

Establishing an Internationally Recognised Certificate System - The Practitioner's View

Presented in Colombo, Sri Lanka

15-19 August 2005

Edmund Everson
BSc Hons (Dunelm) MIoD FRSA



The Green Certificate Company Ltd.
12 The Broadway, Amersham, Bucks, HP7 0HP, UK
T: +44 1494 432323
F: +44 1494 434888
E: info@green-certificates.co.uk
W: www.green-certificates.co.uk
Document Reference: **GCC-SL-C001**

Executive Summary

The development of markets for Renewable Energy Certificates in Europe, Australasia and the Americas together with the emergence of the United Nations Framework Convention on Climate Change sponsored Clean Development Mechanism as a method to provide support to “environmentally friendly” energy producers has given rise to a number of standards, based on a variety of business models. Support schemes around the world are moving towards Certificates as evidence of environmental benefit. In some instances Certificates form part of a direct bi-lateral contract between the generator and the supporting body, in other cases Certificates may be freely traded; with the end-holder redeeming their value with a supporting body.

Supporting bodies are generally considered to be governments, providing support via a variety of mechanisms such as tax credits and guaranteed tariffs. However, supporting bodies could also be consumers (for example via a “green-premium” supply contract) or NGOs (Non-Governmental Organisations) and such-like providing sponsorship to more general consumer schemes.

Within all the various Certificate-based mechanisms there is an overriding commercial and legal requirement for the assurance of any statements made to support market transactions and the transfer of value. This paper examines some of the key issues relating to the issuing of Certificates, based on practical experience within Europe and the Americas. It sets out the key business functions of an Issuing Body and relates these to the requirements of voluntary, mandatory and CDM markets. It then addresses some of the problems encountered in establishing and transferring value through regional/national boundaries and inter-continental trades and the knock-on effects these issues can have on Issuing Bodies. A case study is presented demonstrating how the core activities of an Issuing Body can be discharged.

One principle requirement features throughout, the requirement for confidence. Without an open, robust and credible infrastructure, managed by parties in whom those involved can place both legal and financial trust, any mechanism will be subject to a degree of distrust. The concept of placing a value on “environmental benefit” and then trading this benefit, perhaps internationally and separate from the associated activity, is something many have difficulty in accepting, either for conceptual or political reasons. It is therefore essential that any mechanism promoting environmentally beneficial development through commercial structures based on trading benefits be perceived as open, robust and credible. This credibility has been successfully achieved within Europe, the Americas and Australasia. Certificate mechanisms are now widely accepted as a robust means by which to support the development of renewable energy sources. They have been demonstrated as effective in regional, national and international schemes alike.

Background

In 1990 the UK government put in place (for England & Wales) two mechanisms designed to support the nuclear industry: the Fossil Fuel Levy, a taxation scheme initially designed to fund the nuclear industry, and the Non-Fossil Fuel Obligation (NFFO), effectively a compulsory purchase mechanism to ensure the continued scheduling of nuclear plant. One of the features of this structure was that electricity from non-fossil fuel sources was exempt from the Levy. A supplier with a significant proportion of contracted electricity derived from non-fossil fuels could therefore save on their Levy charges. Almost immediately a new concept of “Green Ticket” contracts was established.

Green Tickets involved the operation of two contracted energy flows across the interconnectors between the England & Wales market and Scotland. The model was subsequently adopted between England & Wales and France. “Brown” fossil fuel derived electricity was sold in one direction and the same quantity of “Green” non-fossil fuel derived electricity was sold in the other direction. The net electrical flow was zero, but the “Greenness” was transferred and the Levy could be avoided.

Whilst suitable for a low number of high value transactions, Green Ticket contracts were cumbersome and by their very nature bespoke to individual deals. In order to assure the parties of value and meet the requirements of a taxation system that had not envisaged such circumvention there were many obstacles to overcome with each contract. However, these contracts were essential in establishing the portability of environmental benefits and the forerunner of today’s Certificate based mechanisms.

In the latter half of the 1990s the Dutch electricity industry put in place the Groenlabelsysteem (Green Label System). This was based on a voluntary agreement between energy companies and restricted to the Netherlands. It established the concept of tradable certificates to evidence the transfer of renewable energy benefits. Other countries around Europe began to develop similar models to support their own national goals and parallel developments in the Americas and Australasia also adopted Certificates as an evidentiary mechanism.

It quickly became apparent that each country had different standards and that in many instances these differences were significant. In some instances the differences were procedural; in others the differences were fundamental to the value of the Certificates. In 2002, the Association of Issuing Bodies was formed with its objectives including assisting in the harmonisation of standards and the promotion of Certificate based mechanisms in general.

For a Certificate based market to function effectively there a number of key functions that must be established. For the purpose of this document the term Issuing Body is used to refer to the party with ultimate responsibility for:

- Ensuring the accuracy of statements made in Certificates issued within a particular regional system;
- Monitoring the compliance of parties with the appropriate market rules; and
- The operation of the local market, including the registration of Certificate ownership (a role sometimes referred to as Trade Registrar).

Within different markets and structures these roles may in fact be performed by a number of authorities or by agents operating under delegated authority.

The term Certificates is used to describe individual evidentiary objects, either paper or electronic, that contain data relating to a specified event, such as the production of 1MWh of electrical energy.



Figure 1 Example Paper-Base Certificate

In some markets, particularly in the case of voluntary statements used for public relations, there is a desire for a physical document that represents the Certificate. However, in most of the traded markets Certificates are managed electronically using registry systems that operate in a similar manner to on-line bank accounts. There are a number of such registry systems in operation in Europe, many of which are linked in order to enable international trade registration.

The effective operation and management of the interface between systems and countries is of paramount importance for a number of reasons. Firstly, any mistake in a transaction can have

significant financial consequences for the parties involved. Secondly, the control of the interface between systems at national boundaries is an essential part of an Issuing Body's function within any scheme that reports against national targets. Finally, confidence in the end to end process is essential for the end consumer. A bank with insecure interfaces would quickly lose any position within the market, similarly this principle applies to Issuing Bodies responsible for system interfaces.

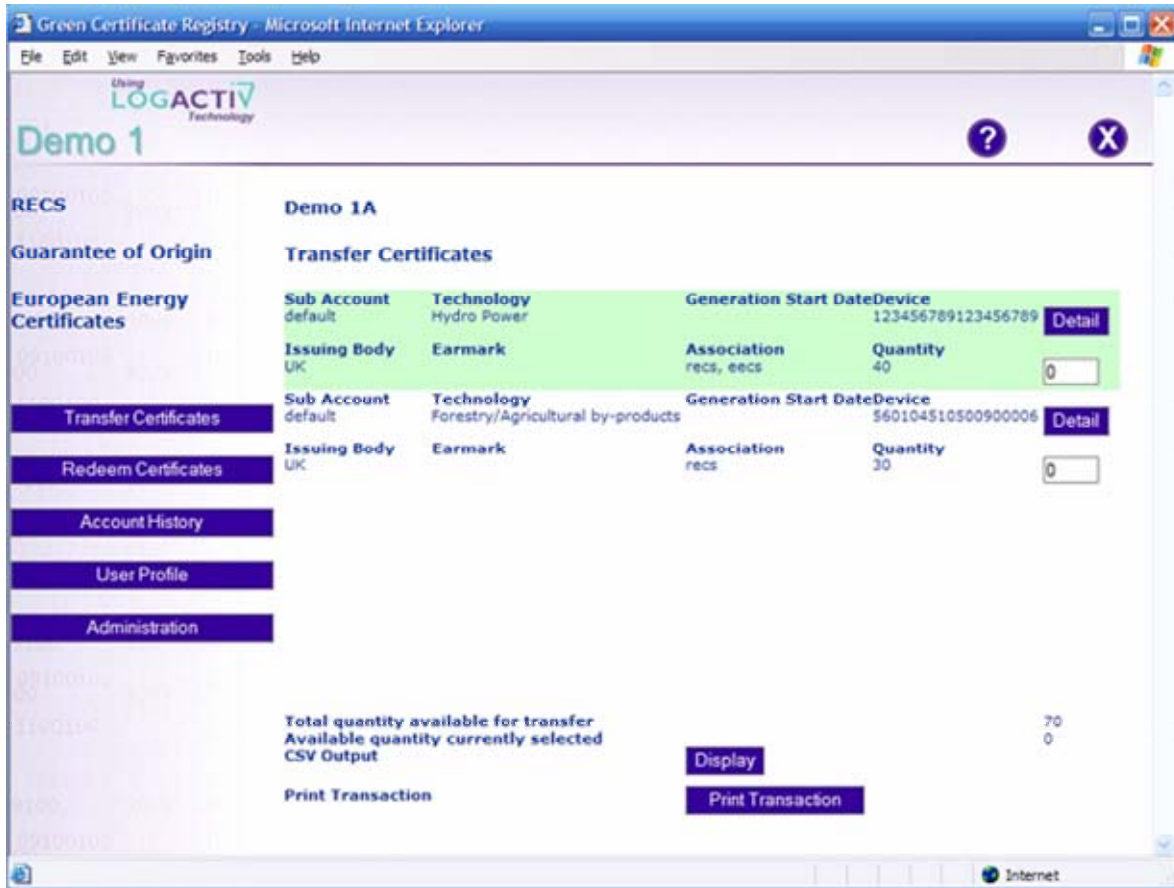


Figure 2 Example Multi-Scheme Electronic Certificate Registry

One of the key features of Certificate mechanisms that is relevant to operators within markets remote from the demand is that they can operate without physical connection. For example, the islanded electricity system in Iceland has traded Certificates with Austria. This is an important precedent, establishing the suitability of Certificate mechanisms for operation not only nationally, nor even within a continent, but on a global scale.

Faith in the Product

Within the scope of environmental benefits, Certificates can be used for a number of purposes. They can be used to evidence both production, as in EECS (the European Energy Certificate System¹), and greenhouse gas reduction, as in the UNFCCC (United Nations Framework Convention on Climate Change²) sponsored CDM (Clean Development Mechanism³).

Both Production-based Certificates and Reduction-based Certificates rely upon quality data in order for the schemes to operate effectively. The support schemes that operate around these structures are many and varied including obligation based compulsory purchase schemes, voluntary tax exemption schemes and direct support based on subsidised tariffs. Ultimately all these Certificate schemes rely upon event-driven data.

Production-based Certificates

Production-based Certificates are relatively simple in concept. A single Certificate relates to a uniquely identifiable event that can be documented without reference to anything else. For example, 1MWh of electrical energy produced on a specified date at a specified generator utilising biomass as a fuel source.

In such a scheme the Issuing Body must establish mechanisms to validate the claim only of the single generator. In the case of a scheme that generates Certificates for electrical energy production these mechanisms would include, but not necessarily be limited to, the following:

- Analysis of generation plant configuration;
- Environmental impact assessments, where appropriate;
- Validation of generation fuel data;
- Validation of site specific standing data (such as loss adjustments);
- Validation of generation output data; and
- Confirmation of commercial structures.

The Issuing Body must keep a register of all its activities, such a registry should ideally include details of each generator, the audit and review activities undertaken and all certificates issued to that generator.

¹ See <http://www.aib-net.org> for details.

² See <http://unfccc.int> for details.

³ See <http://cdm.unfccc.int> for details.

Reduction-based Certificates

Reduction-based Certificates are more complex in concept. Whilst single Certificate relates to a uniquely identifiable event that can be documented, the Certificate must also include details of the associated reduction, be it CO₂ emissions or otherwise. This places a requirement on the Issuing Body to maintain baseline data against which the reduction can be calculated. For example, 1MWh of electrical energy produced on a specified date at a specified generator utilising biomass as a fuel source could be deemed as “carbon neutral”. The associated carbon reduction is therefore determined to be the amount of carbon that would have been emitted by *other* generators should the plant in question not have operated. The Issuing Body must therefore have data for all the generation plant on the network and their aggregate activities over the time period in question. A calculation is then performed to calculate the volume of CO₂ emissions that have not taken place (assuming the fuel mix of other generators would have proportionally increased) because of the biomass plant’s operation and this reduction is then attributed to the Certificate.

In such a scheme the Issuing Body must establish mechanisms to validate the claim not only of the single generator but of all participants on the network. To date, most schemes operating under this structure have adopted fairly flexible criteria for determining reduction values as often it is very difficult to have an accurate picture of the whole market activity. In the case of a scheme that generates Certificates for electrical energy production these mechanisms would include, but not necessarily be limited to, the following:

- Analysis of generation plant configuration;
- Environmental impact assessments, where appropriate;
- Validation of generation fuel data;
- Validation of site specific standing data (such as loss adjustments);
- Validation of generation output data;
- Offset calculation criteria and related standing data; and
- Confirmation of commercial structures.

The Issuing Body must keep a register of all its activities, such a registry should ideally include details of each generator, the audit and review activities undertaken and all certificates issued to that generator. Given the possible complexity of the calculations involved and the reliance on market-wide data, Reduction-based Certificate mechanisms are much more difficult to manage than Production-based Certificate mechanisms.

It is worth noting that the value of an activity measured by Reduction-based Certificates is largely determined by the activities of other parties. Unlike with a Production-based Certificate scheme, errors in a Reduction-based Certificate scheme will directly impact on all participants to some degree. Within a Production-based Certificate scheme such errors would most likely have only second-order effects, if any.

Whatever approach is adopted, the common requirement is accurate data. This becomes even more important where Certificates are freely traded; either locally or, more critically, across regional and national boundaries. Within the voluntary sector the requirements for quality data are no less stringent, indeed they can sometimes be more so than for obligatory schemes. Voluntary schemes, such as EECS and VERs (Verified Emissions Reductions), rely on the satisfaction of both counterparties to each transaction. This can only be achieved by establishing credibility in the commodity being traded, and this in turn relies upon faith in the Issuing Body and the system as a whole.

Faith in the Mechanism

Having established a robust and reliable framework for issuing Certificates, an Issuing Body must also provide a similarly robust and reliable mechanism for the management of Certificates and the registration of trades and Certificate ownership.

Within obligatory schemes such as the UK ROC (Renewable Obligation Certificate⁴) market the framework is mandated by statutes of law. The Issuing Body (in this case Ofgem) has little flexibility to modify the framework and the market operates to the rules set out. A government mandated scheme such as this is likely to establish a reasonable level of market confidence provided the Issuing Body does not make serious errors that are publicly identified.

Similarly, the CDM framework provided by UNFCCC establishes confidence by providing a comprehensively documented and managed infrastructure with many checks and balances. However, as a Reduction-based Certificate scheme it has already been subject to much criticism and sceptical comment as to its effectiveness in determining meaningful reduction levels. The recently announced Asia-Pacific agreement, which is entirely voluntary, entirely technology-based, with no binding targets for reducing emissions, no sanctions, no mechanisms and, perhaps more crucially, no funding as yet seems unlikely to fare any better. At least the CDM framework addresses the majority of these issues and has a relatively broad spectrum of support.

Within voluntary schemes it is far more difficult to establish confidence in the mechanism. This has been an issue encountered in many guises. Green Electricity supply contracts are often unregulated and this can lead to confusion as to what such a product is. Take the following case as an example.

A supplier purchases electricity from a wind turbine generator.

The supplier sells the “renewable benefit” as Certificate to Consumer A, who has a standard electricity tariff with no generation source specified.

The supplier also enters into a contract with Consumer B to supply electricity described as “Green Electricity from Windmills”.

Going back to the principles of the original Green Ticket contracts, the supplier would be misrepresenting his product to Consumer B as the “renewable benefit” had been sold to Consumer A. Ensuring that this type of double counting cannot occur is fundamental to establishing confidence in any voluntary mechanism. Even where there is a mandatory scheme in place, secondary voluntary schemes operating within the same market must be subjected to vigorous standards to ensure that the value of a Certificate is accurately represented and not liable to double counting.

⁴ See <http://www.ofgem.gov.uk> for details.

In order to counter the problems faced in the voluntary sector there have been a number of initiatives aimed at providing common standards that can be adopted to ensure robust management of schemes in a manner that is broadly consistent. One such approach has been adopted under the Eugene⁵ programme which is focussed primarily on the voluntary sector.

Within Europe, the AIB (Association of Issuing Bodies⁶) promotes the use of a standardised system, based on harmonised environment, structures and procedures in order to ensure the reliable operation of international energy certificate systems. It has made great strides in the past few years towards the implementation of a common Certificate infrastructure. Membership includes Transmission System Operators, Market Regulators and independent Issuing Bodies. A number of governmental schemes implementing European legislation for the labelling of energy have integrated their national schemes with the infrastructure developed and managed by the AIB.

Within the United States there are a number of State-wide certificate schemes that have moved towards common standards and there is regular liaison between European and American representatives. Despite the United States rejecting CDM there have been significant developments at State level to implement Certificate-based mechanisms to encourage environmentally friendly technologies. These are both Production-based and Reduction-based in operation. However, without the open support of the national authorities, US schemes have yet to be widely accepted for integration and trade with European schemes.

⁵ See <http://www.eugenestandard.org> for details.

⁶ See <http://www.aib-net.org> for details.

Interaction between Schemes

When considering the confidence required in the mechanism through which Certificates are issued, traded and redeemed for value it is clear that the main issue is the interaction between schemes and the possibility for double counting. A scheme considered in isolation and insulated from other schemes can be relatively easily audited with a simple check of Certificates issued compared with Certificates redeemed or held in owner accounts. The introduction of a second scheme, or the interface with another region, makes this simple audit check redundant and imposes a significantly more complex requirement. The use of voluntary mechanisms in conjunction with obligatory mechanisms makes the situation even worse.

Recognising the problems with these interactions, the AIB has been working with Issuing Bodies in Europe for a number of years, seeking to implement common standards for issuing, transfers and reporting of Certificate details. To a large extent it has been successful, although there remain a number of as yet unresolved issues still to be addressed.

The AIB has documented a universal PRO (Principles and Rules of Operation) that applies to all its members. This document enshrines the principle of Uniqueness. It is this principle, when applied to Certificates, that ensures that double counting cannot occur. A Certificate is produced once and relates to a specific set of evidence, conferring a specific set of evidential attributes that can be traded and redeemed as appropriate to the market.

Within each Issuing Body a clearly defined Domain Protocol has been developed and published. These documents describe the local implementation of the PRO in a standardised format that details the rules and methods as applied by the Issuing Bodies, where necessary complying with locally applicable laws and regulations.

A common interface standard has been agreed providing a secure mechanism through which international trades can be registered on the various registry systems. This is currently being enhanced to enable central logging of international transactions in order to improve reporting and enhance the transparency of the market.

Whilst the AIB has made significant progress in the harmonisation of Certificate standards there remains the possibility that Issuing Bodies operating outside of the AIB could certify the same production or reduction activity. It is therefore remains essential that confirmation is obtained that only one Issuing Body is certifying and enabling the trade of each evidenced activity.

The Role of an Independent Issuing Body

GCC (The Green Certificate Company) is an independent Issuing Body. As such it is not bound by the competitive restrictions encountered by most Issuing Bodies operating under the mandate of a national scheme.

Within Europe there are a number of independent Issuing Bodies operating within a range of markets. For example, Observ'ER acts as Issuing Body for EECS within France and Oeko-Institut undertakes this role in Germany. Similarly there are many Issuing Bodies operating under mandate. Within the Netherlands the Issuing Body function is managed by the Transmission System Operator, TenneT, through its CertiQ subsidiary. This is the case for many of the European nations. Some have chosen to appoint the market regulator as Issuing Body, such as Ofgem for the ROC system in the UK. This case can however raise concerns that there is no-one to regulate the regulator. GCC was appointed by the RECS⁷ participants within the domains of the UK and the Republic of Ireland to act as Issuing Body for these domains.

For an independent Issuing Body the issue of trust is particularly important. This becomes more of an issue where the independent Issuing Body is operating in a market that integrates with obligatory schemes.

In order to ensure the establishment and maintenance of confidence in the services offered by GCC as an independent Issuing Body it was important to recognise and address the concerns market participants and other Issuing Bodies might have. GCC is fully independent of all market participants. It has no role in the production, supply, trading, transmission, distribution or regulation of energy and the associated markets. GCC is therefore not conflicted in any of its duties and offers its customers a service in which they can place their trust.

Being an independent service provider, GCC is able to provide its services to any domain, acting either as an Issuing Body or an agent, taking on the operational responsibilities on behalf of another Issuing Body.

Establishing an independent business structure that is open and without conflict is the first requirement of an Issuing Body. Putting in place robust procedures and mechanisms for the execution of operational functions is the other essential element to establishing confidence.

To this end, in partnership with Campbell Carr and Pure Energi, GCC helped to specify the requirements for the LogActiv⁸ registry system. The LogActiv system forms the foundation of GCC's registry service and is one of the most flexible such systems currently available. LogActiv is designed to operate within a variety of Certificate-based environments. It is compatible with both

⁷ See <http://www.recs.org> for details. RECS and EECS are similar systems, with EECS being a development of the RECS framework.

⁸ See <http://www.logactiv.com> for details.

voluntary and obligatory systems and has been supplied as a managed service to the Spanish and Portuguese transmission system operators. LogActiv is also used in Germany to support the voluntary Certificate sector.

GCC operates a number of LogActiv registry systems within the voluntary sector within the UK and Ireland and also in support of its wider certification operations outside of Europe. The LogActiv platform enables effective interaction between the Issuing Body and generators for the management of generation data and the Certificate issue process. It then provides full account management facilities for generators, suppliers and traders to maintain and transfer their Certificate holdings through a secure web-based client.

LogActiv operates in a similar manner to most enterprise accounting systems, with double entry of all transactions and full audit trails. It is designed to integrate with other certificate platforms and supports a number of secure interface standards, in particular those implemented within the ECCS framework. It is an essential part of GCC's business model.

As an independent Issuing Body, GCC sometimes encounters issues surrounding the interaction of different Certificate schemes. For example, Certificates issued in Country A in 2004 may be eligible for redemption in Country B, but Certificates issued in 2003 might not be because the evidential standards in place at that time did not meet the requirements. An understanding of the operation of these schemes and how the interactions may impact on the value of commodities traded has been proven to be an essential tool in ensuring that Certificates retain the confidence of market participants and the governments that may eventually rely upon the evidence provided by these Certificates. Being independent, GCC is able to provide impartial advice to market participants in these aspects.

It is only by establishing confidence in the services performed and the integrity of the Certificates issued that an Issuing Body can deliver an effective Certificate mechanism. Whether operating as an independent or a mandated authority, an Issuing Body must inspire this confidence in the Certificate mechanism. Within an obligatory Certificate scheme, the enablement of an independent Issuing Body can often enhance faith in the mechanism. Independence is a route to confidence.

Case Study

In 2001, GCC was approached to provide certification services for a new hydro-electric generator in Guatemala. The generator had reached an agreement with a European electricity supply company to provide Renewable Energy Certificates for its hydro-electric electricity production. The supply company intended to use these certificates to meet demand within the voluntary sector for products supporting renewable generation technologies. As such there was no obligatory framework against which compliance could be judged so a robust evidentiary mechanism was required to support the transaction to the satisfaction of all parties.

The initial stage of the process involved the conduct of an independent site audit to establish that the claims made by the generator could be substantiated and subsequently evidenced on a regular basis for the production of Certificates. The site audit was conducted using experts both from the UK and Guatemala and focussed on three key aspects: engineering; environmental impact; and commercial framework.

Engineering

The engineering review consisted primarily of a remote engineering assessment conducted by a UK based engineer together with clarifications from local authorities within the distribution company. The report detailed the production device, meters, technology type, installed capacity and the expected average annual quantity of electricity that should be produced.

The report additionally identified that standby facilities were available in the form of a fossil-fuel based generator. This was highlighted for additional clarification. Subsequently it was determined that operation of the standby generator was not a normal activity and that its output was insignificant and primarily used for emergency supplies to the generation site in case of power outage.

The final engineering report concluded that the electrical output of the site could be classified as Renewable Energy Source Electricity.

For a biomass facility or any facility capable of mixed-fuel generation the engineering review would consider the measurement of fuel quantities and the conversion factors relevant to the generated electrical output. The review would also consider the facilities in place to control emissions.

Environmental

The environmental review took the form of a review of the environmental impact assessments prepared by the site developers and operators prior, during and subsequent to the development of the generating station.

It was confirmed that the developers had undertaken extensive and thorough research into the impact of its development on the environment surrounding the station. As a hydro-electric scheme, consideration was given to the impact of reservoir requirements and the impact the scheme had on the river flow. The research concluded the scheme to be sized appropriately for its area.

For a biomass facility or any facility capable of mixed-fuel generation the environmental review would consider the facilities in place to control emissions. The review might also consider the impact of fuel transportation, etc. Where waste burning is undertaken the review would be likely to include consideration of sorting and filtering processes to ensure that hazardous products are excluded from the combustion process.

Commercial Framework

The commercial framework review took the form of a number of document reviews with supplemental support from local audit bodies.

A general electricity sector review was conducted to confirm that the proposed contractual structure for the transfer of renewable benefit was not prohibited by national regulations and that the generation plant was properly registered with the national authorities.

A contractual review was undertaken to confirm that the energy sale contracts from the generation plant did not require delivery of the associated environmental benefit nor confer any implicit rights to these benefits. As part of this a statement from an accredited auditor was obtained confirming that no financial premium had been received for the electricity sold from the generating plant because of its renewable nature.

A statement by the operator was secured to confirm that no past or present government support was received by the facility. This declaration covered all forms of support, including investment subsidy, tax relief, grant and operational subsidy.

A statement by operator was secured to confirm that none of the environmental benefits (including but not limited to, all emission displacement (CO₂, SO₂, NO_x, etc.)) had been separately sold or applied against a mandatory renewable supply obligation.

The commercial framework review established that the proposed registration of the generation plant for Certificate issue was properly compliant.

The commercial review may take a different structure depending on the specific circumstances. In particular, countries often adopt different principles for state aid and emission displacement. This case was reviewed for the requirements of a specific contract for the supply of green certificates to a single client. Under a generic national or international scheme it is likely that the requirements will differ.

Following the successful registration of the generation plant, GCC began the process of Certificate issue. This process requires verifiable evidence to support the statements of production that are part of a Certificate.

Data Verification

The first stage in Certificate issue is the verification of the meter data recording the generation output of the renewable generator. In this case, the local Wholesale Market Manager provided confirmation of the metered generation on a monthly basis.

This data was validated against the anticipated generation profile and loss calculations for the associated electrical connection to the supply network.

For a biomass facility or any facility capable of mixed-fuel generation the data verification process would also include receipt and verification of fuel source records and comparison of these with the electrical generation output.

Compliance Statement

With each Certificate issue request a statement was obtained from the plant operator confirming that there had been no material changes to the plant that could impact on the eligibility of the recorded generation for the issuance of Certificates.

For a biomass facility this statement would extend to cover the fuel mix used.

Certificate Issue

Once all the required data was validated for a given period, Certificates were issued to the Generator for the total MWh eligible for Renewable Energy Certificates. These initially took the form of paper certificates but were subsequently generated as electronic certificates using the LogActiv registry system.

For any facility capable of mixed-fuel generation the Certificate issue process would also include allocation of Certificates in proportion to the output derived from each component of the fuel mix.

The above steps demonstrate that the key requirement is confidence. Confidence in the data, confidence in the parties involved and, ultimately, confidence in the value of the Certificates.

Summary

GCC's experience as an Issuing Body has confirmed time and time again that the principle requirement is confidence. Without this confidence the commodities evidenced by Certificates are little more than worthless.

Certificates can be both a robust and flexible means by which to implement a mechanism to evidence activities that might be eligible for activity-based support through both the obligatory and voluntary markets. When carefully specified and properly managed, Certificate-based support mechanisms can be cost effective to implement and operate.

It is possible to implement a robust Certificate management system with very little initial development by utilising off-the shelf registry products and configuring them for local requirements. The procedural documentation and management processes required to operate an Issuing Body can be specified to reflect other recognised infrastructures, removing the requirement to start from a blank canvas.

By recognising the value of Certificate-based evidentiary mechanisms early on it is possible to utilise the same infrastructure to support a variety of trading, compliance and monitoring activities. Establishing the standards at the beginning and enabling the voluntary sector to integrate their requirements on the same infrastructure can remove the possibility of double counting and provide participants, regulators and government with a mechanism in which they can have confidence.

Author Notes

Edmund Everson

Ed is a founding Director of The Green Certificate Company. He is also Managing Director of Campbell Carr, a UK-based utilities and markets consultancy with a global client base, and a Director of Pure Energi, the specialist systems house that developed the LogActiv registry solution for certificate management.

An expert in metering and data collection standards, Ed has been a consultant to utilities, governments and NGOs since 1992. He has held a number of positions within the UK electricity industry, primarily focussed on promoting developments targeted at improving data quality. In recent years, he has assisted in the development of standards for the management of the international transfer of Renewable Energy Certificates and advised authorities in Turkey, Pakistan and Ethiopia on standards for electricity metering and data collection. In addition to his role within The Green Certificate Company, Ed is currently engaged on a project to improve data quality and collection standards for a number of water authorities in Ireland.

Ed is a Member of the Institute of Directors and a Fellow of The Royal Society for the encouragement of Arts, Manufactures and Commerce.

Ed can be contacted by email at ed_everson@green-certificates.co.uk.

The Green Certificate Company

The Green Certificate Company is an independent service provider to renewable energy producers. The primary purpose of the company is the provision of the following services:

- Certification of the volume of energy produced from renewable sources;
- Verification of the greenhouse gas reduction attributable to renewable energy generation;
- Registration of trades in these certificates; and
- Enablement of their eventual redemption.

The Green Certificate Company works with local partners wherever possible to ensure both rigorous standards and effective local management.