



An Insight on Carbon Tax Structure in Indian Context – A Theoretical Assimilation

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Abstract:

Global concern is raised by the rise in global temperatures and the resulting climate change. The Paris Agreement has been ratified by 175 countries under the United Nations Framework Convention on Climate Change, including India (UNFCCC). India has committed to promoting a healthy, sustainable lifestyle and to moving in a more environmentally friendly direction. More specifically, it has pledged in its Nationally Determined Contribution (NDC) to create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent by 2030, achieve a cumulative electric power installed capacity of about 40% from non-fossil fuel sources by 2030, and reduce the emissions intensity of its GDP by 33 to 35% from 2005 levels. India has implemented a number of regulatory and fiscal measures to help it meet its NDC objectives. India wants to increase its installed capacity for renewable energy generation from 35 GW in March 2015 to 175 GW by 2022, a more than five-fold increase. The Perform, Achieve and Trade (PAT) Programme seeks to lower industrial energy use and thereby lower emissions. A number of additional measures, including the nation's flagship initiatives on smart cities, river cleaning, and the Swachh Bharat Mission, are in line with India's efforts to combat climate change. The NITI Aayog's National Energy Policy reaffirms the significance of achieving decarbonization through the complementary strategies of energy efficiency and renewable energy. In order to cut carbon emissions, India has also implemented fiscal measures. Coal is subject to a 400 INR per tonne cess. Additionally, the market-determined diesel and petrol prices, the elimination of subsidies (the LPG subsidy was eliminated for consumers with taxable income of more than INR 10 lakh), and the gradual rationalization of the Kerosene quota under the Public Distribution System (PDS) are all decisions that are in line with the goal of reducing carbon emissions. The effectiveness of these measures has varied, and the carbon emitters don't actively monitor and control their CO₂ production. In this context, it is suggested that the Indian carbon tax structure be examined in this paper. A tax on greenhouse gas (GHG) emissions is known as a carbon tax. The carbon tax, which was first implemented by Finland in 1990, has attracted increasing attention in recent years throughout the world. Some nations view it as a practical, affordable, and transparent way to encourage carbon reduction. It can result in overall economic CO₂ emission reductions as well as significant co-benefits like lowered air pollution or increased tax revenue.

Keywords: Global concern, Public Distribution System (PDS), carbon reduction, increased tax revenue, decarbonization

Introduction:

Global concern exists regarding climate change, which if serious mitigation measures are not taken, could have catastrophic effects on the planet. According to projections, even a 2°C increase in global warming could result in extreme heat waves, violent storms, and widespread food shortages. It is imperative that there be zero net carbon emissions by the end of the century in order to avoid reaching this threshold; carbon taxes are one of the mechanisms for achieving this goal. A carbon tax is simply a tax on carbon emissions. A carbon tax's goal is to lower carbon emissions by motivating emitters to avoid carbon-intensive production and consumption by sending a price signal to them. By investing in green technology, renewable energy sources, research on emission reduction, etc., the money governments receive from the carbon tax can then be used to further reduce emissions. Carbon taxes have the benefit of shifting the burden of the external costs of carbon emissions—such as land loss due to sea level rise, crop damage from altered precipitation patterns, and medical expenses related to heatwaves and droughts—from the general public to the polluter. Therefore, carbon taxes serve to include within their scope the costs associated with the negative externalities of carbon emissions. Carbon taxes don't have to be imposed only on carbon emissions; they could also be levied on the consumption of fossil fuels like coal and petroleum. The purpose of this article is to analyse how carbon taxes have affected India. Six gases make up the majority of greenhouse gas (GHG) emissions, which are thought to be the main cause of climate change: water vapour (H₂O), carbon dioxide (CO₂), nitrous dioxide (N₂O), methane (CH₄), sulphur hexafluoride (SF₆), and halocarbons (PFCs & HCFCs).

Fossil fuels and biomass combustion are the main sources of CO₂ emissions. Deforestation, clearing land for agriculture, and soil degradation are additional activities that raise atmospheric CO₂. Domesticated animals (such as dairy cows and pigs) and activities connected to rice farming, gas flaring, and mining are the main sources of methane. The management of agricultural land, the handling of animal manure, the burning of fossil fuels,

the manufacture of fertilizers, and the production of nitric acid are the main sources of nitrous oxide. More than 70% of the world's GHG emissions come from CO₂ emissions, which have prompted concerns about lowering carbon emissions and developing strategies for limiting carbon emissions and promoting cleaner forms of energy. This essay is concerned with CO₂ emissions. For biomass and biofuels, no emission estimates have been created due to a lack of data and the possibility of double counting. We have not taken into account the emissions from forestry, land use change, and domesticated animals like cows, buffaloes, and camels. Despite making a sizable contribution to India's overall emissions, domestic animals and LULUCF are not taken into account in national inventories because of a lack of accurate information. In India, coal accounts for more than 70% of all emissions. With 10.9% of the total carbon emissions, diesel, which includes both high speed diesel and low density oil, is the second largest carbon emitter. In India, natural gas and motor spirit/petrol account for 5.83% and 3% of all emissions, respectively. LPG (2.63%), naphtha (1.90%), kerosene (0.98%), ATF (0.91%), bitumen (0.86%), and lubricants (0.51%) are additional significant sources of emissions.

Brief analysis of carbon tax in the world:

Several forms of carbon pricing methods have been introduced in a number of nations worldwide (carbon pricing mechanisms are mechanisms that place a price on carbon emission). 23 of these nations, mostly on a national level, have enacted carbon taxes, according to the UN. Early in the 1990s, nations started enacting carbon taxes: Finland did so in 1990, followed by Norway, Sweden, and Denmark in 1991. Over the years, carbon taxes have been implemented in both established and emerging economies (for example, Chile and South Africa have introduced carbon taxes). Every country has a different system and rate for carbon taxes, which are being introduced by more nations not only to combat the effects of climate change but also to evade sanctions from the international community.

The carbon tax regime in India:

India is one of the ten nations most impacted by extreme weather brought on by climate change, according to the Global Climate Risk Index 2021. It is crucial to reduce carbon emissions as much as possible because we are a developing nation. Although though India is one of the few nations on track to meet its carbon reduction goals under the Paris Agreement, more must be done to support it in the fight against climate change. India currently lacks a national carbon tax, but several state governments have instituted their own levies to cover the costs of unfavorable externalities, such as the Green Cess in Goa and the Eco Fee on automobiles entering Mussoorie. Also, even though the Government of India (GOI) hasn't established a clear carbon tax, it has in the past passed legislation to collect the costs associated with unfavourable externalities. The Clean Energy Cess was one policy the GOI implemented in 2010 with the intention of encouraging the use of clean fuels by raising the cost of coal consumption and allocating a percentage of the money rose to research and clean energy initiatives. The Clean Energy Cess was, however, eliminated with the implementation of the Goods and Services Tax (GST) in 2017; in its place, a Compensation Cess on coal production at a rate of Rs. 400 per tonne was introduced. The newly implemented Compensation Cess will be in effect until 2022. But, it simply taxes the use of coal, not the amount of carbon emissions that coal use produces. This leads to two problems:

1. It does not diminish the amount of coal consumed and the subsequent amount of carbon dioxide released.
2. Taxpayers are penalized even if they choose to use cleaner coal alternatives.

At the moment, India's carbon taxing scheme is at best crude. Also, the taxation structure is not progressive. This not only has an effect on the economy of the nation since the external costs of carbon are not sufficiently captured, but it also may have an influence on India's international trade. The European Union (EU) declared its intention to enact the "Carbon Border Adjustment Mechanism" (CBAM), which would impose a tax on items that release carbon at the borders of the EU. Currently, using imported items is less expensive than using domestically produced ones. The CBAM intends to address this problem by closing the price gap between imported and indigenous goods. A reporting system will go into effect in 2023 as part of the CBAM deployment strategy, and importers will have to start making financial adjustments by 2026. India has made it clear that it is unhappy with the CBAM and that it will harm its interests. From the standpoint of international trade, India lacks a domestic carbon pricing system; therefore it lacks the negotiating strength to fight against measures like the CBAM that would be harmful to its interests. It is to be expected that many more nations would employ such procedures as the threats posed by climate change grow. Adopting a carbon price, for example, would not only demonstrate to the world that India is serious about meeting its emission reduction commitments, but would also progressively help to cut carbon emissions and lessen the impact of policies like the CBAM on its exports.

Utility of carbon taxes:

Carbon taxes have several utilities as laid down below:

- ✓ Carbon taxes encourage the adoption of renewable energy sources by discouraging the consumption of highly emissive materials and energy sources. Such levies will encourage businesses to look for greener sources by raising the cost of highly emissive inputs.
- ✓ Carbon taxes shift the public's share of the external costs of carbon emissions to the polluter. This forces polluters to use less-emitting, more environmentally friendly production methods. Also, they give the government the ability to raise money that can be used to lessen any possible calamities brought on by climate change.

- ✓ Carbon taxes could be a progressive system of taxation if a maximum emission threshold is established, above which such emissions would be subject to taxation. Furthermore, a carbon tax system would benefit the nation without affecting the very people it intends to protect because it taxes emissions rather than the usage of fossil fuels, which are necessary for people who are economically disadvantaged.
- ✓ From the standpoint of international trade, India would safeguard itself from being shunned or punished for not enacting a carbon tax. India will also be able to defend itself against any negative effects on its exports.

Disadvantages of carbon taxes:

While carbon taxes have many utilities, they also have several disadvantages:

- ✓ Systems of carbon taxes could harm the economy if they are not designed specifically for it. If the system is not designed to meet the demands of the economy, it may place a heavy strain on those who are already struggling financially. So, a plan for establishing such a mechanism needs to be well thought out and thoroughly carried out.
- ✓ Carbon emissions are produced during the manufacture of a number of necessities. If emissions are subject to a carbon tax, this could raise the cost of such necessities and ultimately increase consumer costs. For a nation like India, where sizable portions of the populace cannot afford to pay an increased price for such commodities, this is immensely problematic.
- ✓ Businesses might conceal their genuine carbon emission levels in order to avoid paying carbon taxes, which would conceal the problem's full scope. Governments would need personnel and infrastructure, which might be time-consuming and expensive to build, in order to audit companies' emissions rather than rely on voluntary disclosure.

Basis for determining the carbon tax rate:

The impact of the carbon tax on carbon emissions is significantly influenced by the tax's rate, which is a key factor. In light of the goals or policy objectives that the carbon tax aims to accomplish, the methodology used to set the rate has significance. Two methods have been taken into consideration for this paper's objectives in calculating the rate of the carbon tax:

SCC approach: Social Cost of Carbon the SCC is a projection of the cost to society of emitting one tonne of CO₂ or carbon equivalent emissions at a specific time. The social cost includes, among other things, harm to human health, property damage, bad effects on the climate and ecology, and shifting tropical heat belts. The carbon tax rate is compared to the social cost of carbon using the SCC technique. The SCC technique is beneficial because it aids in balancing the advantages and disadvantages of the CO₂ emission-reduction solutions. The Integrated Assessment Models, such as the Dynamic Integrated Model of Climate and Economy (DICE), Regional Integrated Model of Climate and Economy (RICE), Policy and Analysis of Greenhouse Effect (PAGE), and Framework for Uncertainty, Negotiation, and Development, are the most widely used models in the world for estimating the SCC (FUND). Given that India's regional SCC is assumed to be 12% in this paper, the DICE 2016 model, which was taken into account, places the global SCC at USD87. According to this, India's social cost of carbon is \$10.44, or, rounding up, \$10.

Assessment of measures undertaken by India to reduce carbon footprint:

The government has introduced many measures, regulatory and fiscal, to reduce India's carbon footprint. An assessment of these measures brings out the following aspects that need attention:

- ✓ All of the emission sources are not completely covered by the current regulatory procedures. The transportation and electrical industries, which are responsible for around 63% of the emissions, are the main emphasis. The government's regulation efforts do not completely cover the manufacturing sector, which is responsible for 26% of the emissions.
- ✓ Due to the amount of actions taken, the government is required to make periodic revisions to regulatory standards, such as energy efficiency standards for sectors covered by the PAT scheme and standards for appliance efficiency. The ability of the government to enforce these laws will determine how effective they are.
- ✓ India does not have a standard method for determining fuel prices. In addition to cost plus pricing, prices may also be administered pricing mechanisms or market-based. For instance, the price of domestically generated natural gas differs from the price of gas imported from abroad depending on a formula specified by the government (based on international price). The efficiency of taxation in addressing the issue of carbon emissions is diminished by the use of various fuel pricing strategies.
- ✓ Currently, there is no connection between the amount of carbon emissions and the imposition of a clean environment tax. To further encourage the move from a polluting fuel like coal to a cleaner fuel, if the former is subject to higher taxation, the availability of cleaner fuels such as natural gas, as well as the actual utilization of the power generation capacity of renewable sources of power, needs to be increased.
- ✓ Already, there is a heavy tax burden on gasoline and diesel. The government has a limited capacity to levy additional taxes on these two fuels.

- ✓ Under the GST, revenue reasons rather than pollution concerns dictate the tax rates on fuel and whether or not fuels are included in the GST base.

International experience:

In the first decade of the 1990s, carbon taxes were first enacted. A tax of this kind was first implemented in Finland in 1990, then in Norway, Sweden, and Denmark in 1991 and 1992. Carbon taxes were first implemented in emerging economies in the early 2010s. Countries like South Africa, Mexico, and Chile either have carbon levies in place or are thinking about doing so. Around 20 national and sub-national level governments, including British Columbia in Canada, have implemented or are considering implementing carbon taxes, according to a World Bank research from March 2017. Carbon taxes may be created and implemented differently in different jurisdictions. There are variations in the rates, scope, and point of taxing, as well as in the administration, use, and coverage of the money raised by carbon taxes. But, there are parallels in the methods used to tax carbon as well. Moreover, success levels have been inconsistent among nations. In contrast to Australia, where a carbon tax (also known as the carbon pricing mechanism) was abolished after two years of implementation, carbon taxes have been in place for almost twenty years in Nordic nations. This paper investigates the design and implementation of carbon taxes in a few jurisdictions with the goal of identifying lessons that could guide the development of an Indian carbon tax mechanism. Denmark, Finland, Switzerland, Australia, the BRICS nations (South Africa), and developing economies are among the nations chosen. Countries where carbon taxes have had difficulties include Australia (Mexico).

Policy options for mitigating carbon emissions:

There are two main policy options that can be used to solve the problem of lowering carbon emissions: regulatory and market-based instruments. The regulatory tools provide emission criteria or restrictions. When it comes to implementation and effectiveness and compliance monitoring, several of these standards could be quite expensive. For instance, the installation of renewable energy sources necessitates the government to implement a number of policies throughout all of India's states, such as convincing state governments to purchase renewable energy, even though the cost of generation may be higher than that of other sources. It can be difficult to set efficiency criteria for each appliance and to regularly review and put those standards into practise. As a result, the regulatory regulations may result in a circumstance where the price of implementing measures to reduce emissions is far higher than the real environmental advantages. Moreover, command and control-style methods could not be comprehensive and might not cover all emission sources. The market-based mechanisms, such as taxes, levies, subsidies, and trading tools, can, however, be more cost-effective. They fundamentally operate on the guiding principle that by increasing the relative cost of polluting inputs and outputs, they can encourage acceptable environmentally favourable decisions. The purpose of implementing these instruments is to alter the taxation structure rather than adding to the citizens' tax burden. The ability to redistribute emission reduction/abatement funds among different polluters so that each one can do so at the lowest cost to itself is made possible by market-based tools like taxes. Carbon taxes and emissions trading systems are two main MBIs to reduce emissions. Compared to Emissions Trading Systems, which are sector- or industry-specific, carbon taxes have a broader scope. In addition, carbon taxes are easier to administer and have a more transparent administrative process, especially at the national level.

Conclusion:

A good way to cut carbon emissions and combat climate change is to implement carbon fees. Internationally, countries' introduction of carbon pricing schemes is becoming more and more crucial. Carbon taxes would encourage businesses to move to cleaner, more environmentally friendly methods of production, which would be good for the economy and the environment while also capturing the costs of negative externalities. Thus, the implementation of such a tax in India would be advantageous. Yet, it must be remembered that such a system must be created after taking the unique requirements of the Indian economy into account.

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