

# The Concept of Carbon Credit Accounting and Comparison of CO<sub>2</sub> Emission of India with selected Developing Countries

Dr. Ashish K. Desai

Head of the Department, Accountancy

D. R. Patel and R. B. Patel Commerce College, Bharthana (Vesu), Surat

E-mail: aashish.desaai@yahoo.com

**Abstract:-** The research on the concept of carbon credit accounting has been carried out with the exact objective of panel data analysis in carbon dioxide emissions in developing countries. Carbon dioxide emission per region/country for the period of 1990–2013 has been taken for the study. It has been concluded that financial accounting standards for carbon credit must be established. From the panel data analysis, it has been found that India is the top country who produces more carbon dioxide than that of the other selected countries followed by Brazil, Mexico, Iran, Saudi Arabia and South Africa.

**Keywords:-** Carbon Credit, Carbon Dioxide, Carbon Credit Accounting

\*\*\*\*\*

## I. INTRODUCTION

Entire world is suffering from the problems of climate changing and environmental conservation. Running blindly towards amazing industrialization and development create troubles for the environment. Due to the carbon dioxide (CO<sub>2</sub>) and its equivalent gases (CO<sub>2</sub>e), the environment is going to be fall down. So, the concept of carbon credit has been entered to prevent the environment.

According to this concept, measurement to emission the carbon dioxide and its equivalent gases has been framed for every industry. If they release more gas than its measurement, they have to purchase carbon credit from the government or particular industry. And if they release less gas than that of the measurement, they can sale carbon credit into the market.

A carbon credit is also known as a carbon offset. It remains in form of tradable certificate or permit.

## II. PROBLEM STATEMENT

Though, the growth of carbon credit business is going remarkable, there are no separate accounting standards. So, it is a vital issue for the government as well as for the Institute of Chartered Accountants of India (ICAI) and International Accounting Standards Board (IASB) in combination with the US Financial Accounting Standards Board (FASB) to frame a particular standard for this (Heather Lovell et al., 2010). On this base, this research work has been carried out.

## III. OBJECTIVES OF THE STUDY

1. To study the concept of carbon credit accounting.
2. To study the trends in carbon emissions in selected countries from the year 1990 to 2013.

## IV. RESEARCH METHODOLOGY

This study is based on secondary data. The data has been collected from environmental agency, report, magazine, journals etc. This paper includes a study of trends in CO<sub>2</sub>

emissions for six developing countries namely India, Brazil, Mexico, Iran, Saudi Arabia and South Africa for the period of 14 years from 1990 to 2013 to understand the percentage growth and trend in these countries for these periods. The data has been analyzed by applying Least Square Dummy Variable Regression Model (LSDVRM) which is one of the tools of panel data analysis.

## V. ANALYSIS AND INTERPRETATION

### 5.1 CONCEPT OF CARBON CREDIT ACCOUNTING

Many company sale carbon credits to commercial and individual customers. They purchase the credits from an investment fund or from an individual projects. Buyers and sellers can also use an exchange platform to trade like the Carbon Trade Exchange (CTE). It is like a stock exchange for carbon credits. At current scenario, concept of carbon credit is growing rapidly in all over the world. But the main issue is raised about the accounting treatments of it.

Carbon credit may be the cost reducer or cost gainer. When the company purchases the carbon credit, it increases the cost and if the company sales the carbon credit, it reduces the cost as the company gets the revenue. So the question raised that is carbon credit considered as a cost or revenue?

One another thought regarding carbon credit is placed that it should be considered as intangible assets as it is invisible and can be sold. So, it should be treated as per accounting standard 26.

From the taxation point of view, income from sale of carbon credit should be taxable under the head of Business and Profession. Some opinionnaire says that carbon credit is a transferable certificate like shares. So it should be treated under the heading of capital gain. Moreover it is necessary to point out whether it is accounted as short term or long term holdings because taxation rate is different for both the period.

At present, most of the companies in India record earnings from carbon credit trading as income from 'Other Sources'.

### 5.2 PANEL DATA ANALYSIS

The present study focused on the trends in CO<sub>2</sub> emissions in the selected countries and tried to compare 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 six developing countries such as India, Brazil, Mexico, Iran, Saudi Arabia and South Africa for the period of 1990 to 2013.

### INTERPRETATION

Above table no. 1.1 clearly shows that there is an increasing trend in CO<sub>2</sub> emission for all the selected countries except South Africa. This increasing trend indicates negativity as the increasing level in CO<sub>2</sub> emission is not good for the environment. Moreover, the level of CO<sub>2</sub> emission is comparatively higher in India than 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 195.71% in India, 150% in Brazil, 66.67% in Mexico, 100.0% in Iran, 150% in Saudi Arabia during the period of 1990 to 2013.

The level of CO<sub>2</sub> emission is almost stable in South Africa which indicates good sign for up gradation of environment. Whether the level of CO<sub>2</sub> emission in India is significantly higher than other selected country?

As well as to know the 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.

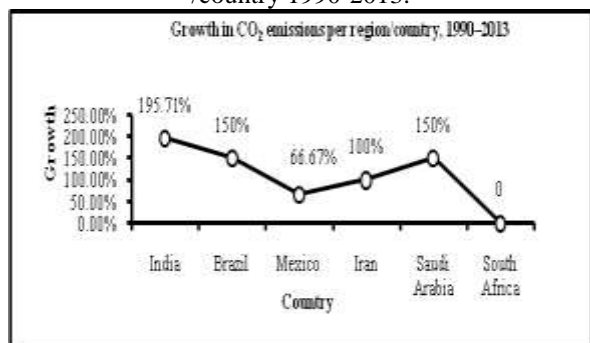
The Result of this econometric application is as follows; Least Square Dummy Variable Model

**Table No. 1.1** Trends in CO<sub>2</sub> emissions per region/country, (Unit: Billion Tonnes of CO<sub>2</sub>)

Year	India	Brazil	Mexico	Iran	Saudi Arabia	South Africa
1990	0.7	0.2	0.3	0.2	0.2	0.3
1991	0.7	0.2	0.3	0.2	0.2	0.3
1992	0.7	0.2	0.3	0.2	0.2	0.3
1993	0.8	0.2	0.3	0.2	0.2	0.3
1994	0.8	0.3	0.3	0.3	0.2	0.3
1995	0.9	0.3	0.3	0.3	0.2	0.3
1996	0.9	0.3	0.3	0.3	0.2	0.3
1997	1.0	0.3	0.4	0.3	0.2	0.3
1998	1.0	0.3	0.4	0.3	0.2	0.3
1999	1.0	0.3	0.4	0.3	0.3	0.3
2000	1.1	0.4	0.4	0.3	0.3	0.3
2001	1.1	0.4	0.4	0.4	0.3	0.3
2002	1.1	0.4	0.4	0.4	0.3	0.3
2003	1.2	0.3	0.4	0.4	0.3	0.3
2004	1.2	0.4	0.4	0.4	0.3	0.4
2005	1.3	0.4	0.4	0.5	0.3	0.4
2006	1.4	0.4	0.4	0.5	0.3	0.4
2007	1.5	0.4	0.5	0.5	0.4	0.4
2008	1.6	0.4	0.5	0.4	0.4	0.4
2009	1.7	0.4	0.4	0.4	0.4	0.4
2010	1.8	0.4	0.5	0.4	0.4	0.3
2011	1.82	0.5	0.5	0.4	0.4	0.3
2012	1.98	0.5	0.5	0.4	0.5	0.3
2013	2.07	0.5	0.5	0.4	0.5	0.3
Growt%	195.71	150.00	66.67	100.00	150.00	0.00

Source: Trends in Global CO<sub>2</sub> Emissions, 2014 Report

**Figure No. 1.1** Growth in CO<sub>2</sub> emissions per region /country 1990-2013.



**Table no. 1.2** Results of Least Square Dummy Variable Model

Variables	Coefficient	t-ratio	R <sup>2</sup>
Constant	- 34.160***	-10.1283	0.87
Year	00.018***	10.4915	
Brazil Dummy	- 00.873***	-21.6238	
Mexico Dummy	- 00.827***	-20.4895	
Iran Dummy	- 00.873***	-21.6238	
Saudi Arabia Dummy	- 00.923***	-22.8612	
South Africa Dummy	- 00.898***	-22.2425	

\*\*\* Significance level of 0.01. Note: 144 observations (6 Countries x 24 Years)

Dependent variable: CO<sub>2</sub>, Reference Country: India

### INTERPRETATION

The results of table no. 1.2 imply that, the coefficient of time period is 0.018 which is significant at confidence level of 0.01. This coefficient conveys that over a one year level of CO<sub>2</sub> emission increased by 0.018. With reference to the 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 in Brazil, Mexico, Iran, Saudi Arabia and South Africa are lower by 0.87, 0.83, 0.87, 0.92 and 0.89 respectively than India. The value of R<sup>2</sup> found to be quite high of 0.87, which suggest that about 87% of variance in the CO<sub>2</sub> emission level is due to the time period.

### VI. CONCLUSION

It is a responsibility of government as well as the Institute of Chartered Accountants of India (ICAI) and International Accounting Standards Board (IASB) to develop accounting standard for carbon credit. They are trying to develop accounting standards for carbon credit but do not get

success. From the data of selected period, it has been found that there is an increasing trend in CO<sub>2</sub> emission except South Africa which is not good for the country as well as for the environment. From the panel data analysis, it has been concluded that India remains at top in emission level of CO<sub>2</sub> followed by in Brazil, Mexico, Iran, Saudi Arabia and South Africa. Moreover, it has been found that growth in emission level of CO<sub>2</sub> remains almost same for Brazil and Saudi Arabia. South Africa gets success to be stable in the emission of CO<sub>2</sub> which shows positive aspect for this country.

#### REFERENCE

- [1] Chotaliya Meghna (2014). Accounting for Carbon Credits In India, Indian Journal of Applied Research, 4 (5): 1-2.
- [2] Kamat Manoj S. And Kamat Manasvi M. (2015). An Evaluation Of The Perceptions In Carbon Accounting And Reporting In India, International Refereed Research Journal, 6 (2): 27-39.
- [3] Locatelli B., Pedroni L. (2004). Accounting Methods for Carbon Credits: Impacts on the Minimum Area of CDM Forestry Projects. Climate Policy 4 (2): 193-204.
- [4] Ravuru Narasimha Reddy and Y. V. N. S. (2012). Suvikram Chemical Engineering Department, Institute of Technology, Nirma University (2012). Carbon Credits - A Step to Sustainable Future of the World, Research Journal of Recent Sciences1: 388 - 397.
- [5] Stephen G. Kerr (2008). Accounting Policy And Carbon Credits, Journal of Business & Economics Research, 6: 77-88.
- [6] Sumita Nair and Preeti Nandkumar (2009). International Journal of Advancements in Research & Technology, 2 (9): 110-118.
- [7] <http://www.iasplus.com/en/standards/ifric/ifric3>, surfing Date: 10-09-2015, 13.44pm.
- [8] Heather Lovell, Thereza Sales de Aguiar, Jan Bebbington and Carlos Larrinaga Gonzalez (2010). Accounting for Carbon, The Research Report.

#### ACKNOWLEDGEMENT

I acknowledged deep sense of gratitude to Prof. Dr. Nilesh B. Patel and Prof. Dr. Brijesh S. Patel for their constant support during the research work. Prof. Dr. Nilesh B. Patel was kind enough to help me in data analysis and interpretation.