

# Carbon Credit: A Burning Business Issue

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## Abstract

Carbon market is the brain child of the Kyoto Protocol for controlling green house gas emissions. This market has become the fastest growing financial market in the world. This market is mainly operated by Clean Development Mechanism (CDM), which allows carbon credit earnings and carbon trading between countries and companies, establishing carbon credit exchange in the business world. As the first commitment period of the Kyoto Protocol in 2012 is completing nearly, it is important to take stock of global scenario of the carbon business and its achievement level.

India signed and ratified the Kyoto Protocol in August 2002. Since India is exempted from framework of the treaty, it is expected to gain from the protocol in terms of transfer of technology and related foreign investments. India was an early player in the market and was doing well, but after the entry of China in 2005, it gradually outperformed India in the carbon market.

This article focuses on the global scenario, India's participation and performance in the carbon market. It also describes the market mechanism, highlights accounting treatment of carbon trading in India and international and finally cited number of case studies of Indian companies in carbon trade.

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## Introduction

With the progress of mankind there has been an increasing adverse effect on the global environment due to hazardous emissions including carbon. This has caused what we know of as global warming. To address this 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 in the atmosphere. Subsequently, to supplement the convention, the Kyoto Protocol came into force in February 2005, which sets limits to the maximum amount of emission of GHGs by the countries.

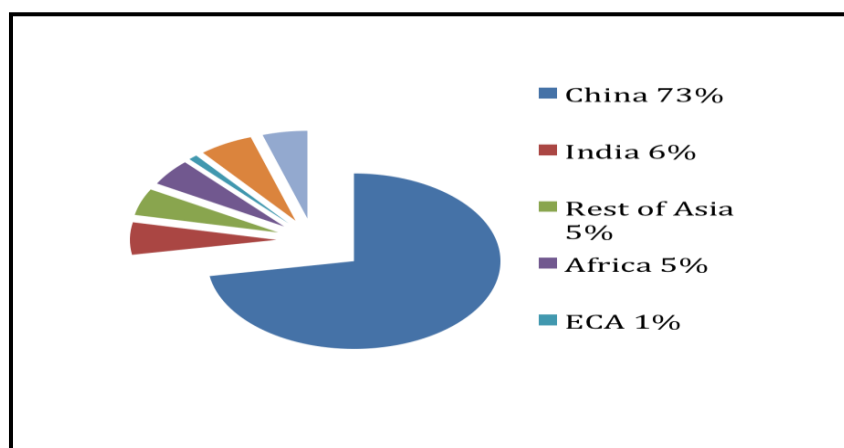
This protocol has created a mechanism under which more than 189<sup>1</sup> countries have agreed to reduce green house gas emissions globally. The UNFCCC divides countries into two main groups. A total of 41<sup>2</sup> industrialized countries are currently listed in the convention's Annex-I who are committed to reduce their GHG emissions by at least 5% below their 1990 baseline emission by the commitment period of 2008-2012. There are 24<sup>3</sup> countries included in Annex-II of the convention. These countries mostly were members of the organization for Economic Co-operation and Development (OECD) in 1992. All other countries not listed in the convention's Annexes, mostly the developing countries, are known as non Annex-I countries. They are currently numbered at 145<sup>4</sup>, as per the Kyoto Protocol, at present these countries are not bound by the amount of GHG emissions that they can release in the atmosphere though they also generate GHG emissions. Most of world's industrialized nations support the Kyoto Protocol. One notable exception is the United States of America, which releases more GHGs than any other nation and accounts for more than 25% of those generated by human beings worldwide.

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## Global Scenario

The carbon markets have become the fastest growing financial market in the world. According to many market analysts<sup>5</sup>, carbon will be the world's largest market overall. The carbon markets are a prominent part of the response to climate change, and have been largely driven by two specific international

regulations: (i) The Kyoto Protocol and (ii) The European Union Emissions Trading Scheme (EUETS), which is a main pillar of the EU's effort to meet emission reduction commitments under the Kyoto Protocol, and which allows large emitters of carbon dioxide within Europe to trade in allowances issued by national governments. According to Kyoto Protocol, countries with binding emission reduction targets (which are represented by Annex- I countries) in order to meet the assigned reduction targets are issued allowances (carbon credits) equal to the amount of emissions allowed. An allowance or carbon credit represents one metric tonne of carbon credit equivalent. To meet the emission reduction target, binding countries ask their local businesses and entities to purchase carbon credits from the developing countries (non Annex-I countries) who are not bound by the amount of GHG emissions. At present, European Union are the major purchaser of carbon credit and Asia dominates the seller market (see chart) led by China.



Source: State and Trends of the Carbon Market 2007, World Bank, Washington, D.C.

The volume of carbon markets mainly depend on the national emission reduction target of GHG gases of the developed countries. National targets<sup>6</sup> range from 8% reductions for EU, 6% for Japan and 10% for Iceland. Market analysts estimate that should the industrialized nations adopt an aggressive emission reduction target of 50% or more by mid century, and should they meet half of their emission reduction commitments through the purchase of project based emission reductions from developing countries such as India & China, the carbon market could grow to \$100<sup>8</sup> billion sales annually. In 2005, after the Kyoto Protocol was in force, the carbon markets were worth \$10<sup>9</sup> billion which enhanced to \$30 billion in the year 2006. In 2008, there were more than 800<sup>10</sup> projects registered worldwide to participate in the carbon trading mechanism.

### India's Participation and Performance

India signed and ratified the Kyoto Protocol in August 2002. Since India is exempted from framework of the treaty, it is expected to gain from the protocol in terms of transfer of technology and related foreign investments. India was an early player in the market and it hosted the Eighth conference of parties to the UNFCCC in Delhi in October 2002<sup>11</sup> to sensitize the business community about the opportunity provided by the carbon finance and the modalities of the emerging CDM. India's participation in the carbon markets has contributed to the recognition that it is a useful tool in attracting climate friendly investments. In 2004, the growth in the Indian carbon market was fostered by a healthy number of indigenous management and technical consultants, which began to offer services to potential sellers of emission reductions, and the response from primarily the private sector to capacity building initiatives concerning the nascent market. In its capacity as the Designated National Authority (DNA) for the CDM, the Ministry of Environment and Forests (MOEF) also had the foresight to develop simple and transparent rules, whereby project developers can obtain a Letter of Approval (LOA) theoretically within sixty days, which is a key step required for project registration. By the end of 2004<sup>12</sup>, India was the market leader in the forward sale of emission reductions, with 50 % of the supply market.

As the Kyoto Protocol came into force and the EU ETS was enacted, China entered the carbon market in full force in 2005. At the same time, many buyers reported that it was becoming difficult to close

deals in India in 2005, as carbon prices, in particular for EUAs sold pursuant to the EU ETS, began to rise. Even in the absence of price transparency for Certified Emission Reductions (CERs) and other asset classes, many sellers in particular from India, showed a great risk appetite as they expected prices to rise, and attempted to add value to their CERs through project registration. As a result, India dropped to third place in the global supply of project-based emission reductions in 2005 (at 3%)<sup>13</sup>, behind China (73%) and Brazil (11%).

However, it is certain that beyond 2012, China will outperform India in the carbon market, given that (i) it has already surpassed the Indian number of projects taking into account the total number of projects under validation, requesting registration and registered and (ii) the average project size in China is 2.72<sup>14</sup> times that in India's. Consequently, it is expected that China will have a CDM supply market of 4.75<sup>15</sup> times that of India beyond 2012 when considering projects registered until 2007 and much larger once the projects currently in the pipeline are registered.

The public sector in India has also been relatively absent from the carbon market. Of the 333 projects registered at the CDM EB from India, only 16<sup>16</sup> originated from public sector units (PSUs). Even among these, 10 use small scale methodologies. This is particularly noteworthy since public spending still dominates key business sectors for CDM.

### **Business Mechanism and Carbon Exchange**

A company belonging to a developed country has two ways to reduce emissions. One, it can reduce the GHGs by adopting new technology or improving upon the existing emission technology to attain the new norms of the emission of gases. Second, it can tie up with developing nations and help them set up new technology that is eco-friendly, resulting in earning carbon credits to meet its emission reduction targets. Kyoto Protocol provides three market based mechanism- (1) Joint Implementation (JI), (2) International Emission trading (IET), (3) Clean Development Mechanism (CDM). 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 which are required to meet their emission reduction targets. Under IET, developed countries with emission reduction targets can simply trade in the international carbon credit markets. It means carbon credits can be exchanged between business/entities or bought and sold in international market at the prevailing market price. 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.

An industrialized country that wishes to get credits from a CDM project must obtain the consent of the developing country hosting the project that the project will contribute to sustainable development. Then, using methodologies approved by the CDM Executive Board (EB), the applicant (the industrialized country) must make the case that the carbon project would not have happened anyway (establishing additionally), and must establish a baseline estimating the future emissions in absence of the registered project. The case is then validated by a third party agency, called a Designated Operational Entity (DOE), to ensure the project results in real, measurable, and long-term emission reductions. The EB then decides whether or not to register (approve) the project. If a project is registered and implemented, the EB issues credits, called Certified Emission Reductions (CERs, commonly known as carbon credits, where each unit is equivalent to the reduction of one metric tonne of CO<sub>2</sub> or its equivalent), to project participants based on the monitored difference between the baseline and the actual emissions, verified by the DOE.

### CDM PROCESS



### Carbon Trading

Carbon Trading is a system that allows a company or country that reduces the amount of carbon dioxide it produces to below a particular level to sell the extra reduction as a credit to a company or country that has not reduced the amount it produces enough.

There are three types of carbon trading, Cap & Trade, Baseline & Credit and Offset. The most popularly used system of Carbon Trading is the Cap & Trade. Under the Cap & Trade system:

- The regulator establishes an Overall limit called 'emissions cap'.
- Allowed to emit in a given period.
- Allowances equal to all of the emissions permitted under the cap and then distributed.

### Carbon Exchange

The Multi Commodity Exchange of India Ltd (MCX)<sup>17</sup> entered into an alliance with the Chicago Climate Exchange in 2005 to introduce carbon credit trading in India. MCX is the future exchange. People here are getting price signals for the carbon for the delivery in next five years. The exchange is only for Indians and Indian companies. The Indian government has not fixed any norms nor has it made it compulsory to reduce carbon emissions to a certain level. So, people who are coming to buy are actually financial investors.

The benefits are as follows:

- Sellers and intermediaries can hedge against price risk.
- Advance selling could help project to generate liquidity and thereby reducing its cost of implementation.
- There is no counter party risk, as exchange guarantees the trade.
- The price discovery on the exchange platform ensures the fair price for both the sellers and buyers.

### Accounting for Carbon-India and International

With large number of entities in India generating carbon credits and this being a relatively new area, a need was felt to provide accounting guidance in this area. However, since at present the Clean Development Mechanism (CDM) is the relevant mechanism in India and with India currently not being under the obligation to reduce its GHG emissions as per the Kyoto Protocol, a draft guidance note has been prepared to guide on accounting for carbon credits i.e., CERs generated under the CDM. This guidance note provides guidance on matters of applying accounting principles relating to recognition, measurement and disclosures of CERs generated by the entity that has obtained under CDM. The Institute of Chartered Accountants of India (ICAI) issued guidelines with respect to Accounting for Self-generated Certified Emission Reductions issued on 17/02/2012.

The crux of the guideline is:

- Carbon credits generated under CDM, i.e., CERs can be considered as intangible assets without a physical form as per AS-26.
- 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 “inventories” AS 2.

(For further details please refer to the above-mentioned Exposure Draft)

### **Global Scenario**

At present, there is no authoritative accounting guidance within International Financial Reporting Standards (IFRS) for transactions involving carbon allowances. The International Accounting Standards Board (IASB) issued IFRIC-3 on ‘Emissions Rights’ but it was withdrawn in June 2005. Based on other IFRS issued at that time, IFRIC-3 concluded that:

- Rights (allowances) are intangible assets (IAS 38).
- Where allowances are issued by governments for less than fair value, the difference between fair value and the amount paid (if any) is a government grant.
- Provisions for emissions-related liabilities should be recorded (IAS 37 Provisions, contingent liabilities and contingent assets).

Despite the withdrawal of IFRIC 3 there remain a number of existing standards that provide authoritative guidance on relevant accounting on which companies must draw in forming their policies for carbon related transactions (including IAS 2, 20, 37, 38 and 39).

### **Accounting and Tax Treatment Across Different Countries**

#### **Spain**

The tax treatment of emissions in Spain follows the accounting treatment, as determined in accordance with Spanish GAAP<sup>18</sup>. Emission allowances are treated as “intangible assets”, and the allocation of allowances by the governmental authority is treated for corporate income tax purposes as a government grant (shown on the balance sheet as deferred income) and is accounted for at its fair market value. If the company purchases allowances, the company is required to account for these allowances at their acquisition cost. If allowances are acquired by the joint implementation system or through the clean development mechanism such allowances must be accounted for at their production cost. From a VAT perspective, the acquisition of greenhouse gas emission allowances is considered as a supply of services, and VAT is chargeable in the jurisdiction in which the recipient belongs. If the transfer of emission allowances is carried out by traders or a professional in the course of their business activity, such supply of services would be subject to VAT at a rate of 18%<sup>18</sup>. In addition, if the transfer of emission allowances is carried out by individuals the transfer would be subject to a transfer tax at a rate of 4%.

#### **Germany**

On 6 December 2005, the German Ministry of Finance issued a circular<sup>19</sup> dealing with the tax treatment of emissions allowances. Allowances are treated as intangible assets and must be reported in the (tax) balance sheets as current assets. Allowances granted free of charge by the authorities have a balance sheet value of nil. Costs associated with the acquisition of the (free of charge) allowances, such as application costs, are business expenses and are deductible in the year in which the notice of the allotment of allowances has been issued by the authorities. From a VAT perspective, the granting of (free of charge) allowances by the authorities is not subject to VAT. The transfer of allowances is considered as a supply of “other services” and is subject to VAT (current rate 19%<sup>20</sup>).

#### **United Kingdom (UK)**

The starting point for the UK corporation tax analysis is the accounting treatment. A financial reporting standard covering carbon credits (IFRIC 3 Emission Rights) was issued in 2004; however, it was withdrawn shortly after in 2005. Since that date there has been much discussion about the correct method of accounting for emission rights, but no replacement standard has been issued. Whilst a UK company may elect to purchase allowances through directly entering into an ERPA<sup>21</sup>, for various reasons it may prefer to indirectly acquire allowances. In this scenario an orphan SPV may be used – either acting as a principal or as

the agent of the principals. Alternatively, the use of various financial instruments - such as swaps, options and forwards - may also be considered. Where allowances are initially allocated, this will not be subject to VAT on the basis that the allowances are supplied by the relevant authority for public policy reasons (VAT is generally only chargeable where something is in the course of or for the furtherance of business). Any further transfers of allowances between two commercial parties will be treated as a supply of services for VAT purposes.

## France

The French tax authorities have indicated that the tax treatment for greenhouse gas emission allowances should follow the accounting treatment (administrative guidelines, BOI 4 A-13-05 n°25 and 26 dated 30 December 2005<sup>22</sup>). The CRC 2004-08 regulation dated 23 November 2004 has specified the accounting treatment of allowances and established that they must be accounted for as intangible assets. Under the French VAT rules, the transfer of allowances is regarded as a supply of services falling within the scope of VAT. However, these transactions benefit from the tax exemption mentioned in article 261 C 1° e<sup>23</sup>) of the French Tax Code relating to "transactions on securities". Therefore, sales of emission allowances and reduction units are exempt from VAT, without any possibility of making a VAT option.

## Indian Case Studies on Carbon Trading

### Case 1 : BUDHIL Hydro Electric Power Plant

In India, already 300 to 400 companies<sup>24</sup> have carbon credits after meeting UNFCCC norms. We have taken the case of Lanco Power Trading Ltd. which has established Budhil Hydro Electric Power Project in Himachal Pradesh which was commissioned in 2011.

Assumption of tariff calculations:

CDM Registration with UNFCCC obtained and considered as per UPERC guidelines, assumed for Tariff as under:

1. Certified Emission Reductions (CERs) per Million Units	810
2. EURO Rate per CER	11
3. INR Exchange rate	63
4. Forex Escalation	2%
5. Period	21 Years

(Extracted from the copy of offer for sale of power from Budhil Hydro Electric Project to WBSEDCL, dated 25<sup>th</sup> July, 2011)

Below is the statement showing tariff per unit of electricity on the basis of reduced total cost due to sale of carbon credits:-

LANCO BUDHIL HYDRO POWER PVT LTD- 70 MW BUDHIL HYDROPOWER PROJECT										
Year	1	2	3	4	5	6	7	8	9	10
O&M Cost	137.76	145.64	153.97	162.77	172.08	181.93	192.33	203.33	214.96	227.26
Depreciation	345.65	345.65	345.65	345.65	345.65	345.65	345.65	345.65	345.65	345.65
Interest on Rupee term loan	736.56	688.86	641.16	593.46	545.76	498.06	450.36	402.66	354.96	307.26
Interest on working capital loan	37.93	37.28	36.66	36.06	35.48	34.94	34.43	33.95	33.5	33.09
Return on Equity	266.92	266.93	266.93	266.93	266.93	266.93	266.93	266.93	266.93	266.93
<b>Total</b>	<b>1524.83</b>	<b>1484.36</b>	<b>1444.36</b>	<b>1404.87</b>	<b>1365.91</b>	<b>1327.51</b>	<b>1289.7</b>	<b>1252.52</b>	<b>1216</b>	<b>1180.19</b>
CDM Pass through	0	-16.7	-34.07	-52.13	-70.9	-90.4	-92.21	-94.05	-95.93	-97.85
<b>Total Cost</b>	<b>1524.83</b>	<b>1467.65</b>	<b>1410.29</b>	<b>1352.73</b>	<b>1295</b>	<b>1237.11</b>	<b>1197.41</b>	<b>1158.47</b>	<b>1120.07</b>	<b>1082.34</b>
No. of units Generated (MU)	291.73	291.73	291.73	291.73	291.73	291.73	291.73	291.73	291.73	291.73
Auxiliary consumption (MU)	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63
Transformation losses (MU)	0	0	0	0	0	0	0	0	0	0
Saleable units (MU)	289.1	289.1	289.1	289.1	289.1	289.1	289.1	289.1	289.1	289.1
Royalty/Free Power (MU)	34.69	34.69	34.89	34.69	34.69	34.69	34.69	34.69	34.69	34.69
<b>Net Saleable units (MU)</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>	<b>254.41</b>
Tariff Per Unit Rs.	5.99	5.77	5.54	5.32	5.09	4.86	4.71	4.55	4.4	4.25
Levelised Tariff @ 9.35%	1-35 Yrs	4.7								
Average Tariff	1-35 Yrs	4.47								

Source: Project viability report of Lanco Power Trading Limited

It can be seen that in year 2, the total cost is Rs 1484.36. This gets reduced by Rs 16.70 due to sale of carbon credits. The final reduced cost on the basis of which the tariff is to be set is Rs 1467.65 (Rs 1484.36 - Rs 16.70). Thus the tariff for year 2 is set at Rs 5.77 per unit, which is arrived at by dividing the total cost by number of saleable units. Had there been no gain from sale of carbon credits, the tariff per unit would have been set at Rs 5.84 (Rs 1484.36 / 254.41 units).

The same practice is to be carried out, all through the life of the BUDHIL Hydropower Project. Thus we see that by the sale of carbon credit, the gain is passed on to the final consumer by reducing the tariff per unit. A company may decide not to pass the benefit to the user, and instead decide to keep its selling price constant and increase its profit per unit.

The following table shows the computation of revenue from the sale of Carbon Credits:-

LANCO BUDHIL HYDRO POWER PVT LTD- 70 MW BUDHIL Hydropower Project											
		1	2	3	4	5	6	7	8	9	10
Generation CERs/MU	MU	291.73	291.73	291.73	291.73	291.73	291.73	291.73	291.73	291.73	291.73
		810	810	810	810	810	810	810	810	810	810
Total CERs		2,36,301	2,36,301	2,36,301	2,36,301	2,36,301	2,36,301	2,36,301	2,36,301	2,36,301	2,36,301
Rate per CER	Rs	693	706.86	721	735.42	750.13	765.13	780.43	796.04	811.96	828.2
<b>CER Revenue</b>	<b>Rs in millions</b>	<b>163.76</b>	<b>163.03</b>	<b>170.37</b>	<b>173.38</b>	<b>177.26</b>	<b>180.80</b>	<b>184.42</b>	<b>188.10</b>	<b>191.87</b>	<b>195.70</b>
Beneficiary Share		0%	10%	20%	30%	40%	50%	50%	50%	50%	50%
Net			16.7	34.07	52.13	70.9	90.4	92.21	94.05	95.93	97.85

Source: Lanco Power Trading Limited

It can be seen that in year 2 the Certified Emission Reduction (CER) is 236,301. The Rate per CER as per the assumption for tariff calculations is 706.86. Thus the total CER revenue would be Rs 167.03 millions. As the beneficiary share is 10% for year 2, the Net revenue by sale of CER is Rs 16.70. This net revenue would be used to reduce the total cost of the project for year 2. This would help to reduce the per unit cost. This same practice would be carried on for 21 years of the BUDHIL Hydropower project.

### Case 2: Greenply Industries Ltd

Greenply Industries Limited (GIL) is India's largest interior infrastructure company with a turnover of Rs 1420 Crores. It is the first in the Indian industry and the only laminate manufacturer to get carbon credits under UNFCCC. From the extracts of the P/L A/C for the year ended 31.3.2009, following information is found:

The following shows **Schedule O** which forms an integral part of the Profit and Loss Account:-

SCHEDULE O	
OTHER INCOME	2009
Interest subsidy received	-
<b>Income from Carbon Credits</b>	<b>126.53</b>
Dividend on Long Term Investments	0.12
Insurance Claim Received	48.84
Liabilities no longer required written back	10.65
Prior period Income	0.35
Miscellaneous Income	29.4
<b>Total</b>	<b>215.89</b>

Source: Greenply Industries Limited (Annual Report 2008-09)

#### Key Facts:

- The Company earned Rs 126.53 Lacs by the sale of Carbon Credits.
- The Company was eligible for 17,475 CER's for their Behror unit.
- The share price of Greenply Industries jumped by 7.5% to Rs 102.05 after the Company said it had signed a deal to sell Carbon Credits worth \$5 million.
- The deal would add 5 lakh Euros annually to its revenues between FY 2007-2012.
- The Company would also be submitting an application to UNFCCC for Carbon Credits in respect of its MDF unit at Uttrakhand.

Thus we can see that Income by way of sale of Carbon Credit is beneficial to Greenply Industries and the Income is credited to the Profit and Loss Account.

### Case 3: Reliance Power

Reliance Power, an Anil Ambani Group Company, expects that it would earn Rs 2,000 crores<sup>25</sup> by trading carbon credits from its 3960 MW ultra mega power plant (UMPP) in Tilaiya, Jharkhand during the first ten years of its operations. The Clean Development Mechanism Executive Board of UNFCCC allowed the Tilaiya project which will be commissioned during the 12<sup>th</sup> Five year Plan period, beginning April 2012<sup>26</sup>, to earn certified emission reductions, which can be traded, sold and translated into direct revenues, the company said.

In a statement, the company said it had got approval for carbon credits from the United Nations Framework Convention on Climate Change (UNFCCC).

“This recognition of the company’s commitment to use of clean, green technologies for reducing carbon footprints and sets a benchmark in the country,” Anil Ambani said.

## Conclusion

Though Carbon Credit is definitely a very lucrative proposition for both the buying and selling countries, it is the environment which pays the heaviest price, as the GHG emitting countries cause environmental degradation by polluting it. We live in a world where a balance has to be maintained but in the present situation we are disrupting the balance and the future generations will have to pay a heavy price as they will live in an unhealthy environment. Hence strict laws should be imposed to limit the buying and selling Carbon Credits. Scientists must use their time, money, and all available resources in order to find substitutes for the carbon emitting fuels currently being used so that the environment does not suffer any damage at all. They could use sustainable development programs via renewable or zero carbon emission fuel. Countries need to be the change which they want to see in this world.

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