GLOBAL CARBON TAX TO COMBAT CLIMATE CHANGE

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Abstract

From the very inception of this century, the world has been experiencing a drastic increment in the change in global temperature. This effect was calculated and it was seen that the change in rise in temperature has increased after the industrial era. A sound deduction takes us to the reason behind this unpredicted warming, i.e. Anthropogenic activities via fossil fuels industries. These industries after globalization took the advantage of exploiting the resources of the entire world. Burning of fossil fuels causes the emission of carbon dioxide in large quantities, the main reason for the rise in temperature which results in melting of ice, unseasonal rainfall, floods, shift in precipitation belts and more. The damage caused to the environment for the personal gain of these companies and industries is just criminal. Due to this climate change, beaches are experiencing floods and people living in small islands are in peril, trying to adapt to this cruel phenomena of climate change. Air Quality Index has deteriorated in the past years in many region of the world. Forest area has significantly reduced. The nations are trying to cope up but these industries use certain political and economical tactics to make their business keep growing. The only solution hence, that can save the world from a doomsday is Carbon Tax. It is a policy which aims to mitigate the use of fossil fuels. It does not just makes us contribute accordingly but, also forces to reduce the emissions and switch to the renewable form of energy. The paper explores further the use of carbon tax and why is it the need of the hour.

Keywords: Global warming, temperature, fossil fuel, Carbon Tax, Air Quality index, Climate Change

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Introduction

The warming of the globe is not new to us. The phenomenon has been happening from the beginning of the interactions in the earth. The greenhouse gases were released into the atmosphere from humans, animals, volcanoes and a few more sources. Some gases escape the atmosphere in certain time like methane but others like Carbon dioxide and Nitrogen oxide do not.

The greenhouse gases that are the result of anthropogenic activities and cause global warming are-

1. Carbon dioxide – 64.3%
2. Methane – 17%
3. Nitrous oxide – 6%
4. Fluorinated Gases – 0.8%
5. Other gases – 11.9%

The biggest greenhouse gas emitting countries are China, United States of America and India. The industries mostly contribute to the production of Carbon dioxide. Transportation sector is one of the biggest source of emissions of CO_2. The industries require a large quantity of petroleum to run their machinery efficiently in order to reach the growing needs of the population. 96% of the transportation uses Petroleum as a fuel. These fossil fuels are described as a patchwork of carbon and hydrogen and when they are used by industries or the transportation sector, they release the carbon in the air in the form of carbon dioxide.

The water vapour is one of the greenhouse gases that is independent from human interference. However, the latter aphorism is restricted only to one word, primarily. Since, CO_2 emissions are making the earth warmer, the water considers better to be in the vapour form. It has been calculated that if CO_2 makes an estimate increase in rise in temperature of 1 degree Celsius, the indirect effect on water vapour would enhance that affect to 3 degrees Celsius. These affects are devastating to the entire planet. Methane also leaves the atmosphere by reacting with hydroxyl radical leaving behind carbon dioxide and water vapour as bi-products.

From all the facts presented above, a logical deduction would be that the change in rise in temperature is basically and mostly due to the emission of carbon content in the atmosphere. The second logical deduction would be that the primary source of liberation of CO_2 is fossil fuels. These fossil fuels are being burnt at a very rapid rate not to satisfy basic human needs but to provide luxury.

The developed countries are the culprits, where the population has such a lifestyle which uses the products of such industries which use a lot of fossil fuels. For say, chocolate alone causes 2.1 million tonnes of

greenhouse gas emissions per year. Metal and steel require a lot more.

Carbon dioxide is replaced in the atmosphere by one machinery only – Trees. There are three major forest reserves in the world. They are as follows.

1. Congo Basin in Africa
2. Amazon Forests in South America
3. South-East Asian Rainforests, which span countries like Indonesia, Malaysia, Thailand and others.

These forest reserves purify the atmosphere and reduce the warming being caused. But industries need land to grow their plantations. For say, in Indonesia, industries grow Palm Oil plantations cutting down large forest areas to land of burnt down wood. This Palm Oil is a very cheap commodity, which is needed in most of the products of these big companies like Doritos, Burger King etc. which we consume. In Indonesia, nearly 80% forests were cleared away for Palm Oil plantations.

The change in rise in temperature of the globe increased after the industrial era. The industries started coming up which used raw materials in the form of fossil fuels. Fossil fuels are :-

1. Coal
2. Petroleum
3. Natural Gas

These are derivatives of carbon and on burning them, they produce harmful gases. Most gases like carbon monoxide are reactive and after reacting chemically, they are disposed of. But carbon dioxide is a non-reactive gas. Even as methane leaves the atmosphere by reacting hydroxyl radical, it leaves carbon dioxide and water vapor as bi-products. There were 4 scenarios presented by the report of Intergovernmental Panel on Climate Change. It called these Scenarios as A, B, C and D.

Analysis of the Scenarios:

In the scenario A, we continue to exploit the resources at this rate and do not stop harming the climate; the situation goes bad way down. Although, in scenario B, if we lower the carbon fuels and reverse deforestation somehow, we can somehow make a change but it will not be enough. Scenario suggests that a little more sustainability could be achieved by shifting the energy source from fossil fuels to renewable resources and Nuclear energy sources. This happens in the second half of the century. Now, in Scenario D, this shift happens in this first half of the century. In case of scenario D, emissions of carbon dioxide are reduced. Scientific research says that if Scenario D is achieved, the warming would not stop suddenly, but the curve would keep going up, attain a global maximum and then, go down forming a parabola.

Challenges

Climate change has devastating affects on the population. The poor, the developing countries, or the under-developed countries are the ones who suffer. Because of the anthropogenic activities, the ice at the poles and at the islands is melting at a very high and alarming rate. The melting of ice results in rise in sea level. This rise in sea level is visible at coastal areas. The effect is more visible at small islands. The sea level problem is being dealt by adaptive measures.

The countries with better technology and economy manage to adapt without moving the people. For example, in Miami, by construction, such machinery consisting of pipelines and motors has been installed which keeps the water out. However, the adaptive measures will not last much long. The mayor of Miami himself states that these counter measures taken shall last only 40 to 50 years.

The condition is worse for developing countries and small island states. Scientific research says that after a certain period of time, the islands would be under water. They do not have such technology to build such structures to keep the water out so they use the policy of Migration with dignity.

Countries like China, India and others have been facing an alarming rise in Air Quality Index. This index determines the amount of Particulate matter, 2.5 PM or 10 PM, and other harmful gases, which can cause air borne diseases to public. China is the largest greenhouse gas emitter in the world. The problem of air pollution was so devastating that it started to concern the public. The data was brought before the public. This data showed that half the industries were not abiding by the rules. After regular concerns shown, demonstrations, requests and rallies by the public, the government of china brought the green policy. They are the fastest nation to switch to the renewable sources of energy.

The forests are being switched by plantations. This depletes soil quality and hence, results in land degradation and desertification. These consequences are being caused not only by converting the forests into plantations but also by the process by which this is done. The industries, to escape any liability, put intentional forest fires which burn down large forest areas. Many protected ecosystems have been damaged because of these industries. These forest fires and deforestation not only take away the only source of replacing carbon dioxide and decrease the quality of the soil, but also emit a large amount of carbon dioxide in the process.

The food production is in imminent danger because of degrading quality of soil. According to the reports, food security will become a derivative of climate change. The effect of overgrazing and use of synthetic

fertilizers damage the land, which was retrieved from the forests.

THE HARMONIOUS CONSTRUCTION OF ENVIRONMENTAL CHALLENGES

The issue here is that all the environmental problems till date, may it be global warming, affects on food cycle, deforestation, desertification, forest fires, anthropogenic activities are not distinct. Analogy can be given to the concept of fundamental rights of a citizen. As these rights shall be harmoniously construed, the problems that the nations are facing are harmoniously construed and woven in each other and they cannot be separated. Thus, not every non-environment friendly activity just contributes in one problem.

It contributes in all problems in equal proportions. For say, there is a forest fire in Indonesia. Due to this forest fire, a large area of forest is vanished decreasing the forest area in the world. The fire acts like a carbon monstrosity, which disseminates into the entire world contributing to the problem of global warming resulting in change in winds, which cause unpredicted rainfalls causing the issue of food insecurity. The effects of global warming result in the melting of ice. It further results in melting of polar ice and putting the life in danger. Melting of ice contributes into the rise in sea level, which effects the poor nations and small islands.

The solutions are meant to be three-fold.

1. Adaptive measures
2. Mitigating measures
3. Anti-vulnerability measures

The domestic solutions of law are already working by inflicting punishments. We need an international law for multi-national companies that are causing damage to the atmosphere. Taxes shall be levied internally and externally. Thus, arises the need of a carbon tax. Carbon Tax is a loose derivation and a combination of the Polluter Pays Principle and Precautionary Principle.

It is the tax on the carbon footprint of an individual, company or an entire industry. The amount of Carbon di-oxide released in burning any fossil fuel is strictly proportional to the fuel's carbon content. This allows the carbon tax to be levied "upstream" on the fuel itself when it is extracted from the ground or imported into the U.S. or any other state, which vastly simplifies its administration.

Polluter Pays Principle

State shall always endeavour to promote wellbeing of the citizens and the most pragmatic approach with respect to the environment is Polluter Pays Principle. Rio declaration talked about the compensation of the damages shall be paid by the polluter, the one who pollutes. This should be implemented by all the nations that are

parties to the convention.[1] The Polluter Pays Principle is now widely accepted and is regarded as one of the efficient ways of post-recovery for the environment. It simply suggests that the damage done to the environment shall be compensated by the doers. It may not completely compensate for the loss suffered but shall provide the help required to overcome the harm occurred by the damage to the environment.

The birth of the concept of Polluter Pays Principle took place in Stockholm. The polluter pays principle (PPP) was first mentioned in the recommendation of the OECD of 26th May 1972 and reaffirmed in the recommendation of 14th November 1974. Pollution is defines as the presence of any environmental pollutant in the environment. An environmental Pollutant is any solid, liquid or a gaseous substance whose presence in such concentration shall harm the environment. Polluter is someone who spreads the environmental pollutant. However, sometimes the definition of Polluter is wider. It is also understood by it as someone who is causing risks for the environment and where pollution has not yet occurred.

The Polluter pays principle has basically two functions,

1. Preventive Function - This is based on assumption that the pollution levels shall go down when the enterprises would get to know that the costs they are paying under the PPP is more than the benefits they receive by the act of polluting the environment.
2. Curative Function – PPP's main function is the curative function. For the damages already occurred, the polluter bears the clean-up costs.

The polluter has to pay as according to the damage he has done to the environment. This act is a civil wrong and hence, damages given are unliquidated, i.e. on the discretion of the court. The principle of Absolute Liability is applied. The court said, "When an enterprise is engaged in a hazardous and inherently dangerous activity and harm results to anyone on account of an accident in the operation of such hazardous and inherently dangerous activity, for example, in escape of toxic gas.

The enterprises strictly and absolutely liable to compensate all those who are affected by the accident and such liability is not subject to any of the exceptions which operate vis-a-vis the tortuous principle of Strict Liability in Ryland v. Fletcher." The people are not as much concerned about the grave danger that

[1] Principle 16 of Rio Declaration on Environment and Development, 1992

climate change poses before us because the consequences are not direct. Polluters Pays Principle is a good way of dealing this problem.

Precautionary Principle

This principle means that the damages done to the natural world should be avoided in advance and in accordance with opportunity and possibility. Before 1972, it was the concept of assimilative capacity that was in operation. Assimilative Capacity means, that the environment absorbs itself the effects of Pollution, but beyond a certain level, it may cause damage to the environment requiring efforts to repair it. Thus, according to Assimilative Capacity theory, the role of law begins only when the limit is crossed and the damage is done as in the Polluters Pays Principle.

However, pollution cannot wait and this would lead to more pollution if the compensations cannot reverse the damage. Thus, there was shift from Assimilative Capacity principle to a new principle. This new principle was called Precautionary Principle. Thus, to conduct national assessments on the state of biodiversity, develop national strategies for the combating climate change and make these part of overall national development strategies; conduct long-term research into importance of biodiversity for ecosystems that produce goods and environmental benefits; protect natural habitats; encourage traditional methods of agriculture, agro-forestry, forestry, range and wildlife management which use, maintain, or increase biodiversity."

Thus, in order to protect the environment , the precautionary approach shall be widely applied by states according to their capabilities. When there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation. Thus, Carbon Tax is a tax through which the polluter pays for the pollution as well as the tax provides precautionary measure towards further pollution and global warming. The tax thus has a two-fold effect.

The application of carbon tax can be done by reducing some other obsolete taxes, while putting on the carbon tax. This will lead to the acceptance of the money bill by the larger population. The most tax would be coming from the fossil fuel industries which will certainly lead to the following changes :-

1. The industries would try to switch to renewables.
2. The people would become more aware as they pay tax for their respective carbon footprint.
3. The more the awareness, more application of renewables and

resistance to the use of fossil fuels would happen.

4. The Scenario D could be achieved in time if the tax happens in developed countries like the United States.

The United Nations should build up a monitoring committee or advice IPCC to collect data regarding the carbon content of the respective Multi-National Companies. The tax shall be collected on these global companies by the United Nations and tax money shall be judiciously used as per the problems of the developing countries.The forest reserves, which are the purifying machinery, shall be global property. These forests shall be untouched and a multilateral treaty shall be signed regarding these protected gobal properties. The treaty shall include the following provisions.

1. The forests shall be unharmed and untouched. They shall be free from any human influence. Any interference would result in punishment under the penal laws of this treaty. The person would be regarded as a global criminal and asylums will not shelter such criminals.
2. Any party to the treaty could contribute it's portion of land to the global property. The countries that do so, after the big reserves are compulsorily under the purview of the global property, shall be compensated by the carbon tax collected from the MNCs or other sources of income.
3. The countries, which have the three largest forest reserves of the world, shall be compensated in one transaction.
4. Admission of property to the Global Land shall have certain requirements; chief among them all can be the forest area in sq. km.
5. The concept of sovereignty shall come to peril due to the above 4 provisions. However, sovereign of a state has certain duties towards its subjects. In addition, these sovereign states shall have certain special place in the United Nations.

The damage done can be compensated by the acts of restoration. Steps shall be taken for productive research for better soil quality to mitigate the effects of climate change on food security. Reforestation shall be taken into consideration for the countries which can. For example, USA has the lion's share of the land for beef production. In producing beef, not only methane is burped out , overgrazing happens too degrading further the quality of the soil. Thus, policies regarding beef need to come into existence. Switching from beef to chicken or fruits and vegetables would make a lot of land vacant for reforestation.

To analyze the effect of reforestation, a simulation is done which is as follows. 10 million hectares of forests are planted each year for a period of 40 years, i.e. 4 million sq. km planted. This will enable 1 gigaton of carbon to be absorbed from the atmosphere. This shall happen until the forests reach maturity and hence, more benefits would arise. Thus, this proves that the method of reforestation would work.

Where would the tax be consumed

There is an emerging problem of climate refugees. Countries in Oceania are suffering this problem because of rise in the sea level and the problem is increasing at an alarming rate. The people living on such islands are actually facing adverse difficulties and an unanswerable conundrum in the form of the sea lies before them.

The nations like Tuvalu, Palau and Kiribati among many more are among the poorest nations and shall perish without the help of international community. The next dozen countries that are going to be hit by the wave of climate refugees, which includes Bangladesh, would face more problems in accommodation of such people. Other countries would further face such problems.

The tax collected from the people with carbon footprints would be used in helping these refugees. The refugees need safe transfer especially through the sea, under the UNCLOS. Further, they need camps for temporary stay. Their governments should help in providing the basic needs. As these governments are mostly poor and cannot afford to keep up with the rising stake, they shall be compensated. These funds should be used in funding research by recognized agencies of the nations for finding and discovering ways to mitigate the problem. The global tax needs to properly consumed.

Conclusion

The Paris climate agreement has not been an effective convention. It does not provide any obligation over any state regarding actions to be taken which would again be violative of the UN charter. Thus, the concept of sovereignty shall be centralized regarding this issue of Climate change. The only hope for a sustained future is us.

We need to bring in the necessary changes and amendments to the law, lifestyle, science and resources. It is only we, the people of the globe, if stand together have a chance against the biggest independent growing threat of climate change. Today in the times of machine learning and artificial intelligence, focus should be on building such algorithm-based representations that can be used to trace the damages happening to the nations. Such Machine Learning device could trace the damage doer and only then would be possible a proper implementation of carbon tax on a global level.

IPCC should suggest for such model of artificial intelligence and progress should be made in combating Climate change with artificial intelligence.

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