Inventory Management (as-2): A Study Of Carbon Credits As An Inventory

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ABSTRACT

At present, downward trend in Environment due to rise in global temperature and climate change is one of the major challenge of this era. The momentum of warming has been almost three times the century long average since 1970. The major cause of this climate change is the human-induced emissions of Green House Gases (GHG's) through technological & industrial development into the environment. To address the issue of global warming Kyoto protocol has negotiated in 1997 and came into force on 16 February, 2005. The main objective of Kyoto protocol is to decrease GHGs emission by minimizing blusters of climate change in order to achieve global targets. In order to enforce this emission limit, the concept of Carbon Credit was proposed. Carbon trading practices are done to reduce GHGs emission on the basis of carbon credits (CERs) earned at global scale. For this purpose many national and international projects and schedules undertaken by the government as well as the non-governmental agencies. This paper is focused on Carbon Credit Accounting for Sustainable Energy Development. Carbon Credit being a derived concept, at present there are no uniform accepted accounting treatment for carbon credit is available but there are different accounting treatment options of carbon credits. This paper tries to draw lines and analyze the accounting way of these carbon credits in respect of AS-2 which can be executed in an unambiguous and a fair manner.

Keyword: Carbon Credit Trading, Clean Development Mechanism (CDM), Green House Gases and Kyoto Protocol.

INTRODUCTION:

The globing warming has become the biggest challenge as it effects the depletion of ozone cover and natural calamities. To face this challenge of global warming, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted a protocol in 1997 at the summit in Kyoto, Japan with the target of limiting the effect of Green House Gases (GHGs) in the atmosphere. Haefeli, S., Bosi, M., & Philibert, C. (2004): The challenge of controlling GHG emissions and meeting the emission reduction target seems formidable, as stabilization of carbon dioxide concentrations at any level might eventually need near-elimination of carbon dioxide emission. To meet the emission reduction targets, binding countries in turn set limits on the GHG emissions by their local businesses and entities. The details of Greenhouse Gases as follows:

Table 1: Green House Gases:

S.No.	Name of Gas	Origin	Source
1	Carbon Dioxide (CO_2)	Occurs naturally	Coal mines, paddy fields, landfills and livestock.
2	Nitrous Oxide (N_2O)	Human made or occurs naturally	Generated by burning fossil fuels, cultivation of soils and in the manufacture of fertilizer.
3	Perfluorocarbons (PFCs)	Human made chemical	By-product of aluminum smelting.
4	HFC's	Human made chemical	Largely used in refrigeration and insulating foam.
5	Sulphur Hexafluoride (SF_6)	Human made chemical	Largely used in these industries which are insulated high voltage equipment.
6	Water Vapour (H_2O (gas)	Occurs naturally	Due to rising global temperature.
7	Ozone (O_3)	Occurs naturally. (By reactions involving nitrogen oxide gases.)	Resulting from motor vehicles and power plants.
• In above green house gases the Water Vapour and Ozone are uncontrolled gases.			

Further, in order to enable the developed countries to meet their emission reduction targets, Kyoto Protocol provides three market-based mechanisms:

- Joint Implementation (JI),
- Clean Development Mechanism (CDM),
- International Emission Trading (IET).

Under **JI**, a developed country with a relatively high cost of domestic GHG reduction can set up a project in another developed country that has a relatively low cost and earn carbon credits that may be applied to their emission targets.

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. Examples of projects include reforestation schemes and investment in clean technologies.

Under **IET**, developed countries with emission reduction targets can merely trade in the international carbon credit market. This means that entities of developed countries exceeding their emission limits can purchase carbon credits from those whose actual emissions are below their set limits.

MEANING OF CARBON CREDITS:

Sharma, P. K., & Verma, C. P. (2013): A carbon credit is a generic term for any tradable certificate or permit representing the right to emit one ton of carbon dioxide or the mass of another greenhouse gases with a carbon dioxide equivalent to one ton of carbon dioxide. One carbon credit is equal to one metric ton of carbon dioxide or in carbon dioxide equivalent gases.

ACCORDING TO INVESTOPEDIA:

A carbon credit is a financial instrument that allows the holder, usually an energy company, to emit one ton of carbon dioxide. credits are awarded to countries or groups that have reduced their greenhouse gases below their emission quota. Carbon credits can be legally traded in the international market at their current market price.

CARBON CREDITS AS INVENTORY:

Sharma, D. (2012): Accounting guidelines on carbon credits will come into force from 1st July 2009. "The Council of the Institute of Chartered Accountants of India (ICAI)" has scheduled a meeting between June 18-20 to approve the accounting guidelines on carbon credits," S Santhana Krishnan, chairman, Accounting Standards Board, ICAI, told TOI, which do emphasize on the recording the sale and purchase of the Carbon Credits in the books of accounts, but there still exists a kind of ambiguity.

Sivanesh,R. (2012): Different entities have started treating carbon credits in different ways. Some entities recognize revenue from carbon credits only when the carbon credit is finally sold, that too as other income in the Profit and Loss statement. While some other entities recognize them as intangible assets, still others treat them as government grants and account them according to AS –12 Accounting for Government Grants. But in this paper we will discuss accounting treatment of carbon credits as an inventory as per AS-2.

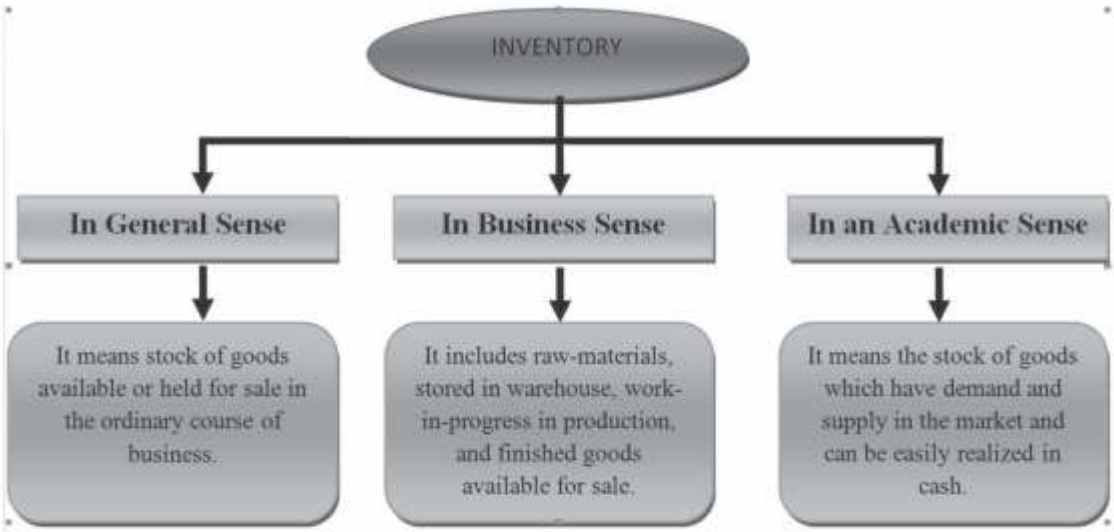
As per ICAI guidelines carbon credits can be treated as inventory as per AS-2. According to AS – 2, "Inventories are assets:

(a) held for sale in the ordinary course of business;

(b) in the process of production for such sale; or

(c) in the form of materials or supplies to be consumed in the production process or in the rendering of services."

Figure 1: Meaning of Inventory:



Source: http://lh3.googleusercontent.com/-cNgBQqZROag/UH0g0BoFUEI/AAAAAAAAGbY/0bz8FmezLIk/s1024/definition-of-inventory.png

From the above, it follows that CERs are inventories of the generating entity as they are generated and held for the purpose of sale in the ordinary course of business. Therefore, even though CERs are intangible assets these should be accounted for as per the requirements of AS 2.

COST OF CERS:

As per AS – 2, the cost of inventories should comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition." According to Sharma, D. (2012); any enterprise that generates CER has to incur various costs set up a CDM project activity, operate the CDM project and generate CERs. But we have to be careful as to include only those expenses which are directly attributable to the generation of CERs. These may include the following: Compendium of Guidance Notes-

(I) Research costs arising from exploring alternative ways to reduce emissions;

(ii) Costs incurred in developing the selected alternative as a process/ device to reduce emissions;

(iii) Costs incurred to prepare the Project Design Documents;

(iv) Fees paid to DOEs for validation and verification and to the National Authority for approval;

(v) Fees of registering with UNFCCC;

(vi) Costs incurred for monitoring the reductions of emissions;

(vii) Costs incurred for certification of CERs; and

(viii) Operating costs incurred to run the CDM project.

Not all costs incurred by the generating entity give rise to CERs and therefore not all costs can be considered as the costs of bringing the CERs to existence (i.e., their present location and condition). For e.g. the research and development cost should not inventoried but treated as intangible assets under AS – 26. Effectively if we see only the certification charges paid to UNFCCC, any charges paid to a consultant in the process alone can be treated as cost.

In order to certify and issue CERs, UNFCCC imposes two types of levies on the generating entity:

(I) At the point of issuance : The first type of levy is in kind whereby a specified percentage of the CERs earned are deducted at the point of issuance by the Accounting for Self-generated Certified Emission Reductions (CERs) UNFCCC. Presently this charge is fixed at 2% of the CERs produced. For e.g. if the entity produces 1000 CERs, UNFCCC will deduct 2% of the CERs and credit only 980 CERs to the Demat Account of the entity.

(ii) Towards meeting administrative costs of UNFCCC : The second type of levy imposed is in the form of a cash payment which is charged by the UNFCCC. In this levy, a fixed payment per unit of CER is charged for the total CERs credited to the generating entity. This fixed payment is presently fixed at $ 0.10 per CER credited to the account of the entity. In the immediate example, the entity has to make a cash payment of $980*0.10 i.e. $98.00.

From the above, it is very clear that the 'costs incurred for certification of CERs' at which the inventory of CERs should be valued includes the consultant's fee and the cash payment made under the second levy to the UNFCCC for obtaining the credit of CERs. Other than these two costs no other costs need to be inventorised as cost of CERS.

NET REALISABLE VALUE OF CERS :

The second part of inventory valuation is the Net Realisable Value. As per AS – 2

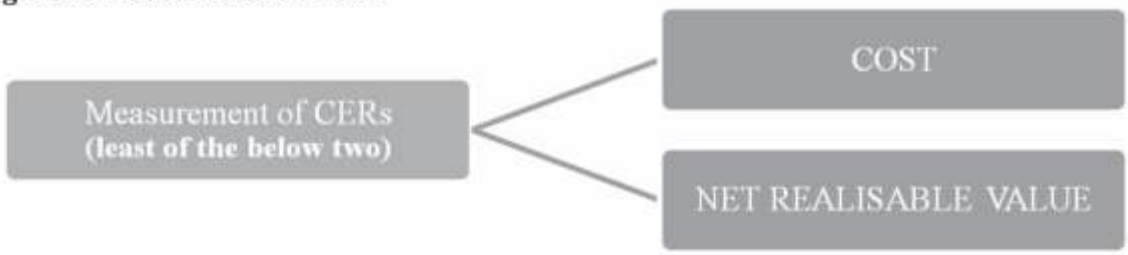
"Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale."

Since the CERs are readily traded in stock and commodity exchanges, it is very easy to determine the estimated selling price of CERs. The selling price obtained from the exchanges less any commission that may have to be paid to execute the sale of CERs will constitute the NRV of CERs. The cost of the CERs as previously arrived should be compared with the NRV as determined above. The lower value of the two should be recognised as the value of CERs in the books of accounts of the entity that engages in a CDM project.

MEASUREMENT OF CERS:

As per AS 2, inventories should be valued at the lower of cost and net realisable value. Accordingly, CERs should be measured at cost or net realisable value, whichever **is lower.**

Figure 2: Measurement of CER



Income Recognition: Since CERs are recognised as inventories, the entity should apply AS 9 to recognise revenue in respect of sales of CERs .

CONCLUSION:

In India, the ICAI has issued guidance note on accounting for self generated CERs in 2012. As more and more number of entities or companies in India are now generating vital volume of carbon credits and selling those carbon credits to commercial and individual customers. These carbon credits are recorded as inventory in company's final account. In India, most of the companies record carbon credit earnings as income from 'Other Sources'.

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REFERENCES:

Bhardwaj, D. B. (2013). Future of carbon Trading: A Business That Works for Global Environment. International Journal Of Science, Environment and Technology , 115-121.

ICAI. (2012). Guidance Note on Accounting for Self-Generated Certified Emission Reduction. New Delhi: Institute Of Chartered Accountant Of India.

UNFCCC. (n.d.). The Kyoto Protocol. Retrieved 21 Tuesday, 2014, from http://www.mtholyoke.edu: http://www.mtholyoke.edu/~danov20d/site/history.htm | Verbruggen, A. Annex I.

Green,T. (n.d.). Glossary. Retrieved January 24, 2014, from http://www.tfsgreen.com: http://www.tfsgreen.com/glossary.php

(PEDA), P. E. (n.d.). Clean Development Mechanism. Retrieved January 24, 2014, from http://peda.gov.in: http://peda.gov.in/eng/clean_dev_mech.html

CA (Dr) Satyajit Dhar ,"Carbon Emissions trading in India, A study on Accounting & Disclosures Practice", The Chartered Accountant Journal, December 2012, Pg 85-91

CA Vineet Raju P, " Carbon Credits-An Accounting Perspective", The Chartered Accountant Journal, November 2012, Pg 64-69.

Delloite Chine Research & Insight Centre- "New Challenges in Carbon Accounting: An Overview"

Lucio Pedroni ,Phd & Bruno Locatelli, Phd, "Non Permanence, carbon Accounting & Project

Scale", Presented at " First Brazillian Symposium on Carbon Sequestration in Agricultural and Forest Systems", Londrina (PR, Brazil) on 21-24th October 2003, by Agriculture Research & Higher Education Centre.

Lucio Pedroni, Bruno Locatelli – " Accounting Methods for carbon credits- Impacts on the Minimum area of Forestry Projects under CDM"

CA Sanjay K Agrawal," Accounting & taxation Aspect of carbon trading", The Chartered Accountant Journal, October 2006, Pg 509-513.

Deloitte , Energy & Resources, "Accounting For Emission Rights".

KPMG LLP UK, Accounting for Carbon: The impact of Carbon trading on Financial Statements.

Tulika Sood," Financial Reporting Framework for Carbon Credit Accounting", International Journal for Research in Commerce and Management, Volume 3, (2012), Issue no 6 June.

Nidhi Bothra, Carbon Credits – Unravelling Regulatory, Taxation and Accounting Issues.

Guidance Notes on Accounting form Self Generated Certified Emission Reductions (CER's).

Sharma, P. K., & Verma, C. P. (2013): Carbon Credit Accounting.

Haefeli, S., Bosi, M., & Philibert, C. (2004): Carbon dioxide capture and storage issues–Accounting and baselines under the United Nations Framework Convention on Climate Change (UNFCCC), *IEA Information Paper*. IEA, Paris.

Maheshwari, M. & Goyal, N. (2015): Carbon Credit Accounting : A Case Study of Delhi Metro Rail Corporation, Vol 8, Issue 3, PP 113-116.

https://www.researchgate.net/publication/258122641_Emissions_Trading_and_Carbon_Credit_Accounting_For_Sustainable_Energy_Development_with_Focus_on_India

Sharma, D. (2012): Accounting Norms and Carbon Credits in India, Philica entries/ http://philica.com/display_article.php?article_id=353

http://sivanesh.com/?p=294

http://www.investopedia.com/terms/c/carbon_credit.asp

http://kthemani.com/?wpfb_dl=278