

Carbon Credit Accounting : A Case Study of Delhi Metro Rail Corporation

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Abstract

Environmental degradation and climate change is one of the greatest challenges of this era. Along technological & industrial development emission of green house gases (GHGs) is increasing continuously which is the main factor of global warming. To deal with the issue of global warming a protocol has come into force. The major goal of Kyoto protocol is to reduce GHGs emission by minimizing threats of climate change in order to achieve global targets. To reduce emission of GHGs the environmental carbon trading practices are done on the basis of carbon credits earned at global scale. Carbon credit represents the allowance to emit one metric tonne of carbon dioxide equivalent. Carbon credits are the certificates which are issued for certifying emission reduction. These certificates are traded in the market and purchased by the companies of developed countries which are signatory to Kyoto protocol in order to cut down GHGs emission with the most cost effective way. It is a great source of revenues for the developing countries in terms of sale. But no proper accounting procedure has been followed by the commercial entities due to lack of proper guidelines. Accounting guidelines on carbon credits came into force on July 2009. Carbon credits are intangible assets and they need to be treated as inventory in the balance sheet till they are sold. The objective of this research paper is to discuss about the carbon credit and its accounting aspects. Also it reveals that carbon credits are not only essential to solve the environmental issues but they also act as a huge source of revenues for the developing and non-developed countries. In this context a case study of Delhi Metro Rail Corporation (India) is considered. DMRC has become the first rail project in the world to earn carbon credits by using regenerative braking system in its trains which reduces the electricity consumption by 30%.

Keywords : Kyoto Protocol, Carbon Credits, Clean Development Mechanism (CDM), Certified Emission Reductions (CER)

Introduction

International concern about the climate change has led to the Kyoto protocol, negotiated in 1997 and came into force on 16th February, 2005. It contains legally binding emission targets for developed countries to limit or reduce greenhouse gas emission. It is an international agreement to curtail emission of green house gases (GHGs) which is responsible for global warming. Green house gas in atmosphere absorbs and emits radiations within the thermal infrared range. The 6 greenhouse gases are responsible : Carbon-di-Oxide (CO_2), Methan (CH_4), Nitrous Oxide (N_2O), Hydrofluoro Carbons (HFCs), Per Fluoro Carbons (PFCs) and Sulphur Hexa fluoride (SFI_6). The objective of the protocol was the stabilization of GHG concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Carbon market is the

brain child of the Kyoto protocol for controlling GHG emissions. The protocol agreed 'caps' or quotas on the maximum amount of GHG for developed and developing countries. The protocol makes it mandatory for the commercial entities emitting above the permitted limit of Carbon dioxide to cut down their emissions to prescribed levels or they should buy carbon credits certificates which can be transacted in the market, or alternatively pay a charge for the emissions, which is referred to as carbon tax.

Carbon Credit

Each Carbon Credit represents one ton of CO_2 either removed from atmosphere or saved from being emitted.

Carbon Trading

The mechanism of buying and selling carbon credits is

known as carbon trading. The developed countries with emission reduction targets are the buyers of the carbon credits. The developing and least developed countries with no emission targets (at present) are the sellers or suppliers of the carbon credits. The non-polluting companies from developing countries sell carbon credits to buyers and earned extra money in this process. The environmental carbon trading is done on the basis of the carbon credits earned. These credits are maintained in the form of electronic certificates. In carbon market two types of trading occur.

- (a) Cap and trade (emission trading)
 - (b) Offset trading (project based carbon credits)
- Kyoto Protocol worked out three mechanism of the emission reduction for developed countries to reduce GHG at target level.
- (i) International Emission Trading (IET) : It allows countries to sell their surplus permitted emissions (which are not used) to those countries which are over their targets these credits can be sold with quantified emission limits and reduction commitments under protocol. Countries can trade in the international carbon credit market.
 - (ii) Joint Implementation (JI) : Under this mechanism a developed country (invest party) with a relatively high cost of domestic GHG reduction, sets up a emission reduction or removal project in another developed country (host party) that has relatively low cost of GHG reduction, to achieve their Kyoto targets. JI offers parties a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host country benefits from the foreign investment and the technology transfer. The credits generated out of JI is called as Emission Reduction Units (ERU).
 - (iii) Clean Development Mechanism (CDM) : It is a market driven mechanism and offers an opportunity to contribute towards environmental sustainability through business operations while at the same time helps to generate revenues by selling carbon credits. Under the United National Frame Work Convention on Climate Change (UNFCCC) charter, any company from a developed country can take up a emission reduction project activity with a company in the developing country that is signatory to the Kyoto protocol. In these developing countries cost of emission reduction project activity is usually much lower. These developed country

companies must adopt new advance technologies and finance these projects to earn carbon credits in developing countries. The credit in CDM is termed as Certified Emission Reduction (CERs). Such credit has to be certified by an appropriate authority under the protocol. After certification, only a part of CERs can be transferred to the companies of developed countries to meet their emission reduction requirements. Thus CER is a 'certificate' just like a stock. For example if a project generates energy using solar power instead of burning coal, then it can save 40 tons of carbon-dioxide per year. There it can claim 40 CERs.

Two types of carbon market occur –

- (a) The voluntary market in which the trade of carbon credit is on a voluntary basis.
- (b) The Regulatory Compliance Market : It is used by companies and government that have to account for their GHG emissions. It is regulated by mandatory national and international carbon reduced regimes.

The market works as financial market and carbon credits are used as a currency in these markets. The elimination cost of an additional unit of pollution may differ for different countries. In order to find a common unit for this commodity, all GHGs are converted to CO_2 equivalent. The CO_2 (equ.) are traded in carbon markets.

Different types of carbon projects

Carbon credits can be generated from various projects including.

- (a) Renewable energy : A switch from fossil fuels to a 'clean' energy. e.g. wind and solar energy.
- (b) Forestation and Afforestation : The planting of new trees ad trees sequester and store CO_2 e.g. forest regeneration.
- (c) Energy Efficiency : Reducing emission through an increase in energy efficiency e.g. installation of energy efficiency machinery.
- (d) Methane Capture : Avoiding methane emissions through capture and burning to create energy e.g. landfill methane capture.
- (e) Transport : Improvement in vehicle fuel efficiency with new technologies switch to transport mode. e.g. changing to less carbon intensive means of transport like Trains, Metro in Delhi.

Project eligibility for carbon credits depends on whether a project follows one of the Kyoto protocol's project based mechanisms or an independent voluntary standard.

Accounting Issues and Carbon Credit Accounting

There is a unclear picture of recording of carbon credits because at present no authoritative accounting guidelines are available under generally accepted accounting principles of India and at International level. India is a huge supplier of CERs in global market. But a separate accounting standard has not been issued to measure and disclose income and expenditure from carbon reducing projects in India. To overcome the situation a significant step is taken by the Institute of Chartered Accountants of India (ICAI). ICAI issued guidance note on accounting for self-generated CERs in February, 2012, which has been effective on or after 1st April, 2012. The Guidance Note (GN) provides guidance on accounting for carbon credits but does not deal with purchased CER's or with the use of CER's in own business.

- (i) As per GN the CER cannot be recognized as an asset till it is certified by UNFCCC and its credit is being received by the generating entity. Thus CER's cannot be recognized at various stages of project.
- (ii) During the period prior to issuance of CER's to generating entity, CER's has to be treated as contingent asset because CER's will actually arise or not with carbon projects, depends upon future certification by UNFCCC.
- (iii) When CER's are actually issued to entity then these are recognized as an asset because now these become resource which is controlled by entity and it leads to future economic benefits in form of cash and cash equivalents on future sale of these with certainty.
- (iv) As per AS-26 : An intangible asset is an identifiable non-monetary asset without physical existence held for use in the production or supply of goods and services, for rental to others or for administrative purposes.

As per AS-2 : Inventories are assets held for sale in ordinary course of business or in process of production for such sale or in the form of materials/suppliers to be consumed in the production process or in rendering of services.

Although CER's have no physical existence and are held for sale in normal course of business but they are not held for use in production or supply of goods or services. So they do not meet the criteria of being taken as an intangible asset. They should be accounted for as per requirements for AS-2 as inventory.

- (v) Treated as an inventory the CER should be measured at the cost or net realizable value (NRV) whichever is less.
- (vi) Here cost includes expenses made to setup a CDM project activity, operate the CDM project and generate CERs. Thus

Cost = Cost of Purchase + Cost of Conversion + Other Cash incurred to bring the inventory to present location and condition.
- (vii) But expenses which do not give rise to CERs, like research and development should be accounted as per AS-26.
- (viii) Capital assets used for generating CER's, should be accounted for as per AS-10 like pollution control devices, boilers etc.
- (ix) (NRV) Net Realisable Value is the difference between estimated selling price in the ordinary course of business and the summation of estimated costs of completion and estimated costs necessary to make the sale.

NRV = Estimated Selling Price – (Estimated Cost of Completion + Estimated Selling Cost)
- (x) AS-9 should be applied by entities with AS-2, to recognize revenues in respect of sales of CERs.

Carbon Credit : A Case of Delhi Metro Rail Corporation

India has a large potential to earn carbon credits. India is currently the fourth largest GHG emitter in the world, although its per capita emissions are less than half of the world's average. India has generated 1,77,360,206 CER's through CDM till 2014 and India stands second in the world in terms of CDM projects registered and issuance of CER's next to China.

Delhi Metro Rail corporation has become first ever railway project in the world to claim carbon credits because of using regenerative braking in its rolling stock. DMRC reduces 30% electricity consumption with regenerative braking system in its trains.

DMRC claimed 4,00,000 CERs for a 10 year crediting period starting December, 2007 when the project was registered by the UNFCCC. This converts to 1.2 crore per year for 10 years.

DMRC has also been certified in June, 2011 by the United Nations body as the first Metro Rail and Rail based system in the world to get carbon credits for reducing GHG emissions as it has helped to reduce pollution levels in the city by 4.5 lakh tons every year, thus helping in reducing global warming.

DMRC so far has helped in removing more than 91 thousand vehicles from the roads of Delhi on daily basis. Accordingly DMRC's second CDM project has been developed, based on the shift of public travels in cars / buses and other means of road transport to the metro trains.

Further, in Phase-III, lifts and escalators designed with regenerative braking are proposed so as to use the data for claiming carbon credits.

Conclusion

Carbon trading is an effective tool to earn extra income and benefits for developing and non-developed countries. Clean development Mechanism is also an effective source of technological and economic development for developing countries with environmental upgradation. DMRC is a great example of the above conclusions. Although India is the largest beneficiary of carbon trading, it still does not have a proper policy for trading of carbons in the market. For appropriate functioning and development of carbon markets and carbon trading practices separate financial accounting standard must be established.

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