

Environmental Degradation and Negative Eco-externalities: A Review of Canons to Curb Environmental Cost

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Abstract

Human greediness of economic development gave birth to unethical exploitation of environmental resources. Sustainable development is the only way to become economically developed with a healthy environment. It can be achieved by removing negative externalities of development endeavours from the environment. A negative externality is a difference between social costs and private costs borne by society.

This study examines the various tools and methods to mitigate environmental degradation for sustainable development. It is exploratory research to enlighten the perceiving methods used by several governments globally. The study discussed various methods viz. corporate social responsibility, environmental laws, carbon accounting, cap and trade system, environmental taxes and carbon tax as fiscal and non-fiscal measures used by governments and their environmental impact. The study found that environmental laws are an ancient way to mitigate environmental degradation, but ineffective enforcement becomes a major drawback to their success. Environmental and carbon tax are fiscal and efficient measures for long-term sustainable development, but their revenue should be used efficiently.

Keywords: Environmental Degradation, Negative Eco-externality, Corporate Social Responsibility, Environmental Tax, Cap and Trade System.

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1. INTRODUCTION

Environmental degradation is the depletion of natural resources and destruction of the ecosystem through unethical utilisation of natural assets (air, water and soil). The natural process (typhoons, droughts, floods, fires, etc.) can also cause environmental degradation, but massive consumption by the human population is alarming for the world. Over-exploitation of natural resources and economic development endeavours with speedy population growth are the principal reasons for environmental degradation (Chopra, 2016).

Global warming is presently the most severe disaster suffering the world, and there is much evidence that harmful substances emissions initiate these destructive fluctuations in the environment (Roy & Dastidar, 2021). Excessive use of nonrenewable energies causes mass carbon dioxide production, which is the prime factor of greenhouse gases (GHGs) (Ghazouani et al., 2020). In the present scenario, human civilisation and globalisation are the dominant culprits of constant global environmental change. Global warming and its damage is now an undeniable threat to human society (Lin & Li, 2011). Human is making their own life bitter by polluting the environment as human interruption is the main cause of environmental degradation (Okafor et al., 2008).

Recent research by students of the University of Copenhagen reveals that global temperature increases unstable local weather. Compared to the pre-industrial level, the world temperature has increased to 1.1 degrees Celsius. The increased temperature causes terrible events around the globe, such as bushfires, heatwaves, the decimation of crops, ice melting in Antarctica and Greenland, deforestation, air pollution, water pollution, land pollution and noise pollution.

Human civilisation and the increasing population lead to the increasing demand for goods and services. Enormous production by industries is the reason for not only air pollution or global warming, but it causes whole environmental degradation such as industrial wastewater, material, hazardous substance etc.

Every big corporate has some negative impact on the atmosphere, but the fossil fuel industry is majorly responsible for environmental degradation.

According to a report published in 2019, the top 20 fossil fuel corporations are accountable for more than 35% and the top 100 companies for more than 71% of GHG emissions on the planet since 1998. Economist calls these negative impacts on the environment by the corporates "Negative Eco Externalities".

1.1 Corporate Externalities

Industrial carbon dioxide emission is the major cause of global warming (Hashim et al., 2015). Corporates produce goods and services and charge only the product's actual making cost to gain profit. Besides that, while working in the social environment, the corporates also impact society positively (innovation, product development, research, etc.) and negatively (pollution, unemployment, environmental degradation, unethical use of environmental resources, etc.).

The way of achieving goals by corporates is social concern as they focus only on the elements that are important for their success and do not concern about the social and ethical impact of their actions (Okafor et al., 2008). Producers, while selling their product to the public, take only actual paid cost, i.e., the private cost of the product. However, some other costs are also borne by society, such as the cost of natural resources, disutility of public services (roadways, drainage systems), worker's long-term health, deforestation, pollution, unemployment, etc. called social costs. The social or total costs of production are larger than the private costs. This difference between the product's social and private costs is called "Externalities". When the difference is positive, that is called a positive externality. Innovation, product development, and Research & development by companies are some examples of positive externalities.

1.2 Negative Social Externalities

Externalities might be negative or positive, but this study focuses mainly on negative social externalities. It is a cost borne by the third party which is not directly linked to the making or utilisation of that goods or service. These negative externalities primarily affect public resources; for example, air can be polluted by producers or consumers without considering the environment. Some examples of negative externalities are air

pollution, water pollution, noise pollution, land pollution, farm animal production, unemployment, passive smoking, traffic congestion, workers' health in hazardous industries, environmental disease.

1.3 Negative Eco Externalities

There are many examples of negative externalities, but environmental degradation is the biggest threat to society. So, this study also focuses on the negative eco externalities and mitigating practices of the same. Corporates are working in the environment to fulfil consumer demand, but their price does not cover all the cost of the product. They emit harmful gases, toxic water, and industrial waste containing chemicals during their production process. These hazardous substances are harmful to the whole environment, such as humans, aquatic animals, crops, plants etc.

Corporate and their negative eco externality are one of the leading causes of environmental degradation. To reduce the negative deterrent effect of environmental degradation, the governments are using various canons of curbing negative eco-externalities. However, the impact of the tools is minimal, and the enforcement strategy of laws is not as per mitigating conditions. Many studies have been done on the methods of mitigating carbon emissions individually. However, a few studies include all of them to compare the existing methods and evaluate the effectiveness of the methods used by numerous governments. So, this study is an attempt to understand existing measures and check their effectiveness by reviewing the existing literature.

The next section provides review of literature followed by objectives of study and research methodology. The fifth section of study highlights the result and discussion. Finally, the paper concludes with conclusion and limitation of the study.

2. REVIEW OF LITERATURE

Demand for energy consumption has increased due to financial and technological development. However, energy consumption is one of the main factors for economic growth, leading to environmental degradation. Due to the substantial growth in GHGs emissions, environmental degradation is a major global issue (Fareed et al., 2022). Pollution by a nation cannot be limited to its

boundaries; it degrades the environment globally by transboundary spillover. Corporate organisations need to realise their social responsibility and social importance (Okafor et al., 2008).

Realising the fact that for sustainable development, environmental quality is a valuable and integral factor with economic growth, governments are now compelled to make laws and regulations to improve the environment. According to the state intervention of the force of law approach, the government can intervene by making laws and regulations to compel the corporates to complete their social responsibility for the stakeholders and the social environment in which they run their business (Okafor et al., 2008). According to (Nomani et al., 2019), for sustainable development and creating an effective tool, there is a need for judicial and technological refinements in enacting environmental laws and their governance.

Mismanagement, corruption and political interest are the main culprits for the failure of the legal system for environmental planning (Tan, 2004). Economic development has its social and environmental costs; thus, the world commission on environment and development focuses on balancing the social cost and development for sustainable development. (Ibaba, 2010) in their study on Nigeria's environmental protection laws found that privatisation and promoting the private gains weaken the laws. The enacted laws on the environment have loopholes because of the federal system of governance. The study suggest good governance as the solution for effective enforcement of environmental protection laws (Ibaba, 2010).

Several countries' governments took initiatives to decrease GHGs emissions by implementing various market and non-market-based instruments. Corporate social responsibility (CSR) by the corporate is an obligation by law to contribute to resolving the social and environmental issues related to the stakeholders. Six core areas of CSR are labour practices, fair business operating practices, environmental issues, consumer issues, human rights and communal involvement and development (Misztal & Jasiulewicz-Kaczmarek, 2014).

Humans can achieve effectual environmental management strategies only by encouraging sustainable practices and discouraging the activities that degrade the environment (Okafor et al., 2008).

Carbon accounting can be defined as a system to inform the stakeholders with accounting methods by collecting, recording, and analysing the climate change information and reporting about carbon-related income-expenditure, assets and liabilities to help in decision making (Tang, 2017). There is a need to provide a more influential technique for carbon accounting to measure and report climate change (He et al., 2022). Authors consider carbon accounting as a branch of accounting. Hence, they define it as "A management activity to provide carbon financial information to its external and internal users with the help of technology, material and accounting methods" (Zhang et al., 2017).

Laws and regulations made by the government are generally sector-wise, but environmental issues are interrelated; that is why proper implementation of those legal instruments is not easy. Government agencies lack coordination, and the loopholes in laws induce ineffective implementation of laws (Tan, 2004).

The study evaluates various measures taken by governments and their impact on environmental degradation. The objective of the study is:

To identify the fiscal and non-fiscal measures to curb environmental degradation..

3. RESEARCH METHODOLOGY

The study identifies the fiscal and non-fiscal measures to curb environmental degradation. In the study, the authors used an exploratory research method and descriptive study with the help of extensive previous literature and web search. It examines published literature to identify the fiscal and non-fiscal measure used by several governments around the globe and their effectiveness on environmental degradation.

The studies identify the enforced laws, cap and trade system and corporate social responsibility as a non-fiscal measure. Carbon accounting, environmental taxation and carbon tax are classified as fiscal measure to mitigate the environmental degradation.

4. RESULTS AND DISCUSSION

Protection of the environment is mandatory for a better future and sustainable growth of the world. Various governments take several measures regarding the protection of the environment. These measures can be divided into two parts.

4.1 Non-fiscal Measures to Mitigate the Negative Eco-externalities

4.1.1 Enforcement of Laws

Government can enforce the law to mitigate the consequences of externalities. Enforcement of Acts is the most common measure taken by governments around the globe since 1962 in Egypt. Society always expects form government to develop rules and regulations and enact legislation to reduce the outcomes of negative externalities. Currently, unethical or unlawful environmental behaviour is dealing by the criminal procedure in India. These sections and laws can significantly impact if they enforce correctly (Singh, 2009).

In India, Environment Protection Acts are applicable, such as the Wildlife Protection Act, 1972; Water (Prevention and Control of Pollution) Act, 1974; The Water (Prevention and Control of Pollution) Cess Act, 1977; Forest Conservation Act, 1980; Air (Prevention and Control of Pollution) Act, 1981; Environment (Protection) Act, 1986; Hazardous Waste Handling and Management Act, 1989; Public Liability Insurance Act, 1991; The National Environment Tribunal Act, 1995; Noise Pollution Rule, 2000; Protection of Plant Varieties and Farmers' Rights Act, 2001; Biological Diversity Act, 2002; Wild Life (Protection) Amendment Act, 2002; The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006; National Green Tribunal Act, 2010.

However, mere enforcement is not enough for achieving targets toward a clean and green environment; there has to be a strict implication of policies and rules of the Act, which is the main problem towards achieving goals. Giving power in the hand of lower-level officials makes it rarely fruitful, so more stringent enforcement of laws needs of an hour (Singh, 2009). Laws seem to be generally admirable, but in reality, strict

enforcement of laws is invaded by factors such as unawareness among the public of environmental issues, insufficient funds, corruption, lack of fear of proceeds by law among the public, and interventions by political parties etc.

4.1.2 Cap and Trade System

Another measure the various governments take globally is the "Cap and Trade System". It is a system used by the governments based on the market's demand and supply of carbon footprint to curb environmental degradation. Under this system, the government sets a limit on carbon emissions by a business that is based on the nation's total carbon reduction target. Governments lower the set limit gradually over time. Governments issue documents mentioning the permitted amount of carbon emission, and these permits are freely tradeable in the open market. It is an effective tool to restrict the emission of GHGs in the atmosphere as it allows emission to a certain prefixed level.

However, it focuses only on air quality and emission of gases in the atmosphere but does not emphasise water and soil degradation. This method prevents corporates from emitting gases above form predetermined level, but it does not make them change and revise their production process to a low emission process. Setting the emission to a predetermined level turns CO₂ into a commodity tradeable among the corporates.

This system allows one corporate to set off its high emission effect by another low emitting corporate. Set-off does not make companies decrease emissions during their production process. Companies continue the business process without addressing the fundamental flaws in their high emitting production process. Although a cap-and-trade system is beneficial as a mitigating tool for environmental degradation, establishing a suitable trading price for carbon emissions is tedious. It also focuses on establishing a low carbon cap so the carbon trading price can be set as high as possible due to the demand and supply factors (Chen et al., 2020).

4.1.3 Corporate Social Responsibility (CSR)

CSR is a concept in which corporates willingly contribute to environmental and social issues and integrate these social activities into their business

practices while interacting with their stakeholders. It is a responsibility towards consumers, workers, stakeholders and the social community in which they operate the business. CSR aims to create higher living standards while conserving the corporation's profitability. High quality of living can never be possible without a clean and green environment, so environmental protection should be corporate social responsibility's primary objective. However, taking environmental protection as their main CSR expenditure is not mandatory for all companies. So, companies are not focusing on this prevalent issue. It is also not efficiently benefiting the environment.

Environmental problems are the genesis of conflicts between the corporate and the surrounding public. These can be drastically reduced if the company's corporate social responsibility emphasises environmental issues (Ejumudo, Kelly; Edo, Zephaniah O; Avweromre, Lucky and Sagay, 2012).

4.2 Fiscal Measures to Mitigate the Negative Eco-externalities

4.2.1 Carbon Accounting

In taking measures to protect the environment, another canon is Carbon Accounting; it refers to the act of measuring and reporting on an organisation's GHGs emissions. Carbon accounting is an estimation of GHGs emissions by an institution or a country to know the impact of their activities on the environment. It is a method of GHGs inventory by measuring direct and indirect emissions of industry. It can establish a price for carbon emissions to be traded in the open market. This practice is regarded as an essential step in cutting down carbon emissions. Famous supermarket chains have taken the initiative in America and UK by mentioning the product's carbon footprint on the description label so that consumers can take a responsible decision for the environment.

Methods for carbon accounting are in the initial stage, and it is an emerging area for research as well. Its definition and calculation methods are still not precisely defined. There is a need to standardise it at the international level and treat it as a tool for mitigating environmental degradation

(Chainho & Matos, 2012). However, our industrial society uses tons of thousands of chemicals. However, industries use a huge quantity of numerous chemicals, and they emit a vast quantity of hazardous substances to the environment. Inventorying the entire consumption and its emission is near impossible which is one of the major drawbacks of carbon accounting.

4.2.2 Environmental Taxation

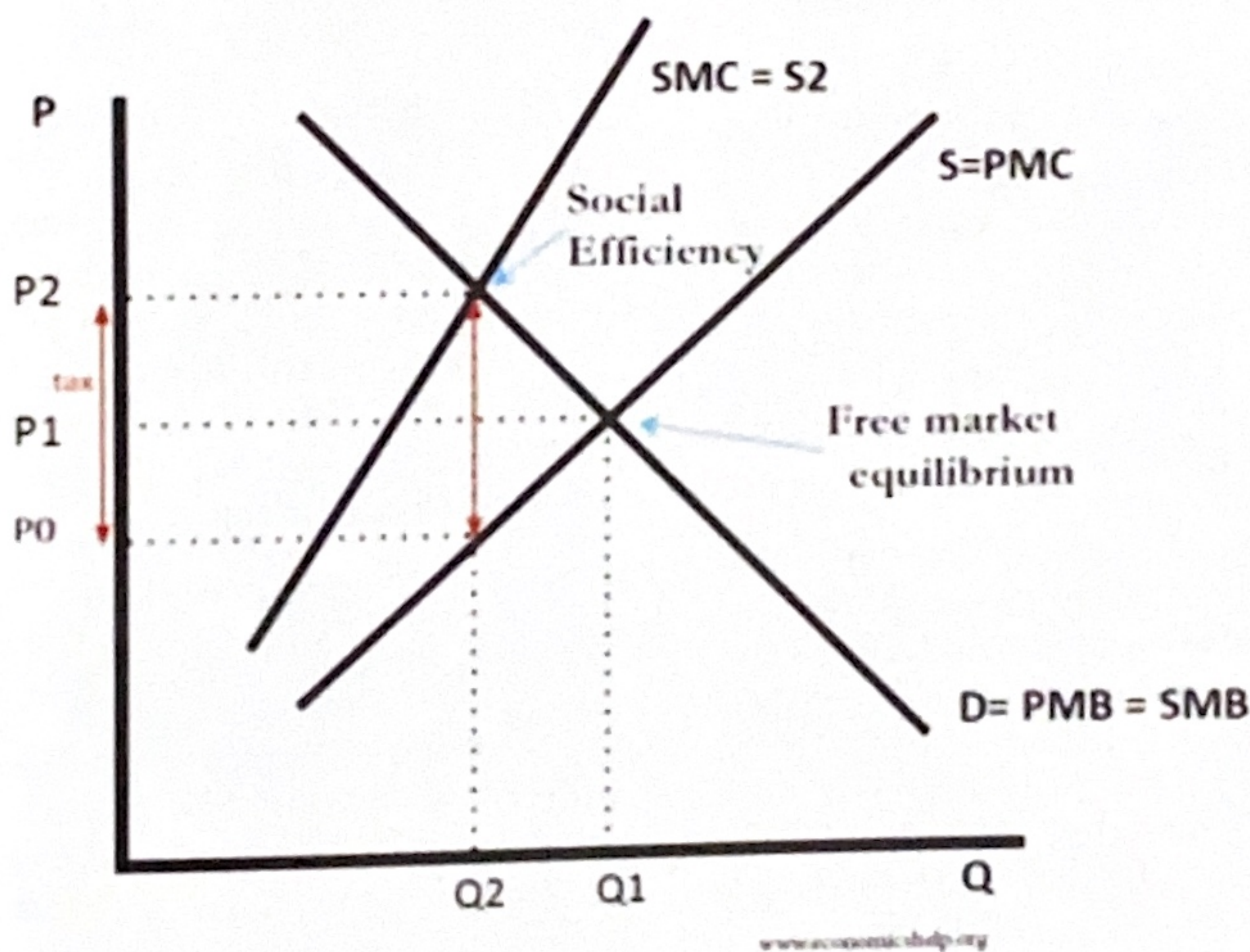
Environmental taxation is a newly emerging tool to mitigate environmental degradation. In this, governments penalise the polluters of environmental substances (air, water, soil) by creating liability to pay a tax equal to the social cost of degradation. According to the OECD, "A tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment is called *environment tax*". Environment taxation can also be

called green, ecological, pollution, eco-tax, or carbon tax (for air pollution). An ecological tax is a tax levied on activities which are considered to be harmful to society. A company may harm the environment by implementing hazardous low-cost plants to gain more profit. The company will earn higher returns by charging only private costs.

The Social cost of carbon is paid by consumers/producers after taxing the negative externalities, which will reduce the consumption of environmentally hazardous products. If a product has a negative externality, without a tax, there will be over-consumption (Q_1 where $D=S$) because producers ignore the external costs (Figure 1).

Social marginal cost (SMC) should be paid by the consumers with an equal amount of destruction to society.

Figure 1 : Taxes on Negative Externalities



Source: www.economicshelp.org

Therefore, authorities should charge the polluters with the exact amount of the cost of harming society (Pigou, *Economics of Welfare*, 1920), known as the "Pigouvian Tax". The Pigouvian tax is named after famous author Arthur C. Pigou. A Pigouvian (Pigouvian) tax is charged to individuals and

corporates for performing any hazardous activities which impact the environment adversely. It focuses on including the social cost in the product's private cost to create a significant market price. The effect of these negative externalities, such as environmental degradation,

a burden on the public healthcare system because of selling the hazardous product, viz. alcohol, tobacco and any other negative impact, can be reduced by imposing this kind of tax system. Such a tax would generate revenue that would equate the cost prevailed with polluters' adequate internalisation of all costs. By the same logic, governments should provide subsidies to those who create positive externalities by the benefited amount.

4.2.3 Carbon Tax

The carbon tax is the most compelling Pigovian tax in a leading-edge society. Governments of the OECD, Nordic region, and European Union countries imposed a carbon tax on companies which burns nonrenewable fuel source. When burned, fossil fuels emit greenhouse gases, the cause of global warming, damaging our planet in multiple ways. When companies use nonrenewable fuels, it produces GHGs, which cause global warming to harm the earth in numerous ways. The carbon emission tax makes polluters pay the actual cost of burning fossil fuels.

In this tax system, the government sets a price on per ton of carbon emissions, making producers and consumers shift towards low carbon-emitting technologies and products to avoid the tax burden. As it is a form of Pigovian tax, the tax amount should be equal to the social cost of carbon. A progressive tax rate of the carbon tax will speed up shifting toward new technology and product.

While implementing the carbon tax, authorities should keep in mind that lower-income group of the society spend their more significant share of income on carbon-emitting products than higher-income groups. So, the carbon tax will impact negatively, the lower-income group as their purchasing power will reduce due to the higher tax rate. That is why subsidies should be provided to the affected group to minimise the distributional effect of the tax.

The carbon tax will not only affect the lower-income group; it will affect multinational industries as well. Selling their product at a high rate and increased production costs due to taxed raw material will reduce their competitiveness in international markets. To address the competitive-ness concern, exemptions, deductions, and rebates to the selected industry must be given by the government.

Conclusively it can be said that carbon taxes are a source of colossal revenue. However, utilisation of those revenues by the governments and authorities is the main factor for efficient implementation effect.

5. CONCLUSION

Environmental degradation has adverse effects on the atmosphere and human life. To mitigate environmental degradation, several attempts have been made by governments worldwide. The government enforces environmental laws to make rules and regulations regarding the emission of hazardous substances. It is an effective tool to control emissions, but strict enforcement needs to get effective results. The cap and trade system effectively restricts carbon emissions to a specific pre-defined level. It primarily focuses on air pollution and carbon emission. Carbon accounting is a method to measure the carbon footprints of an organisation or country. It helps to know the emission and can be used as an efficient tool but primarily focuses on air pollution.

Environmental tax is a fiscal measure to meet the negative externalities. It can be used for any negative externality for the environment and has been adopted by many governments worldwide. It is an effective tool for revenue generation for the government and curbing environmental degradation. Its revenue should mitigate environmental degradation and subsidies for economic development.

6. LIMITATIONS

This study does not use any quantitative method to assess the effectiveness of the aforementioned measure in curbing environmental degradation. There are numerous methods to minimise environmental degradation, but it is not feasible to include every method in the study. So, the most used method by governments around the globe is included in the study.

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