodity Network and is one of the representatives of the Rotterdam Climate Initiative - Port.

Topic: Current development and challenges

The scope of this interview focuses on the development of GGL since 2009 until now. In 2012, GGL has undergone important changes and is regarded as “a new system” by Mieke. Main changes include: (i) Increase the list of approved SFM (but also with limitations); (ii) split up the CoC certificate to separate certificates for different parts in the chain - the inspection now covers not only the producers but also the end-users to provide more proofs; (iii) the users along the chain will get the ownership of the certificates, and they have to collect the evidence by themselves (which previously collected by Control Union). The increase in trade is the main reason for these changes. In other words, GGL is preparing and transforming itself to a certification scheme that can be used for commoditized wood pellets.

Mieke said that GGL has been growing exponentially, especially changing rapidly in recent years. New challenges arises from ongoing changes in policies and regulations in different countries. In EU, governments evaluate their policy year by year based on evolving sustainability requirements and discussion. Wood pellet market is still a non-mature market. This corresponds to the complaint from the Rob Tarcon (see Appendix III) claiming that the updates of changes for the producers is not frequent enough. To address this issue, also mentioned by Bas (see Appendix V), a representative of producers will now join the GGL advisory board meetings.

However, instead of technical issues, Mieke regarded cultural factor as the biggest barrier in implementing the GGL system. In North America the producers believe that already enough governance measures are in place to meet the sustainability objectives for bioenergy (i.e. legislation, regulations, guidelines). The main challenge is to overcome their reluctance to make additional proofs through better communication.

The other remarkable development is the harmonization of different sustainability initiatives of wood pellets. Currently there are different systems used in the market. Mieke explained the difference between “verification” and “certification”. GGL is currently the only “certification” system that is widely applied on industrial wood pellets. In GGL, several SFMs used in North America is recognized and used as proof at the production end of the chain. In reality, GGL 2 (Agri), GGL 5 (Wood) and GGL 7 (Conservation) have seldom or never been used. Instead, other external standards, particularly the SFMs are accepted for raw material sourcing part. Therefore, compatibility issue with regional sustainability systems is minimal at the moment, and stakeholders are not confronted with a multitude of audits and requirements. However, the iLUC and land criteria discussion will be another challenge ahead. The GGL standard designed to fulfil the RED compliance, GGL 3, is not applied yet.

6.7. Appendix VII

Interviewee: Joseph Wilde

Position: Senior Researcher

Organization: Centre for Research on Multinational Corporations (SOMO)

Date: October 2012

Location: E-mail

Description: SOMO's multi-year project on 'energy chains' focuses on transparency, sustainability and due diligence practices by the various actors within the value chains of electricity feedstocks such as coal, solid biomass, and uranium. The overall aim of this project is to contribute to the improvement of social and environmental conditions within the energy chains. By increasing the degree of transparency in energy chains, SOMO seeks to raise public and political pressure on electricity companies to bring their supply chain policies and practices into line with leading international normative standards and take action to improve social and environmental conditions throughout the chain.

Topic: Transparency

Encouraging greater transparency in the biomass supply chain, particularly related to the origin of biomass and socio-environmental conditions at production sites, should be a priority in the coming years. Transparency is crucial for civil society to help monitor (and eventually improve) social and environmental conditions in the supply chain, and a number of recently-ratified international normative standards for responsible conduct (such as the OECD Guidelines for Multinational Enterprises and the UN Norms for Human Rights and Business) demand a high degree of supply chain transparency from companies. We currently see a very low degree of transparency in the biomass chain (compared to transparency in the supply chains of, for example, the garment/textile and electronics industries – we are even now seeing some slight improvement in the transparency of the coal supply chain), with only a very few examples of power companies willing to publicly identify their suppliers of biomass. This puts the power companies out of line with international standards, and far behind global best practices.

6.8. Appendix VIII

Interviewee: Johan Maris

Position: Managing Director

Organization: Peterson Control Union

Date: February 2013

Location: E-mail

Description: Johan Maris is the Managing Director at PCU, an international inspection and certification organisation, with offices in over 60 countries, with experts (agronomist, fishers, foresters, food processors, etc.) on sustainable food, feed, textile, green energy, wood, paper and board and fish.

Topic: Transparency

The sensitivity of confidential information is always related to time of publication as well as the details. In certification we are obliged to publish the names of those who are certified. In that sense it is very transparent. The only thing which we can't publish without the permission of the company involved is business related information, as who is buying form each other volume's, periods, prices off course and so on. The reason for this, that such information can influence future deals. Publishing information in a more larger scale or with a delay of a year, avoids these kind of problems. Example's are 'x tonnages shipped from BC, Canada', this kind of information can be published as long you cant make up a conclusion of the questions I formulated earlier. Another possibility is of course to let every company declaring that they allow the certifier to publish this kind of information, but I doubt if companies are willing to do so.

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