

September 11, 2006

Carbon Credits from Renewable Energy

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C TRADE's web registry, www.ctrade.org gets very frequent requests and enquiries to develop carbon credits for various renewable energy projects from all parts of the world. For example, we received this typical request: I am presently working on a small project (150 KW) which is a sustainable, green project in New England and am wondering how I would get marketable carbon offsets for that project and what the rate might be. Could you advise me on that?

Generally U.S. companies developing renewable energy projects may be able to set-up and obtain Renewable Energy Credits (RECs), which is the prevalent offset crediting mechanism in many states. In the United States, there is no national mandated carbon offset program, although there are several initiatives for mandatory programs being developed such as the Regional Greenhouse Gas Initiative (RGGI) by seven North Eastern States and the recent California Global Warming Bill. These mandatory programs are not yet fully operative. There are also a number of voluntary carbon credit programs within the United States. For projects outside of the United States, carbon credits called Certified Emission Reductions (CERs) are applicable for developing countries who have adopted the Kyoto Protocol, and these credits are usable under the Kyoto mandatory cap and trade program. While such credits are not available for projects being developed in the United States at this time, U.S. companies or investors should nonetheless have an understanding of the financial benefits of CERs to the extent they may become involved with project development or investment in applicable developing countries.

Renewable Energy Credits

RECs are a potential financial enhancement for renewable energy projects in many U.S. states which have developed and mandated Renewable Energy Portfolio Standards (RPS). Renewable Portfolio Standards require that certain percentage of a utilities overall, or new generating capacity, or energy sales must be derived from renewable resources. RECs are tradable units that represent the commodity formed by the environmental attributes of a unit of renewable energy from the underlying electricity. Under most programs, one REC would be equivalent to the environmental attributes of one MWh (Mega Watt Hour) of electricity from a renewable generation source. Many of the states in the U.S. have adopted some sort of Renewable Portfolio Standard and some state utility commissions or electric utilities issue Requests for Proposals for the development of new renewable projects to meet their RPS commitment. RECs do not have a uniform certification process like CERs and different States in the United States have developed different standards to define what are considered eligible REC attributes and who owns the RECs. Thus, while RECs can be an important project financial enhancement or medium for investment, careful attention is required to the distinct rules of the various governing states or regions.

Kyoto Protocol and Clean Development Mechanism

The Kyoto Protocol requires industrialized countries that signed the Protocol, called Annex B countries, to achieve certain greenhouse gas (GHG) emission reduction targets during the first commitment period, 2008 to 2012. The Kyoto Protocol established the Clean Development Mechanism (CDM) under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) in December 1997. CDM was established to facilitate the implementation of greenhouse gas (GHG) emission reduction projects, and lower the cost for emission reductions for industrialized countries, while at the same time assisting developing countries in achieving technology transfer and sustainable development.

CDM allows a wide range of GHG reduction projects including energy efficiency, fuel switching, forestation, transportation, and renewable energy such as wind, solar, hydro, geothermal and waste biogas. The development and operation of qualified CDM projects produces Certified Emissions Reductions (CERs) or carbon credits for the actual amount of GHG reduction achieved in the host developing country. CERs can provide significant financial benefits for CDM project development and investment.

CERs Certification Process

Here is a brief summary of what is involved in the certification process for carbon credits in a developing country: An application for national approval of the project needs to be prepared and submitted to the Designated National Authority (DNA), an agency identified by the CDM Kyoto Protocol process in the host country. The DNA ensures that the project complies with national sustainable development criteria and local environmental requirements. The Project Design Document (PDD) is prepared and submitted to a Designated Operational Entity (DOE), a third party verification and validation company accredited by the UNFCCC. The PDD is developed using a specific format recommended by the CDM Executive Board, which includes a detailed description of the project, GHG emission reductions, baseline methodology, crediting period, monitoring methodology, environmental impacts, and stakeholder comments. Validation of a project is then carried out by the DOE. This could be done in parallel with the assessment by the host country DNA. Once the CDM Executive Board completes the review and registers the project, it can start operations and accumulate GHG reductions as CERs. After the project is operational, all activities and data documented during the monitoring stage are used for the subsequent verification and issuance of CERs. Data quality audits and performance reviews need to be conducted. DOE verifies and certifies the emissions reductions on an annual or biennial basis. Once the GHG reductions are verified and certified, CERs are issued by the Executive Board.

CASE STUDY: Development of CERs for Biogas Renewable Energy Project in Philippines

A renewable energy project being developed by C TRADE in the Philippines is used to illustrate the certification process for CERs, where methane gas emissions are to be avoided and electric power generated using waste methane bio-digester gas recovered from pig and poultry manure. Greenhouse gas (GHG) emissions reductions are calculated from the methane biogas generated and the electric power provided to the facility.

The Project Design Document (PDD) is developed by C TRADE, projecting approximately 9,000 tons of GHG emission reductions per year. A proposed CDM project needs to get approval by the Designated National Authority (DNA) in the host country, the Philippine Department of Environment and Natural Resources. The process includes validation to be completed by the Designated Operational Entity (Det Norske Veritas), a third party verification and validation company, accredited by the UNFCCC, before it is certified as CERs.

This Renewable Energy Biogas Project consists of five main stages:

1. Animal Farm Waste Pig and Chicken Manure Collection System
2. Biogas Digester System designed by C TRADE producing 2500 cu m per day of methane
3. Biogas Collection Tank Farm and Pretreatment System
4. Sludge Dewatering and Fertilizer Production
5. Gas fired Steam and electric power generator producing 9,000 tons of CO₂e

Conclusion

Carbon Credits as Certified Emission Reductions obtained from CDM projects in developing countries are bought, sold and traded by companies, governments, carbon funds and others in industrialized countries needing the credits to meet their Kyoto Protocol commitments. Carbon market transactions in 2005 were estimated at

1.8 billion Euros by Point Carbon. The demand and market for carbon credits is expected to grow significantly, based on current trends. Renewable energy projects such as the waste biogas-to-energy project in the Philippines not only provide a funding mechanism through CERs for cost effective GHG reductions, and marketable carbon credits, but also provide technology transfer to developing countries, and reduce their dependence on foreign oil imports.

About C TRADE

C TRADE specializes in international development of renewable energy and carbon sequestration projects that produce carbon credits in 13 countries. (www.ctrade.org) Dr. Prabhu Dayal also serves as the Chair of EUEC 2007: the 10th Annual Electric Utilities Environmental Conference jointly organized by the US EPA, US DOE, EPRI, EEI and C TRADE, held January 21 - 24, 2007 at the Westin La Paloma Resort and Spa in Tucson, Arizona, where 1,000 utility executives and world-leading experts present 250 technical presentations on Clean Air, Global Warming, and Renewable Energy. (www.euec.com)