**Review Paper (SS-4)**

**CARBON TAXATION IN INDIA : AN EFFECTIVE MARKET-BASED APPROACH FOR REDUCING CARBON DIOXIDE EMISSIONS**

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Received February 25, 2009  Accepted May 16, 2009

**ABSTRACT**

The need for domestic Indian legal policy that addresses the perils of climate change is increasingly apparent, in the light of the national environmental policy which aims at sustainable usage of natural resources and pollution prevention along with development. In the Indian environmental setting, one way to do this is to place a price on the negative externality like pollution through Carbon tax on the production, distribution or use of fossil fuels and other non renewable resources based on the carbon content of the fuel. The paper proposes levying of Carbon tax as a preferred market-based mechanism to counter the challenge of Global climate change, as compared to the cap-and-trade approach on various parameters such as overall cost effectiveness and predictable long-term prices to name a few. The researchers shall analyze the feasibility of implementing revenue neutral carbon taxation in the Indian context and consequently provide the modalities thereof, deriving assistance from the legal paradigm of the nations which have successfully levied this tax like Canada, Sweden and Finland amongst others.

**Key Words :** Carbon tax, Global Climate change, Revenue neutral tax, Cost effectiveness, Market-based approach, Cap-and-trade.

**INTRODUCTION**

A rising scientific consensus is that the growing concentrations of carbon dioxide and other greenhouse gases (GHGs) is a product of burning of fossil fuels, and gradually warming up the Earth’s climate. It is necessary to restrict the escalation of CO₂ emissions and limit those emissions to a level that would stabilize atmospheric concentrations. The United Nations reacted to the growing concern over climate change by forming the IPCC in 1988. This was followed by the formation of the U.N. Framework Convention on Climate Change (UNFCCC) at Earth summit 1992 in Rio. India on November 1, 1993, and it entered into force March 21, 1994. India’s Eighth Five Year Plan (1992-97), prioritized sustainable development of energy. The strategy ensured a gradual shift from non-renewable energy resources to renewable ones. The UNFCCC was a precursor to Kyoto Protocol 1997. To date, 141 countries have undertook to reduce their GHG emissions under the Protocol, and of those countries, thirty-six/annex I developed countries and transitional economies are legally bound to do so. India ratified the Kyoto Protocol in August 2002. While the Protocol sets limits on the emissions, it does
not impose specific mechanisms for meeting them. A number of legal luminaries and economists have asserted that the most efficient approaches for reducing emissions of CO$_2$ can be a tax on emissions or a cap-and-trade scheme. Several EU countries including Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Slovenia, Sweden, and the UK have introduced carbon/energy taxes in selected sectors of their economies. The carbon tax policy has implemented by federal states like Québec and British Columbia, suggesting the practicability of the same in the Indian legal set up.

**Objectives**

The objective of our paper is to propose a Carbon Tax for India as the effective market Based Approach to counter Global Climate Change. A comparative analysis between carbon tax and the cap-and-trade approach was performed for the same. The ways in which the proposed revenue-neutral carbon tax can be an efficient Policy instrument for India within our existing legal framework have also been identified and suggested.

**RESULTS AND DISCUSSION**

India is a developing country with approximately 700 million rural population which is directly dependent on the climate-sensitive sectors and natural resources for their subsistence and livelihoods. The adaptive capacity of dry land farmers, forest dwellers, fisher folk and nomadic shepherds is very low which further aggravates the problems. As shown by the National Communications Report of India to the UNFCCC, Climate change is likely to effect all the natural ecosystems as well as socio-economic systems. The latest high resolution climate change scenarios and projections for India, based on Regional Climate Modelling system, known as PRECIS developed by Hadley Center and applied for India using IPCC scenarios A2 and B2 shows that under A2 scenario, the rise in an annual mean surface temperature by the end of century, will range 3 to 5°C and 2.5 to 4°C under the B2 scenario, with warming more pronounced in the northern parts of India. India is currently the sixth largest and second fastest growing greenhouse gas contributor to climate change in the world. Thus India’s concerns over escalating GHGs are justified.

**Carbon Tax : The Effective Market-Based approach**

There is an array of policy tools that can be used to reduce greenhouse gas emissions, most can be classified into: market based tools and non-market based tools. Under the non market based tool like command-and-control method, the government instructs each resource user on exactly how to regulate carbon emission. “Market-based” approach utilizes market forces to correct the socially ineffective use of resources. Market-based approach is, in principle, more cost effective. A price based market mechanism like imposition of a carbon tax, also known as CO$_2$ tax, gives polluters incentives to reduce pollution in case the cost of reduction is lower than the cost of paying taxes, so that government specified aggregate pollution limits are achieved, but gives each individual polluter a free hand in deciding how much to clean up and what methods to use. A pure carbon tax is a tax that is levied on fossil fuels in direct proportion to their carbon content or the amount of CO$_2$ that will be emitted when the fossil fuel is combusted. Conceptually, the carbon tax is a dynamically efficient Pigovian tax that balances the discounted social marginal costs and marginal social benefits of additional emissions. A carbon tax would be applied to fuels based on their carbon content; it
would affect primarily the three main fossil fuels: coal, oil, and natural gas. Coal being the largest source of commercial energy in India, accounts for 60% of fossil fuel use in calorific terms, liquid petroleum (30%) and natural gas (10%)\(^\text{19}\).

**The rationale behind Carbon Tax**

The basic theoretical premise behind tax is the need to correct for the externalization of the environmental costs associated with carbon emissions. These corrective taxes or Pigovian taxes advocate the use of price-based controls or liability rules to control pollution\(^\text{20}\). In the context of carbon, a carbon-based tax could capture the externality costs of the \(\text{CO}_2\) emissions and internalize them in the market price of fuel\(^\text{21}\). A tax system theoretically results in the lowest cost to the economy for a given level of emissions reduction\(^\text{22}\). The purpose of the carbon tax is not to generate revenue rather it is to create a liability i.e. to "make polluters pay"\(^\text{23}\). The carbon tax places a disincentive on unclean fuel consumption, and promotes adoption of alternative sources of energy by making it cost-competitive with cheaper fuels. India’s potential for the effective use of renewable energy sources like wind power, small hydro, biomass, and solar energy being high allows substitutability to be a possible option in the market\(^\text{24}\).

**Choice of policy instrument for India**

The primary market-based instruments to be considered for greenhouse management are carbon tax and cap-and-trade system. The cap-and-trade policy puts a cap on the total amount of carbon emission combined with a system of tradable permits\(^\text{25}\). A carbon tax has important practical advantages over a permit trading scheme. A carbon tax is comprehensive as it sets a market price leading to predictable energy prices, reduction and alternative energy development\(^\text{26}\), while in the cap-and-trade system the benefit is quantified but the permit prices may fluctuate over time, thus increasing the adjustment cost as compared to tax policy\(^\text{27}\). The permit prices can spike up, leading to debilitating compliance costs or the prices may collapse due to the distribution of too many allowances, thus it suffers from cost uncertainty\(^\text{28}\). Relative to a cap-and-trade program with predetermined emission limits each year, a steadily rising tax could better accommodate cost fluctuations while simultaneously achieving a long-term target for emissions\(^\text{29}\). The cost-effectiveness of any market-based approach to controlling \(\text{CO}_2\) emissions gets windswept if administrative costs are too high like in cap-and-trade. On the other hand, the measurement of emission will be precise in case of carbon tax\(^\text{30}\). A carbon tax would definitely entail a new collection burden for tax authorities, but it could utilize existing tax collection mechanisms and administrative resources. A permit system, in contrast, would require the development of new system for compliance reporting, audits, and verification. Cap-and-trade systems are inherently more complicated and difficult to design\(^\text{31}\). Comparatively, a carbon tax can be implemented quickly. This aspect is vital for the effectiveness of any \(\text{CO}_2\) emissions reduction policy because time is quintessential from scientific performance point of view\(^\text{32}\). A carbon tax is transparent, thus can be imposed with lesser manipulation and can be simply comprehended by the public. The past experience suggest that permits would be freely distributed rather than auctioned by the government, generating substantial windfalls for large coal and oil companies and raising fairness concerns\(^\text{33}\). This implies uncertainty regarding the creation and distribution of permits. In the former case, unlike carbon taxes revenue recycling effect does not occur, since no revenues are raised by the government\(^\text{34}\). Once the market targets for carbon are set, the rate of carbon tax can be readily adjusted according to market success.
or failure whereas permits will be viewed as a form of wealth, and reducing or increasing the emissions allowed under each permit would have an impact on the value of the permits, thereby making such variations unacceptable. Evidence also suggests that cap-and-trade has proven to be unsuccessful in reducing carbon emissions in the European Union and other global markets. From the foregoing discussion it is evident that carbon tax more efficiently serves the underlying goal in India paradigm as well.

**Level of imposition of Carbon Tax**

Economists agree that a broad-based tax, viz. taxing the initial entry point of the fuel into the economy, is more economically efficient than the narrow based taxes targeting narrow groups or activity. Broad-based taxes create smaller deadweight losses than narrow based taxes. Imposing the tax at later stages in the production cycle involves costs as the resulting tax would necessarily have a narrower base than if it had been imposed at the beginning of the production cycle which ensures identifying all fuel users. Maintaining a broad base shall also address the concerns of regressive nature of the tax. In the Indian context the administrative ease and implementation considerations suggest that the carbon tax should be imposed upstream. An “upstream” tax would involve taxing or regulating the suppliers of fossil fuels such as coal producers, petroleum refiners, natural gas processors and major carbon intensive industries, the major ones including iron and steel, cement, fertilizers, aluminum, glass, power and steel. An upstream program has economy-wide impact, it is highly likely that both the producers and the consumers would respond to changed price signals by turning to green products or clean energy technologies. The carbon tax can also be imposed as a downstream tax which shall have a direct impact on the consumption pattern of the individuals or firms, showing a downward trend in the purchase of energy-intensive products. In India however, a downstream tax would greatly increase the number of taxable entities, thereby causing a problem of quantification and imposition of tax which undermines the entire purpose of the adopted market based tool due to its higher implementation cost and administrative complexity.

**Nature of the Tax and Companion measures**

The proposal of taxes may not be politically popular as it puts an additional burden on the common man. Thus carbon tax is carefully designed to be a revenue neutral form of green tax. India being one of the biggest democracies, the acceptance of the tax is vital for adoption of any policy. A revenue-neutral carbon tax is supported by the weak form of double dividend hypothesis which states that said tax revenues can be used to cut distorting taxes. It can reap second dividend as the revenue generated can be used to offset the added cost from the tax interaction effect or to invest in environmentally sound technology. Carbon tax reaps the benefit of the revenue-recycling effect since the revenues obtained can be used to finance cuts in marginal tax rates of distortionary taxes such as the income tax, corporate income tax. The reduction in these taxes shall result in the increase employment and investment levels, and thereby produces an economic gain. This gain is called revenue-recycling which augments revenue neutrality. The energy intensive industries of India have been a source of direct and indirect employment for substantial Indian population. These energy intensive industries derive energy from the fossil fuels; coal supports about 56% of the commercial energy in the country. The high and volatile prices of fossil fuels adversely affect the energy intensive industries and employment in these industries. Indian
legislators should compensate the very low income households and also the workers in the carbon-intensive sectors such as the coal based industries who might lose their jobs because of the policy which advocates reduction in the usage of fossil fuels. As regards international competitiveness concerns that may be raised against its implementation, the answer lies in a concept known as “Border Adjustment”, viz. taxing imported energy-intensive products manufactured in non-carbon-taxing countries while granting credits for exports consequently to those industrial house who might be impacted by higher production costs internally, without any prejudice to domestic pricing of those goods. This practice has, for example been implemented in Austria and the USA as acceptable.

**Constitutional Framework for the tax**

A carbon tax may be imposed like an excise duty on the carbon content of the fossil fuels, within the existing administrative framework of central tax legislation existing in the country. As suggested earlier it will be an upstream carbon tax. The suppliers would thus easily pass the cost of the tax onto their distributors or customers, thereby rendering it as an indirect tax. The Central Government would have the clear mandate to impose the proposed carbon tax under Entry 97 List 1 of schedule 7 of the Indian Constitution with the aim of reducing GHG emissions.

**CONCLUSION**

A carbon tax would serve to correct the failure of the market to account for some of the environmental externalities associated with carbon emission unlike cap-and-trade. Since the tax would pose inequities and could be complicated to enforce, its design is of utmost importance. In administering a carbon tax over time, officials should periodically reassess its effectiveness. Changes in industry structure, improvements in technology, and expansion of scientific information regarding the consequences of global warming necessitate this periodic reassessment of the tax’s design. To reduce/stabilize CO2 emissions effectively, it will probably be necessary to institute a variety of policy options, including both tax and regulatory policies. Indeed, a carbon tax would provide benefits sufficient to justify instituting an environmental policy in furtherance of sustainable development, a quintessential facet of environmental law in India.

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