



## Carbon credit accounting and India

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### Abstract

This paper analyses the current regulations in carbon accounting in Indian context. Secondly analysis the Carbon credits certificates which are issued for certifying emission reduction. These certificates are purchased by the companies of developed countries which are traded in international market. This certificate is an agreement with Kyoto protocol in order to cut down GHGs emission with the most cost effective way. Carbon credit is an intangible asset and it is also a financial instrument which treated as asset in the balance sheet until they are sold in the market. At last evaluate Indian carbon accounting regulations and its implementation with the proposed guidelines.

**Keywords:** carbon accounting, carbon credit, CDM, India, Kyoto protocol

### 1. Introduction

Now a day the main cause of global warming is human consumption activity. The gases like Carbon Dioxide, Carbon Monoxide, Methane, etc shut in this heat by forming a layer in the middle of the various layers of atmosphere and blocking the outlet of this heat. These gases are called Green House Gases (GHGs). These gases suck up some extent of heat from the atmosphere and then re-emanate this heat in the atmosphere. The speedy climate change as a result of this warming required greater attention and take preventative measures to solve this problem. The key idea taken in this area is the Kyoto protocol, which directs the governments, business entities and consumers to change their behaviour in the direction of the environment and convey a new and improved environment. India is counting as a serious entrant in the global carbon credits market. A carbon credit is a rising term now a day's in India but a very little number of corporate houses are aware of this. At present, it is crucial to create consciousness about this carbon credit accounting. In India the GHG emission is lower than the mark and so, it sell surplus carbon credits to other developed countries. India is including about 35% to the total world carbon trade, which approximately increase 29 billion dollar by 2013. This is endowing with a great business opportunity to India in carbon trading. Foreign companies who cannot fulfil the norms of the Kyoto protocol, they can buy the surplus carbon credit from companies in other countries. Many Indian companies have been re-rated on the stock markets based on the roll-over prize that will ensue to them when carbon trading kicks off. JSW Ltd and NFL Trading International have entered into a sale and purchase Credit Emission Reduction. Torrent Energy and BOC India have a business in energy which is appropriate for carbon credit benefits. Gujarat Flour chemicals were the first company among the India companies to register for Clean Development Mechanism (CDM) project. India has including as the most tough competitor in carbon credit market, because about 250 and more Indian companies have applied for registering their CDM Project for marketing the surplus carbon credits.

India's Delhi Metro Rail Corporation (DMRC) has become the first rail project in the world to produce carbon credits because of using regenerative braking system in its rolling stock. DMRC has earned the carbon credits by using the regenerative braking system in its trains that reduce 30% electricity consumption.

### 2. Literature Review

The review of the literature was done by taking factors such as Carbon Credit Accounting, Kyoto protocol, Carbon Trading, and cleans development mechanism. The research was done to find out the awareness of carbon credit accounting. It is a present topic to ponder upon much on its basic concept and only looked upon. The research has been made in the context to carbon emission and simultaneously credits earned by the corporate houses in India. Carbon accounting is an activity undertaken to check the amount of carbon dioxide and its equivalents which will not be released into the atmosphere can be protected under the Kyoto protocol mechanism. The system which is used for this often called cap and trade. The main motto of this system is to reduce pollution and global warming and also fight again climate change the international emissions trading stands out for offering the developed countries for participation in the lowering of greenhouse gas effect. Bansal, Anuj and Sakti (2007) analyzed and state that India is the biggest seller's of carbon credit and Europe is the biggest buyers of carbon credit. According to the survey, India has generated some 28 million carbon credit and to push about 140 million into the world market. Sharma, Smita (2010) suggested that Income from the sale of CERs should be considered under the head of 'Business and Profession'. But in case of sale as Intangible, it would be taxable under the head 'Capital Gain. Most companies in India are recording earnings from carbon trading as Income from 'Other Sources. Sunita, Irfan (2009) explained the carbon credit accounting. She also investigated that recently there is no authorise accounting literature from the financial accounting or International accounting standard board on accounting emission allowances. Indian Companies have

developed their policies and provision regarding carbon credit accounting. Gupta, Ansul (2011) discussed the importance of carbon credit accounting and the basic concept. They emphasized on the methods used to save the environment and stated that the business opportunities in the global emission market in the Indian context. Satya, Suresh (2011) define that the process of carbon credit trading and showed that India has generated 70.41 million CERs/Carbon credit units as on 31st July 2009, and has expected that some Indian company which are earned multimillions through execution of CDM Projects. Sameer, Sanjay K. (2006) also described the accounting and taxation aspect of carbon credit and raised some doubt regarding the accounting of carbon credit. In his opinion, the sale of CER should be treated as other income, not turnover.

### 3. Research GAP

From above literature review the researcher identify following gaps:

- There is no one found about relation between firm financial statements with its environmental performance.
- Any previous researcher could not found the actual benefit derive by the firm from carbon credit trading in India.

### 4. Background of the topic

Carbon accounting is referred to the accounting treatment for carbon emission rights or the accounting methods for carbon emission for financial reporting purpose, as it is contrasting the scientific carbon accounting which is anticipated to assess and enumerate physical GHG emissions. It is difficult to deduce the account for emission right without proper accounting standards and it is also difficult to evaluate financial statement of the firm. According to the general principles of accounting (International Financial Reporting Standards IFRS), there are various ways of elucidation carbon credit accounting. Some firms categorize emission rights as intangible assets, others as inventory assets, others as R&D, and so on, but it is the reality that there is no common provision for different institutional contexts. In the absence of an international accounting standard regarding emission rights, only some studies have empirically analyzed the determinants of the different ways to account emission rights. Because the absence of specific standard it is difficult for accountants for capturing emission rights under existing standards.

CO<sub>2</sub> emission rights are created by the Kyoto protocol and obligations on states, which resulting create a market for carbon trading. It transforms ecological and environmental concepts into economic phenomena, and then, this affects the accounting practice. However, the complex character of emission rights makes difficult the traditional accounting of assigning asset/liability status. There are three main features which make emission rights special: first of all it is a costly activity. Secondly govt. try to mitigate that cost, and marketable allowances are the way of mitigation. Also, accountants and accounting standard-setters face various problems regarding the appreciation of the production process of carbon credits. At the end of 1994, the IFRIC guide the accounting treatment of emission rights, (IFRIC-3), but it was withdrawn due to inconsistencies in the provision. There has been no guidance from the international standard on how to account for emission rights.

Carbon accounting including various accounting standards, such as IAS 20 (government grants), IAS 38 (intangible assets), and IAS 39 (financial instruments). This is created in a controversial situation for the accountant. Due to the absence of proper guidance by the IASB, several approaches have developed by the IFRS, which is used to account for the effects of emissions trading schemes. A survey by the International Emissions Trading Association identified as many as thirteen variations to account for carbon emission rights. The accounting standards of the FASB proposed both positive and negative sides of three solutions—allowance as an inventory, marketable security or intangible. They also suggest that reporting the allowances at a fair value, which needs proper internal planning and control, but external needs required historical cost valuation.

### 5. Objectives of the study

1. To analysis the theory of carbon credit accounting.
2. To investigation accounting treatment of carbon credit in India.
3. To evaluate carbon emissions in selected countries with India from the year 2008 to 2018.

### 6. Research Methodology

This research is based purely on secondary data, which is collected from various environment agency, report, magazine, journals etc. In this study the researcher compares the India CO<sub>2</sub> emissions with three developing and two developed countries namely Brazil, Mexico, Iran, China and USA for the period of 10 years from 2008 to 2018 to understand the percentage growth and trend in these countries for these periods. The data has been analyzed by using the Least Square Dummy Variable Regression Model (LSDVRM).

### 7. Data Analysis and interpretation

#### 7.1. Theory of carbon credit accounting

There are various Indian companies, who sell carbon credits to commercial as well as individual customers. The companies purchase their credits from an investment fund or an individual project. Both Buyers and sellers use an exchange platform to trade, which is called the Carbon Trade Exchange (CTE). It is like a stock exchange for carbon credits. In the current set-up, the concept of carbon credit accounting is mounting rapidly all over the world. But the main question is raised about the provision and standard for accounting treatments. When Carbon credit purchase by the company it increases the cost so it is called cost gainer and if the company sales the carbon credit, it reduces the cost then it is called cost reducer because the company gets the revenue from it. So it is increased the difficulty that is carbon credit considered as a cost or revenue. Second thought regarding carbon credit is that it should be considered as intangible assets or not because it is invisible and it can be sold by the companies. Therefore it may be treated as per accounting standard 26. According to taxation, income from the sale of carbon credit should be taxable under the head of Business and Profession but some say that it is a transferable certificate like shares. So, therefore, is treated as a capital gain. However, it is necessary to point out that whether it is considered as short term or long term assets because the taxation rate in both cases is different. But At present situation most of the Indian companies 'record carbon trading earnings as income from

‘Other Sources’.

**7.2. Accounting treatment of carbon credit accounting in India**

Carbon Emission Reduction certificate to be treated as an asset. To generate CERs, a firm can undertake a CDM project and through which reduces carbon emissions. There are various stages include in a CDM project activity to generate CERs. carbon emission reductions are generated after successful registration and operation of CDM project and these reductions continue to be generated over the course of the project. But when the emission reductions are taking place, CERs do not arise. CERs are a procedural aspect so that, when emission reductions take place these should be considered as assets since certification of this reduction is in the process. Therefore, it is noted that issue of CERs is subject to the verification process because CERs are applied and after 15 days if no request for review is received and after having satisfied all requirements; a communication is received from UNFCCC after that the generating firm crediting the CERs. It is, thus, the creation of CERs is the result of emission reductions. Accordingly, at this stage when emission reductions are taking place, CERs can said to be contingent assets as per Accounting Standard (AS) 29, Provisions, Contingent Liabilities and Contingent Assets, which defines Compendium of Guidance Notes – Accounting a contingent asset as “a possible asset that arises from past events the existence of which will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the firm”. This is because when the generating firm reduces carbon emissions through CDM project, the generating firm becomes eligible to receive CERs from UNFCCC. However, whether CERs will arise and be received by the firm or not will depend on a future uncertain event. When a CER comes into existence and define as an asset only when the communication of credit of CERs is received by the firm. This is because the CER becomes a resource controlled by the generating firm and therefore expected to get future economic benefits in the form of cash and cash equivalents which arise on the future sale of CERs. Accordingly, when a CER comes into existence, stated as an asset for generating firm. A firm should present certified emission rights as part of his Inventories, in the company balance sheet, separately from other categories of Inventories such as Raw Materials, Work-in-process, Finished goods etc. A firm should disclose the following information relating to certified emission rights in the financial statements:

- a. No. of CERs held as inventory and the basis of their valuation.
- b. No. of CERs under certification.
- c. Depreciation and operating and maintenance costs of Emission Reduction equipment expensed during the year.

**7.3. Comparison of CO2 emission in the selected countries with India**

The research focused on the comparison in CO<sub>2</sub> emissions in the selected countries and tried to evaluate the level of CO<sub>2</sub> emissions of India with other countries. The following table shows the level of CO<sub>2</sub> emission in selected three developing and two developed countries such as India, Mexico, Iraq, Iran, China and USA for the period of 2008 to 2018.

2018.

**Table 1.1:** Per country trends in CO<sub>2</sub> emission of CO<sub>2</sub> emission Unit-Billion Tonnes

Year	India	USA	China	Mexico	Iraq	Iran
2008	1.2	0.3	0.2	0.3	0.3	0.2
2009	1.2	0.2	0.2	0.3	0.2	0.2
2010	1.3	0.4	0.2	0.3	0.2	0.3
2011	1.3	0.3	0.2	0.4	0.2	0.3
2012	1.4	0.3	0.3	0.4	0.2	0.4
2013	1.4	0.2	0.3	0.4	0.3	0.4
2014	1.5	0.5	0.3	0.5	0.3	0.4
2015	1.6	0.1	0.4	0.5	0.3	0.4
2016	1.23	0.3	0.4	0.4	0.4	0.5
2017	1.75	0.3	0.5	0.3	0.4	0.5
2018	2.01	0.5	0.5	0.4	0.5	0.5
Percentage Of growth	144.45	28.18	31.81	38.18	30	37.27

Sources: Global CO<sub>2</sub> emission, Kyoto Protocol Report 2019

**Interpretation**

Above table no. 1.1 undoubtedly shows that there is an growing trend in CO<sub>2</sub> emission only in India. All other selected countries have a mixed trend, means ups and downtrend in CO<sub>2</sub>emission. This increasing trend in India indicates unconstructiveness in increasing level of CO<sub>2</sub> emission is not good for the environmental Deveipment. Moreover; the level of CO<sub>2</sub> emission is higher in India than in other countries. The proportionate increased in level of CO<sub>2</sub> is found to be highest in India i.e. the level of CO<sub>2</sub> increased by 144.45% in India, 28.18% in USA, 31.81% in China,38.18% in Mexico, 30% in Iraq and 37.27 in Iran for the period of 2008 to 2018. The emission of CO<sub>2</sub> level is almost lowest in USA which indicates good indication for up-gradation of the environment. Rather than the level of CO<sub>2</sub> emission in India is extensively higher than other selected country.

**7.4 Compare through least square dummy variable model**

As well as to know the accurate trend of the CO<sub>2</sub> emission by all selected countries, the Least Square Dummy Variable Regression model has been applied on the structured panel data of CO<sub>2</sub> emission in the Selected countries. The Result of this econometric application is as follows; Least Square Dummy Variable Model.

**Table 1.2:** Least Square Dummy Variable Model Result

Variables	Coefficient	t-ratio	R <sup>2</sup>
Constant	-37.155***	-12.235	0.86
Year	00.021***	11.4731	
USA Dummy	-00.789***	-20.471	
China Dummy	-00.887***	-21.613	
Iraq Dummy	-00.799***	-20.187	
Iran Dummy	-00.801***	-22.567	
Mexico	-00.878***	-20.987	

\*\*\*Significant level of 0.01 Observation is 66 (5 countries×11 years) Dependent Variable: CO<sub>2</sub>

**Interpretation**

According to above table 1.2, the coefficient of the period is significant with the confidence level of 0.01 which is 00.021. This coefficient indicates that over one year the CO<sub>2</sub> emission level increased by 0.021. Concerning India, all other countries emission level of CO<sub>2</sub> is found to be

Lower significantly. The levels of CO<sub>2</sub> emission are China, USA, Iran, Iraq and Mexico are lower by 0.887, 0.789, 0.801, 0.799 and 0.878 respectively than India. The value of R<sup>2</sup> found to be pretty high with 0.86, which signify that about 86% of the variance in the CO<sub>2</sub> emission level is due to the above period.

### 8. Finding, Suggestion and conclusion

Carbon trading is an effective tool to earn extra payback for developing countries and non-developed countries. Clean Development Mechanism is also a useful source of technological and economic development for developing countries with environmental up-gradation. Even though India is the largest beneficiary of carbon trading, it still does not have a proper policy for the trading of carbons in the market. For proper functioning and development of carbon markets and carbon trading practices, separate financial accounting standard must be established. It is a duty of government of India in addition to the Institute of Chartered Accountants of India (ICAI) and International Accounting Standards Board (IASB) to develop accounting standard for carbon credit accounting. They are trying to build up accounting standards for carbon credit accounting but do not get success. From the data of the particular period, it has been found that there is an increasing trend in CO<sub>2</sub> emission except for China which is not good for the country and also for the environmental development. From the above data analysis, it has been concluded that India residue at the top in emission level of CO<sub>2</sub> followed by in Brazil, Mexico, Iran, USA and China. Moreover, it has been found that growth in emission level of CO<sub>2</sub> remains almost same for Brazil and China. USA gets success to be stable in the emission of CO<sub>2</sub> which is encouraging for this country.

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