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Carbon accounting: A process for recording in books of accounts

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Abstract
This paper aims to present a general idea of the key themes in the development of carbon accounting. The evolution of the field since the Kyoto Agreement has been divided into four stages. The need to account for and disclosure of greenhouse gas-related emissions of industrial organizations has emerged parallel to growing concerns about climate change, and international and national policy developments in the field have followed. In India Carbon accounting is an emerging field of business economics and covers a wide range of activities, including the measurement, calculation, monitoring, reporting and auditing of greenhouse gas emissions at organizational, process, product or supply chain levels. Various initiatives (such as the Greenhouse Gas Protocol or the Carbon Disclosure Project) motivate and assist industrial organizations in accounting for and reporting their achievements in the field. Carbon accounting should not be an isolated task for businesses. On the contrary, there is a strong need to integrate carbon accounting issues into different functional fields in order to achieve both corporate and climate policy goals.

Keywords: carbon credit, carbon credit mechanism, carbon trading and carbon accounting

Introduction

Carbon Accounting

Carbon accounting is the process by which a company uses software programs and on-the-ground monitoring to account for the six major greenhouse gases (carbon dioxide, methane, and nitrous oxide, HFCs, PFCs and sulphur hexafluoride/SF6) as defined under the Kyoto Protocol. Customers, Suppliers, Stakeholders, Boards, Managers, and Business Owners all ask about carbon accounting. Carbon Accounting is indentifying, measuring, recording, monitoring, benchmarking and reporting organizations Greenhouse Gas Emissions in a defined reporting period. Carbon Accounting is not is a greener type of financial accounting.

Brief Historical Background

At present, rise in global temperatures is a major concern all over the world. The speed of warming has been almost three times the century long average since 1970. The main cause of the rise in global surface temperature is the human-induced emissions of Green House Gases (GHG's) into the environment.

To address the issue of global warming, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992, with the objective of limiting the concentration of Green House Gases (GHGs) in the atmosphere. GHGs refer to polluting gases including carbon dioxide (Co_2), So2 & CFC which cause global warming. Subsequently, to supplement the Convention, the Kyoto Protocol came into force in 16 February 2005, which sets limits to the maximum amount of emission of GHGs by countries. As per the Kyoto Protocol, at present, developing (known as non-Annex I or Annex II countries) and least-developed countries are not bound by the amount of GHG emissions that they can release in the atmosphere, though they too generate GHG emissions. Under the Kyoto Protocol, countries with binding emission reduction targets (which at present are applicable to developed countries) in order to meet the assigned reduction targets are issued allowances (carbon credits) equal to the amount of emissions allowed. An allowance (carbon credit) represents an allowance to emit one metric tonne of carbon dioxide equivalent. To meet the emission reduction targets, binding countries in turn set limits on the GHG emissions by their local businesses and entities. The Kyoto Protocol at present commits 41 developed countries (known as Annex I countries, last year USA and Canada have withdrawn themselves) to reduce their GHG emissions by at least 5% below their 1990 baseline emission by the commitment period of 2008-2012. (Commitment I) In Doha meetings developed countries commits to reduce their GHG emissions by at least 18% below their 1990 baseline emission by the commitment period of 2013-2020.

Literature Review

Garg, AK, and Arya S (2016)

The Carbon Credit Trading concept is generated from Kyoto Protocol and is basically used to control the greenhouse gas emissions. This concept is used to earn carbon credit earnings and trading between the various companies and government. Carbon credit also known for the reduction of carbon emissions in order to mitigate future climate changes targets mainly on greenhouse gases specially carbon dioxide. It is very significant to take stock of global scenario of the carbon credit business.

Meenu Maheshwari, Nidhi Goyal Ms (2015)

Environmental degradation and climate change is one of the greatest challenges of this era. Along technological & industrial development emission of greenhouse 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.

Meghna Chotaliya (2014)
Carbon credit, a generic term for any tradable certificate or permit, represents the right to emit one tone of carbon dioxide or the mass of another greenhouse gas with a carbon dioxide equivalent to one tone of carbon dioxide.

Qingliang Tang (2014)
Climate change is a complex phenomenon and a serious challenge but the role of accounting for global warming is not made clear. The study proposes a broad concept of carbon accounting referring to a system which uses accounting methods to record and analyse climate change information, and accounting and reporting for carbon related assets, liabilities, expenses and income for the decision- 19 making of users.

Kerr SG (2011)
In 1996 the Kyoto Protocol has been taken during the analysis in the study and established a global policy which aimed at reducing greenhouse gas (GHG) emissions. In response, slow steady steps are being taken to implement carbon emission limits. Markets are being established so that companies can exchange carbon allowances.

Joseph Aldy E, Robert Stavins N (2011)
International cooperation among nations has now become necessary to take meaningful action at the global level to deal with the problems of climate change, pollution and global warming. At the same time, it will inevitably be up to the actions of sovereign nations to put in place policies that bring about meaningful reductions in the emissions of greenhouse gases. Due to the ubiquity and diversity of emissions of greenhouse gases in most economies, and also the variation in cost reduction among various individual sources, traditional environmental policy approaches, such as uniform technology and performance standards are insufficient to the task.
As a result, market-based instruments 32 in the form of carbon-pricing mechanisms have gathered all the attention over a period of time.
The opportunities and risk associated with the major options for carbon pricing: carbon taxes, cap-and-trade, emission reduction credits, clean energy standards, and fossil fuel subsidy reductions were also examined.

Singhal N, Gupta H, Goel R (2008)
Carbon dioxide is today a tradable commodity because some developing countries such as India and China put their foot down and told the developed rich countries that they were squarely to blame for much of the global warming.
Europe has a robust carbon exchange today. China, India and Brazil are fighting for a share in the pie to become the biggest sellers of CERs.

Market-Based Mechanisms
In order to enable the developed countries to meet their emission reduction targets, Kyoto Protocol provides three market-based mechanisms –

Under CDM, a developed country can take up a GHG reduction project activity in a developing country where the cost of GHG reduction is usually much lower and the developed country would be given carbon credits for meeting its emission reduction targets.

In case of CDM, also entities in developing/least developed countries can set up a GHG reduction project, get it approved by UNFCCC and earn carbon credits in the form of Certified Emission Reduction units (CERs). Hence, this mechanism creates new CERs which is not the case in the other two mechanisms. Such carbon credits generated can be bought by entities of developed countries with emission reduction targets.

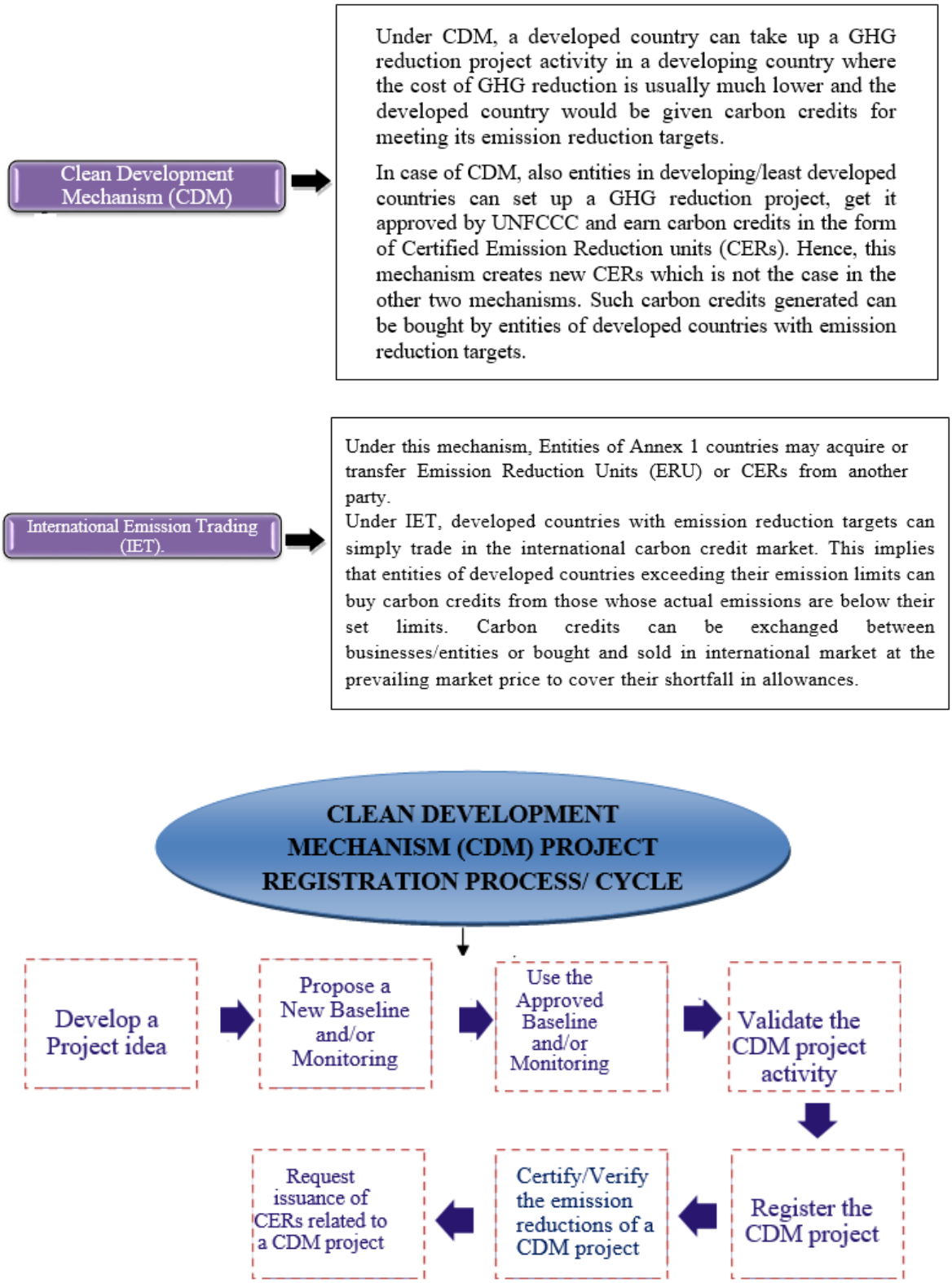

Fig 1: Clean development mechanism (CDM) project registration process/ cycle

Carbon Trade

The mechanism of buying and selling carbon credits is known as carbon trading. The carbon credits can be traded at designated markets called Climate Exchanges. There are three Climate Exchanges.

- Chicago Climate Exchange (CCE) - USA
- European Union Climate Exchange (EUCX) and
- Multi Commodity Exchange (MCX) - India

These Exchanges have developed to trading platforms for carbon credits.

The markets for carbon credits are basically 'Compliance based'. Compliance markets have set a "cap and trade" system whereby the total annual emissions for an industry or country are capped by law, and carbon credits can be traded between businesses or sold in trading markets.

In other words, those producers who exceed their emission reductions can trade their credits to others in the market place who have not reached their emission goals.

Pricing of Certified Emission Reductions (Cers)

Prices of CERs generated by CDM projects are influenced by several factors including demand and supply. The main factors are:

- Price of European allowances traded under the European Emissions Trading Scheme
- Demand from other Annex I countries (e.g. Japan and other Developed countries)
- Delivery stage of the CER credits (e.g. registered project with delivery guarantee/without guarantee, CER futures from project not yet registered).

Table 1: Accounting Treatment for Carbon Credit as Per Accounting Standard

AS-2	Accounting for Inventories
AS -10 (Revised)	Accounting for Property, Plant and Equipment (PPE)
AS- 26	Accounting for intangible assets
Ind. AS -20	Accounting for option to measure non-monetary government grants
Ind. AS -38.	Accounting for intangible for intangible asset

The Institute of Chartered Accountants of India (ICAI) issued a Guidance Note (GN) entitled 'Accounting for self-generated Certified Emission Reduction (CER)' in February, 2012. It aims to provide guidance on matters of applying accounting principles to be adopted for recognition, measurement, and disclosure of CERs.

More specifically, Guidance Note (GN) addresses following key accounting considerations:

1. Whether CER is an asset?
2. Recognition of CERs
3. What type of asset is a CER?
4. Measurement of CERs
5. Measurement of underlying asset related to CERs

CER is an Asset

The 'Framework for the Preparation and Presentation of Financial Statements', issued by the Institute of Chartered Accountants of India (ICAI), defines an 'asset' as follows:

"An asset is a resource controlled by the enterprise as a result of past events from which future economic benefits are expected to flow to the enterprise."

Hence CER is an Asset

Recognition of CERS

CERs come into existence when these are credited by UNFCCC in a manner to be unconditionally available to the generating entity.

Type of Asset is a CER

Keeping in view the non-physical form of CERs, the definition of 'intangible asset', as per Accounting Standard (AS) 26, Intangible Assets, is noted as follows:

"An intangible asset is an identifiable non-monetary asset, without physical substance, held for use in the production or supply of goods or services, for rental to others, or for administrative purposes."

Measurement of CERS

As per AS 2, inventories should be valued at the lower of cost and net realizable value. Accordingly, CERs should be measured at cost or net realizable value, whichever is lower. Various costs are incurred by the generating entity to set up a CDM project activity, operate the CDM project and generate CERs. Cost included in the valuation of CERs is:

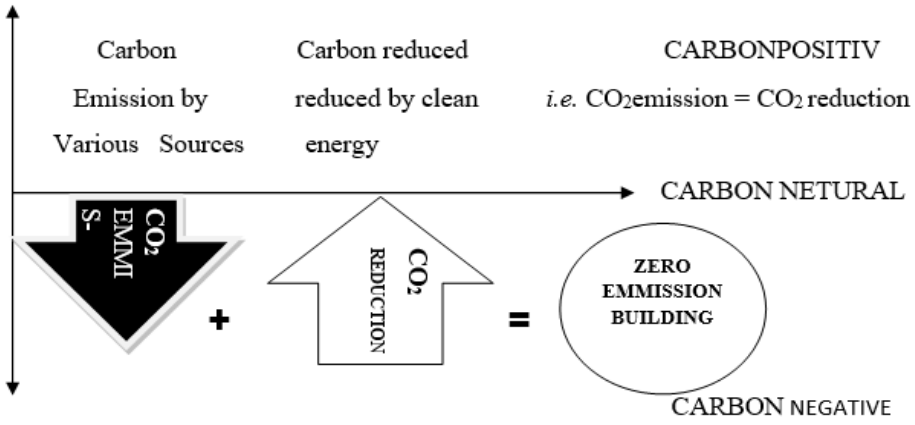

Fig 2: Research costs + costs incurred in developing device to reduce emissions + Cost of Project Design Documents + Fees paid to DOEs + Fees of registering with UNFCCC + Cost of monitoring emissions + Cost incurred of certification + Operating costs incurred to run the CDM project etc

Carbon Negative

A company has incurred USD 200,000 in CERs registration, certification and other related costs during financial year 2018-19. This entitles the company to 1, 80,000 CERs.

Required:

Pass necessary Journal entries for recognition of CERs, year-end value to be appeared in the financial statements (assuming that the CERs are being traded at USD 1.2 per CER in MCX at the year-end) and on sale of CERs in the next year @USD 1.2 per CER.

The company shall pass the following entry (in USDs):

Inventory A/C (for CERs.) Dr. 2, 00,000

To Bank A/c 2,00,0000

Notes

For the year-end financial statements for financial year 2018-19, the Company shall carry out a NRV assessment by comparing the realizable value of CERs with cost of USD 200,000. Since NRV of USD 2, 16,000 (1, 80,000 CERs x USD 1.2) is higher than cost of USD 200,000, the company shall continue to disclose the inventory at cost without any NRV mark-down. Further, it will provide appropriate disclosures per AS 2. This inventory shall be carried forward till related CERs are sold in the market

On sale of CERs in the financial year 2019-20

Bank A/c Dr. 2, 16,000

To Sale of CERs A/c 2, 16,000

Profit and Loss A/c (Consumption) Dr. 2, 00,000

To Inventory. 2, 00,000

Sale of CERs A/c Dr. 2, 16,000

To Profit and Loss A/c 2, 16,000

Presentation

An entity should present certified emission rights as part of Inventories, in the balance sheet, separately from other categories of Inventories such as Raw Materials, Work-in-process, Finished goods and others.

Accounting Treatment under Ind As

Indian Accounting Standard (Ind AS) does not have any specific guidance to cover accounting for Carbon Credits. In the absence of the same, an entity will have to exercise judgment and adopt a consistent method of accounting for Carbon Credits to present a true and fair picture of this area in its financial statements.

Carbon Credits or CERs shall meet the definition of Government Grants under Ind AS 20, 'Accounting for Government Grants and Disclosure of Government Assistance'. In most cases, the grant will be recognized as an intangible asset in accordance with Ind AS 38. However, it may also be appropriate to recognize CERs as inventory in accordance with Ind AS 2 *'Inventory'* if they are held for sale in the ordinary course of business.

New Proposals Regarding Corbon Credit

Budget 2018 proposes to reduce the tax on income from carbon credits to 10% from 30% as an incentive to industries to reduce emissions. In order to bring clarity on the issue of taxation of income from transfer of carbon credits and to encourage measures to protect the environment, it is proposed to insert from April, 2018 a new section 115BBG to provide that where the total income of the assessee includes any income from transfer of carbon credit, such income shall be taxable at the concessional rate of ten per cent (plus applicable surcharge and cess) on the gross amount of such income. No expenditure or allowance in respect of such income shall be allowed under the act.

Income-tax Department has been treating the income on transfer of carbon credits as business income which is subject to tax at the rate of 30%. Divergent decisions have been given by the courts on the issue as to whether the income received or receivable on transfer of carbon credit is a revenue receipt or capital receipt, it said.

115 BBG

1. Where the total income of an assessee includes any income by way of transfer of carbon credits, the income-tax payable shall be the aggregate of-

a. The amount of income-tax calculated on the income by way of transfer of carbon credits, at the rate of ten per cent; and

b. The amount of income-tax with which the assessee would have been chargeable had his total income been reduced by the amount of income referred to in clause (a).

2. Notwithstanding anything contained in this Act, no deduction in respect of any expenditure or allowance shall be allowed to the assessee under any provision of this Act in computing his income referred to in clause (a) of sub- section (1).

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