Reforming Indirect Taxes in India: Role of Environmental Taxes

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1. Introduction

The indirect tax system in India has undergone extensive reforms for more than two decades. Even after these reforms, it is still a highly fragmented and distortionary tax structure characterized by multiple tax rates, barriers to inter-state trade, and cascading of taxes. However, these reforms have succeeded in preparing the ground for the introduction of a comprehensive goods and services tax (GST). The GST has significant implications for the environmental management. In this paper, we argue that the environmental taxes should be integrated into the current design of GST. This will be consistent with the recent international experience where eco-taxes are increasingly being used to achieve environmental objectives while imparting a 'green shift' to the tax system.

The paper is divided into seven sections. Section 2 looks the role of eco-taxes for environmental management. Section 3 examines the progress of indirect tax reforms in India culminating into the GST proposals. Section 4 discusses the three basic designs of GST currently being discussed and highlights the place of environmental taxes in these designs. Section 5 analyses the international experience in this regard and the key lessons for India. Section 6 outlines a suitable design for integrating environmental taxes into the GST design. Section 7 provides concluding observations.

2. Role of Environmental Taxes

An environmental tax is Pigouvian tax on polluters. It can induce appropriate environmental decisions by raising the relative costs of polluting inputs and outputs and thereby correcting the negative externalities of a polluting activity. Many economists have argued that pollution levies are an efficient instrument for achieving environmental objectives (e.g. Baumol and Oates, 1988). In a full-employment model with mobile firms, Wellisch (1995) shows that direct controls lead to inefficiently low levels of emissions, while taxes continue to produce an efficient outcome.

Levied on output, it is aimed at raising the price of the output, inducing consumers to reduce consumption levels or shift to non-polluting substitutes. Its impact depends on the price-elasticity of the polluting good and availability and relative prices of close substitutes. Levied on inputs, any increase in the prices may be partially or fully passed on to the final goods, depending on the supply and demand elasticities. To the extent that the producers have to bear the burden of the price rise, they will explore the option of using non-polluting substitutes. Technological innovations reducing the use of the polluting inputs and increasing the use of non-polluting substitutes may also be induced. The environmental tax

may be levied directly on the pollutant like a carbon tax or indirectly on polluting inputs. Administering the tax directly on the pollutant is often costly and difficult to implement and may sometimes be not consistent with constitutional design of taxes.

a. Should these be Revenue-neutral or Revenue-augmenting? The "Double-Dividend" Possibility

If the environmental taxes are designed to be revenue-neutral, there would be a corresponding reduction in other conventional taxes. Since the conventional taxes are distortionary, deadweight costs of taxes can be reduced. The basic idea of the double dividend hypothesis is that using environmental tax revenue to reduce the existing distortionary taxes might be welfare improving regardless of the environmental gain (see e.g., Oates, 1991; Pearce, 1991; Bovenberg and de Mooij,1994). Ballard and Medema (1992) argue that conventional taxes that tax labour and capital income are 'perverse' taxes as they penalise the 'goods' , viz., human labour and the successful use of capital rather than taxing the 'bads', viz. the overuse of energy and primary resources that lead to pollution and consumption of exhaustible resources. Weizsacker *et al* (2005) argue that ecological tax reforms should be taken up as a 'revenue-neutral, slowly progressing long-term tax shift'.

To the extent that promotion of 'environment' is a public good, like all public goods, financing of this public good should also be from the general pool of taxes including the environmental taxes. The supply of all public goods including the environmental public good should be determined by reference to the principle of 'marginal social cost of public funds'. The marginal social cost of public funds is the ratio between the shadow price of tax revenues and the population average of the social marginal utility of income. In defining the utility function, environmental public good should be included in addition to other public goods. In the literature, it is generally argued that for an optimal tax system the marginal social cost of public funds should be equal to one. In the literature, there are two traditions in this context (see, e.g. Ballard and Fullerton, 1992). In the Harberger-Pigou-Browning tradition the marginal cost of public funds is always larger than unity and the Dasgupta-Stiglitz-Atkinson-Stern tradition where it may be larger or lower than one. In the first tradition the marginal project is a lump sum transfer to a representative consumer financed by a distortionary tax. A marginal cost of public funds greater than unity then occurs because the dead-weight loss of taxation. Lundholm (2005) shows that under optimal taxes, a positive net social benefit is a necessary and sufficient condition for a project that passes the cost–benefit test. Under non–optimal taxes, if taxes are too low, a positive net social benefit is a necessary but not sufficient condition. In these analyses, environmental public good in the social welfare is not included nor are environmental taxes included in the cost function of taxes. If the analysis is extended to include these, the following are the likely effects: given other things inclusion of environmental public good should increase the size of the public sector relative to GDP and lower the deadweight costs of financing these since environmental taxes curb both negative externalities of pollution and reduce the deadweight cost of non-environmental taxes. There will be reduction in demand

for non-environmental public goods (e.g. less need for public provision of health care, maintenance of roads), and private goods (less private health care costs). Extension of the existing literature in these directions would provide further insights about the impact of providing environmental public goods accompanied by environmental taxes.

b. Are they Effective in Reducing Pollution? Positive Evidence

Both practical experience and simulation models indicate that environmental tax can be effective in reducing taxation. For example, Symons, Proops and Gay (1994) use a demand system with estimated demand elasticities to study reduction in emissions resulting entirely from consumer demand responses. They modeled the carbon tax as a set of *ad valorem* taxes on commodity groups. Using input-output data for calculating the consumers' responses to the price changes, they have taken 14 sector house hold survey commodity grouping and 28 sector input-output classification for Australia for the price changes and the corresponding demand changes. They also investigated the effect of allowing for substitution in production. They observe that the order of magnitude of a carbon tax to reduce emissions in Australia by 20 percent (assuming no technological substitution) is high (at A$414 or US$306 per tonne of carbon) but it is less than that calculated by Symons, Proops and Gay (1994) for the UK (US$411).

c. How Should the Rate of Environmental Taxes be Determined? Some Insights

Implementing a Pigouvian tax requires complete information of marginal abatement cost and marginal damage functions. Given the related information difficulties, Baumol and Oates (1988) have suggested that standards should be set to serve as targets and fiscal measures and other instruments should be designed to achieve these.

While generally, partial equilibrium frameworks are used for this purpose, analyses in general equilibrium framework offer additional insights. In a general-equilibrium setting, Sandmo (1975) and Bovenberg and Frederick van der Ploeg (1994) have demonstrated how the well-known "Ramsey" formula for optimal commodity taxes is altered when one of the consumption commodities generates an externality. Bovenberg and Goulder (1996) examine the optimal environmental taxation in the presence of other taxes in a general-equilibrium framework. They examine how optimal environmental tax rates deviate from rates implied by the Pigouvian principle in a second-best setting where other distortionary taxes are present. They link the optimal rate for a newly imposed environmental tax to the marginal excess burden from existing taxes. Their study indicates that in the presence of distortionary taxes, optimal environmental tax rates are generally below the rates suggested by the Pigouvian principle even when revenues from environmental taxes are used to cut distortionary taxes. The numerical simulations support this analytical result. Under central values for parameters, optimal carbon tax rates from the numerical model (when the tax system is fully optimized) are

between 6 and 12 percent below the marginal environmental damages. In addition, the numerical model shows that in the presence of realistic policy constraints, optimal carbon tax rates are far below the marginal environmental damages and may even be negative. Simulations based on the U.S. tax system indicate that if policy makers can only incrementally alter existing distortionary taxes (rather than globally optimize the tax system); the optimal carbon tax may be substantially below the marginal environmental damages. [1]

Nordhaus (1993) examines the optimal greenhouse gas reductions and the tax policy in the dynamic integrated climate-economy (DICE) model.[2] He considered how recycling carbon-tax revenues through cuts in distortionary taxes affect the optimal carbon tax. When revenues from the carbon tax are returned in lump-sum fashion, the optimal tax rate for the first decade is about $5 per tonne; the optimal rate rises to $59 per tonne when revenues are devoted to reducing distortionary taxes. This model integrates the economic costs and benefits of other green house gases (GHG) reduction with a simple dynamic representation of the scientific links of emissions, concentrations, and climate change. The model contains two policy variables, conventional investment and reduction of the rate of emissions. The latter represents the fractional reduction of emissions relative to the uncontrolled level. The model determines the optimal control rate along with its dual variable, the derivative of the objective function with respect to emissions, which is the "carbon tax". Two key parts of the model are the climate- damage function and the GHG-reduction cost function. The results suggest that the optimal policy has a global benefit relative to no controls of $16 billion annually. This policy would have a GHG control rate of slightly less than 10 percent in the first period. The optimal carbon tax would rise steadily over the coming decades, reaching about $20 per tonne by the end of the next century. The environmentally correct policy of a 20 percent cut would impose significant net global costs of $762 billion in annualized terms. The control rate in the environmentalist policy is higher than the optimal rate, around 30 percent in the first period, and would require a carbon tax of $56 per tonne.

Manresa and Sancho (2005) follow the tradition of applied general equilibrium modelling of the Walrasian static variety to study the empirical viability of a double dividend (green, welfare, and employment) in the Spanish economy. They consider a counterfactual scenario in which an eco-tax is levied on the intermediate and final use of energy goods. Under a revenue neutral

[1] These considerations suggest that estimates of optimal carbon taxes in integrated climate economy models (for example, Nordhaus, 1993, and Peck and Teisberg, 1992) are biased upward. While the Nordhaus study accounts for the efficiency gains connected with the reduction (through recycling) of initial distortionary taxes, it does not consider the efficiency costs stemming from the interactions between remaining distortionary taxes and the newly imposed carbon tax.

[2] The DICE model assumes that a 3°C warming would lower world output by 1.3 percent and that the impact increases in a quadratic fashion with the temperature increase. Cline (1992) finds quantified impacts for the United States of 1.1 percent of GNP for a 2.S°C warming as opposed to the estimate of 1 percent for 3°C warming by the present author. Fankhauser (1992) estimates total impacts of a doubling of C02 would lead to a 1.3 percent cost to the United States, a 1.4 percent cost to the OECD, and a 1.5 percent cost to the world.

assumption, they evaluate the real income and employment impact of lowering payroll taxes. They perform simulations under a range of alternative model and policy scenarios to assess the extent the model structure and behavioural assumptions influence the results. They conclude that a double dividend (better environmental quality, as measured by reduced CO_2 emissions and improved levels of employment) may be an achievable goal of economic policy.

Sterner (2007) provides a review several studies for a number of countries and concludes; "Had Europe not followed a policy of high fuel taxation but had low U.S. taxes, then fuel demand would have been twice as large". Sterner observes that fuel taxes are the single most powerful climate policy instrument implemented to date. Environmental tax reform can have a powerful effect on energy use.

Ekins (2009) estimates the price elasticity of energy demand in the UK at about (-) 0.64, which implies that a 10 percent increase in the energy price will reduce energy consumption by 6.4 percent. He also finds that energy use tends to increase with value added with an elasticity of (+) 0.5 (meaning that a 10 percent increase in value added will tend to increase energy consumption by 5 percent). Other things being equal, this means that if a sector (or by implication the economy as a whole) is growing, its energy use will be growing too, unless it is restrained by a rising energy price.

With a reasonable change in the relative prices of labour and environmental resources, environmental tax reform may significantly change the incentives for innovation and technological development, inducing companies to devote more effort to increasing resource productivity, and less to increasing labour productivity. Industries that reduce pollution, increase resource productivity and encourage a switch to renewable resources. These industries are collectively being called the environment industries (EI) which have two distinct components: the supply of traditional pollution control technologies and services ('end-of-pipe treatment') and industries relating to resource management (management of materials and energy). Both components of the EI have contributed to environmental improvement in the EU.

d. How should Environmental Taxes and Environmental Subsidies be Combined?

From Curbing Pollution to Promoting Environment

One related question is how should revenues from the environmental taxes be used. Should these become part of the general revenue pool of the government or should these be earmarked for environment promoting activities. By definition, if the environment tax is a cess it should be earmarked for the sector or industry from where it has been raised. Within that sector it needs to be allocated to promoting environment promoting technologies and processes. There are however a number of taxes like taxes on petroleum products and electricity that, while raising revenues for the government, also serves to curb a polluting activity.

3. Indirect Tax Reform in India

a. Towards Taxing the Value-Added: From Central Excise to CENVAT

The current generation of reforms of indirect taxes leading the system towards a value added tax started with the introduction of MODVAT from March 1, 1986 with reference to specified Chapters of the Central Excise Tariff Act, 1985. At first, the coverage was limited to 37 out of 91 Chapters. From March 1, 1987, all commodities except petroleum products, textiles, tobacco, cinematographic films and matches were covered. In the MODVAT system, early in the nineties, full rebate on the excise tax paid on capital goods was allowed instead of setting up a system of annual depreciation related deductions. With effect from 1995-96, the entire manufacturing chain was brought under MODVAT.

The central government change MODVAT to CENVAT in 1996-97. The CENVAT covers value added in the case of production and sale of goods up to the stage of 'manufacturing'. Compared to MODVAT, CENVAT had fewer rates. The taxation space up to the value added in the production of goods is common between the centre and states. While the tax structure was thus simplified, continuation of several surcharges and cesses continued to complicate the system. These are listed below:

a) Special Excise Duty,
b) National Calamity Contingent Duty,
c) Education Cess,
d) Secondary and Higher Education,
e) Cess on Motor Spirit,
f) Cess on High Speed Diesel Oil,
g) Surcharge on Motor Spirit, and
h) Surcharge on Pan Masala and Tobacco Products.

b. Towards Taxing the Value Added: From Sales Tax to State VAT

State taxes include state sales taxes, the Central Sales Tax (CST) assigned by the central government to the states, motor vehicle tax, state excise duties, entertainment taxes. The structure of sales tax, prior to reforms undertaken in late nineties was characterized by high tax rates, multiplicity of tax rate and exemptions, lack of uniformity in defining the tax base across states, large number incentives, and cascading of taxes. During reforms of sales taxes prior to the introduction of state VAT, most states had agreed to phase out the incentive related exemptions, and implement floor rates. There are several minor taxes imposed by the States on the sale, purchase, storage and movement of different goods.

Apart from the general sales tax, most states levied an additional sales tax or a surcharge. In addition, the states levy luxury tax as also an entry tax on the sale of imported goods. All these practices led to heterogeneity in structure, as well as rates, causing diversion of trade as well as shifting of manufacturing activity from one state to another. Further, widespread taxation of inputs led to

vertical integration of firms, encouraging production of more and more of the inputs needed rather than purchasing them from ancillary industries. This system taxation of goods became non-neutral, interfering with the producers' choice of inputs as well as with the consumers' choice of consumption, thereby leading to severe economic distortions.

With the initiative of Empowered Committee of the state Finance Ministers, states initiated indirect tax reforms in the late nineties. As a first step, they reduced the rate categories in the case of sales taxes, reduced exemptions, and introduced floor rates. There were tangible revenue benefits after these changes, which facilitated, under the guidance of the Empowered Committee, the implementation of state level VAT.

The State-VAT recommended by the Empowered Committee of state Finance Ministers was elaborated in a White Paper brought out by the Government of India. The main features of the scheme suggested by the Empowered Committee were:

a. uniform schedule of rates of VAT for all states, making the system simple and uniform and prevent unhealthy tax competition among states;
b. the provision of input tax credit meant for preventing cascading effect of tax;
c. the provision self assessment by dealers aimed at reducing harassment; and
d. the zero rating if exports aimed at increasing the competitiveness of Indian exports.

As per the basic principles of VAT, the State-VAT provides that for all exports made out of the country, tax paid within the state will be refunded in full. Units located in Special Economic Zone (SEZ) and Export Oriented Units (EOUs) are to be granted either exemption from payment of input tax.

The most important part of the VAT scheme relates to the tax rates. Under the VAT system covering about 550 goods, only two basic VAT rates of 4 and 12.5 percent are to apply plus a specific category of tax-exempted goods and a special VAT rate of 1 percent only for gold and silver ornaments.

Under the exempted category, the Empowered Committee placed 46 commodities comprising of natural and unprocessed products in the un-organized sector, items that are legally barred from taxation and items which have social implications. Under the state-VAT, there is the proposal to give flexibility to the states to select a set of maximum of 10 commodities States for exemption from a list of goods specified by the Empowered Committee, which are of local social importance for the individual States without having any inter-state implications.

The rest of the commodities in the list are common for all the States. Under 4 percent VAT rate category, the largest number of goods (about 270) were placed, common for all the States, comprising of items of basic necessities such as medicines and drugs, all agricultural and industrial inputs, capital goods and

declared goods. The remaining commodities, common for all the States, will fall under the general VAT rate of 12.5 percent.

It was proposed that VAT on AED items relating to sugar, textile and tobacco, because of initial organizational difficulties, will not be imposed for one year after the introduction of VAT and till then the existing arrangement will continue.

c. Expanding the Tax Base: Service Tax

The service tax was levied for the first time in 1994-95 budget. Since then its rate has been progressively increased and the number of services under the service tax net has also been increased year after year (Table 1).

Table 1: Taxation of Services

Service Tax was introduced from 1st July 1994

Union Budget	Number of Services Introduced	Cumulative Number of Services	Union Budget	Number of Services Introduced	Cumulative Number of Services
1994-95	3	3	2004-05	7	65
1996-97	3	6	2005-06	15	80
1997-98	9	15	2006-07	12	92
1998-99	11	26	2007-08	6	98
2001-02	15	41	2008-09	4	102
2002-03	10	51	2009-10	4	106
2003-04	7	58	2010-11	8	114

Source (Basic Data): Union Budgets, various years.

e. **Reducing the Tax Rate: Lowering Dependence on Indirect Taxes**

Reducing the tax rates as well as the number of rate categories was a key objective of the reform. In the case of CENVAT, most of the products used to attract excise duties at the rate of 14 percent until recently. As per an announcement in December 2008, the core Cenvat rate has been brought down to 10 percent. Some products also attract special excise duty/and an additional duty of excise at the rate of 8 percent above the Cenvat rate. In addition, there is a 2 percent education and 1 percent higher education cess applicable on the aggregate of the duties of excise. Excise duty is levied on ad valorem basis or based on the maximum retail price in some cases

In 2005, the core Cenvat rate was kept at 16 per cent for a majority of the items. There were two more rates: a demerit rate of 24 per cent and a concessional rate of 8 per cent. Effectively, there were several other rates of excise duty that continue to be applied on different items, subject to their end-use. With the 2008-09 budget, the core Cenvat rate was brought down to 14 percent. This has now been brought down to 10 percent. The adoption of the statevat also led to

rationalization and some reduction in the tax rates. The rate of the central sales tax was also gradually brought down.

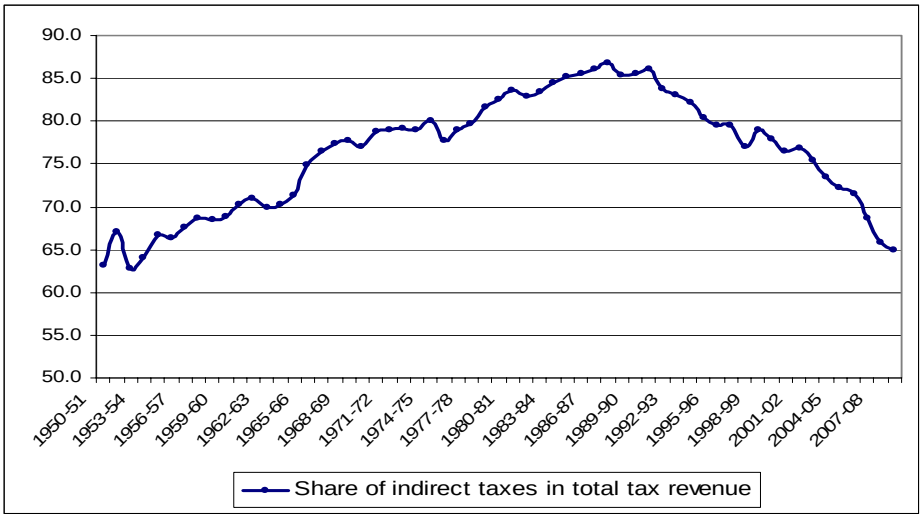

Chart 1: Share of Indirect Taxes in Total Tax Revenues

Reduction of indirect tax rates led to a fall in the share of indirect taxes in total taxes. This was compensated by a rise in the direct tax revenues so that the overall tax revenue relative to GDP except for a few initial years of reforms did not fall. It may be noted that the rate reduction led to higher tax buoyancy in the case of direct taxes and fall in tax buoyancy in the case of indirect taxes (Appendix Table A2). However, it has reduced the dependence of overall tax revenues on indirect taxes thereby facilitating the move to the next stage of reforms towards GST where the risk of revenue shock to the system is less now than used to be the case.

f. Unfinished Reforms

While the system of taxation is thus characterized by fragmentation and overlaps in the case of goods, the taxation of services remains separated and disjointed. The service tax is levied by the central government. Taxation of goods by either tier of government may cascade into taxation of services and vice versa since goods are needed in the production and sale of services and services are needed in the production and sale of goods. The nature of a modern economy is such that it is often difficult to draw lines between goods and services as these are embedded into each other. Considering the value added of goods and services taken together in the overall Indian economy as providing a comprehensive tax base, there are three kinds of segmentations that take place in India under the existing arrangements: segmentation of goods from services, segmentation of central jurisdiction vis-à-vis state jurisdictions, and segmentation of production/manufacture from sale. These artificial divisions for purposes of taxation lead to various distortions, administrative and compliance costs, and inefficiencies. These are also not consistent with prevailing tax practices in the modern economies of the world who have implemented a value added tax regime including federal countries.

Thus, even after the introduction of the principle of taxation of value added in India, its application has remained piecemeal and fragmented. Several problems continue with each segment of the system of taxation of goods and services as summarized below.

1. In the case of Cenvat, the issues relating to definition of manufacturing and methodology of valuation remain causing difficulties in implementation of the tax.
2. The problem of multiple rates remains although the tax rate structure is simpler than what it used to be. This leads to various classification disputes.
3. In the case of services taxation, problems relate to distinguishing between a good and a service. The distinction between the two is often blurred.
4. Exclusion of services from the tax base of the states potentially erodes their tax- buoyancy in a growing economy.
5. Cascading has not been fully eliminated as there is cross cascading between Statevat, Cenvat, and central services tax.
6. The Central sales tax continues to cause artificial inter-state border boundaries and violating the destination based principle of taxation of goods and services.
7. Many of these problems can be addressed by extending the scope of taxation of services for the states and the scope of taxation of goods up to the retail stage for the centre.

This is not to underplay the importance of the success already achieved in bringing about a value added taxation mechanism in highly distorted system of taxation in India that existed prior to these reforms. However, the logic of reforms would remain incomplete until the goods and services are integrated for purposes of taxation of the value added in the process of production and sale of goods and until a countrywide integrated market is not created.

4. The GST: Three Versions

The basic idea of GST is to adhere closely to the principle of a comprehensive value added tax. Three versions of GST are currently under Discussion suggested respectively by the Empowered Committee of State Finance Ministers, Task Force of the Thirteenth Finance Commission (which we may use as reference point as the 13 FC makes reference to it) and the Model GST of the Thirteenth Finance Commission. In all three cases, the GST has two parts: central GST (CGST) and State GST (SGST). With a view to highlighting the similarities and differences between these proposals, we look at the following six aspects of GST proposed by these models. These are: (a) broad structure, (b) central and state taxes to be merged in GST (c) treatment of inter-state sales, (d) rate structure, (e) threshold limits, and (f) place of environmental taxes.

a. Broad Structure

The broad structure of the GST is similar in all the three models. The GST consists of a central and state GST components (CGST and SGST) with the

following main features:

i) The basic features of law such as chargeability, definition of taxable event and taxable person, measure of levy including valuation provisions, basis of classification etc. should be uniform across these statutes as far as practicable.

ii) The CGST and SGST would be applicable to all transactions of goods and services made for a consideration except for the exempted goods and services, goods which are outside the purview of GST and the transactions which are below the prescribed threshold limits.

iii) The CGST and SGST are to be paid to the accounts of the Centre and the States separately. Taxes paid against the CGST and SGST will get input tax credit (ITC) within the CGST and SGST chains respectively but cross utilization of ITC between CGST and SGST would not be allowed.

iv) The administration of the CGST will be with the centre and that of SGST with the States.

v) The GST is based on the destination principle. This requires that inter-state sales of goods and services and exports are zero-rated.

b. Taxes to be Merged

There are however differences about the taxes to be merged. Table 2 highlights these.

Table 2: Central and State Taxes to be Merged into GST

Empowered Committee	**Task Force (13th FC)**	**13th Finance Commission**
Central Taxes		
(i) Central Excise Duty, (ii) Additional Excise Duties, (iii) Excise Duty levied under the Medicinal and Toiletries Preparation Act, (iv) Service Tax, (v) Additional Customs Duty, commonly known as Countervailing Duty (CVD), (vi) Special Additional Duty of Customs (SAD), (vii) Surcharges, and (viii) Cesses.	Central Excise Duty (including Additional Excise Duties); Service Tax; Additional Customs Duty (commonly referred to as 'CVD'); and Surcharges and all cesses	Central excise duty and additional excise duties Service Tax Additional Customs Duty (Countervailing Duty) All surcharges and cesses
State Taxes		
(i) VAT / sales tax, (ii) entertainment tax (unless it is levied by the local bodies, (iii) luxury tax, (iv) taxes on lottery, betting and gambling, (v) State cesses and surcharges in so far as they relate to	VAT/Sales Tax (including central sales tax and purchase tax); Entertainment tax (other than levied by local bodies); Entry taxes not in lieu of Octroi;	Value Added Tax Central Sales Tax Entry Tax, whether in lieu of octroi or otherwise Luxury Tax Taxes on lottery, betting and gambling

supply of goods and services, and (vi) entry tax not in lieu of Octroi.	Other Taxes and Duties (includes luxury tax, taxes on lottery, betting and gambling, and all cesses and surcharges by States); Stamp duty; Taxes on Vehicles; Taxes on Goods and Passengers; and Taxes and duties on electricity. Residential and commercial property	Entertainment Tax Purchase Tax State Excise Duties Stamp Duty Taxes on vehicles Tax on goods and passengers Taxes and duties on electricity All state cesses and surcharges

The most comprehensive list has been proposed by the Task Force. Between the 13th FC and its Task Force, the inclusion of residential and commercial property is the additional inclusion in the latter. In the Empowered Committee list, compared to that of the 13th FC, the following are the main exclusions: stamp duty, tax on vehicles, purchase tax, and electricity duty. There is a difference in the way reference is made to the entry tax. In the EC case, it covers entry tax in lieu of octroi. In the case of the 13th FC, it refers to entry tax in lieu of octroi or otherwise. These differences have a bearing on the determination of the revenue-neutral rate.

c. Inter-State Transactions

In the Empowered Committee model, the Centre would levy Integrated Goods and Services Tax (IGST) which would be CGST plus SGST on all inter-State transactions of taxable goods and services with appropriate provision for consignment or stock transfer of goods and services. The inter-State seller will pay IGST on value addition after adjusting available credit of IGST, CGST, and SGST on purchases. The exporting state will transfer to the Centre the credit of SGST used in payment of IGST. The importing dealer will claim credit of IGST while discharging his output tax liability in his own State. The Centre will transfer to the importing State the credit of IGST used in payment of SGST. The relevant information will also be submitted to the Central Agency which will act as a clearing house mechanism, verify the claims and inform the respective governments to transfer the funds. Table 3 shows the mechanism of handling inter-state transactions by Empowered Committee, Task Force and the Thirteenth Finance Commission.

Table 3: Mechanism of handling Inter-State Transactions

Empowered Committee	**Task Force (13th FC)**	**13th Finance Commission**
Integrated GST (IGST) Centre to levy IGST which would be CGST plus SGST on all inter-State transactions of taxable goods and services with appropriate provision for consignment or stock transfer of goods and services. Centre to transfer to the importing State the credit of IGST used in payment of SGST.	Modified Bank model All inter-state transactions in goods and services to be zero rated using the Modified Bank Model. The consignment sales and branch transfer should be similarly treated.	Any model meeting the condition of zero-rating of export can be considered.

Instead of IGST, the Task Force recommends adoption of a Modified Bank Model (the Bank Model was referred to in the EC Draft Discussion Paper) and suggests that all inter-state transactions in goods and services should be effectively zero rated by adopting the Modified Bank Model. The consignment sales and branch transfers across states should be subject to treatment in the same manner as if it was a inter-state transaction in the nature of sale between two independent dealers. The Thirteenth Finance Commission has not specified any specific mechanism. Any model can be adopted which will satisfy the condition of zero rating of inter-state transactions and exports.

d. Threshold Limits

Keeping in view the compliance cost and administrative feasibility, small dealers (including service providers) and manufacturers should be exempted from the purview of both CGST and SGST if their annual aggregate turnover (excluding both CGST and SGST) of all goods and services does not exceed Rs.10 lakh. However, like in most other countries, those below the threshold limit may be allowed to register voluntarily to facilitate sales to other registered manufacturers/dealers, limit competitive distortions and avoid inequities. Further, the threshold exemption limit should be uniform for both CGST and SGST and across States. With a view to reducing administrative and compliance burden, small dealers with annual aggregate turnover of goods and services between Rs.10 lakh to Rs.40 lakh may be allowed to opt for a compounded levy of one percent, each towards CGST and SGST. However, no input credit should be allowed against the compounded levy or purchases made from exempt dealers (Table 4).

Table 4: Threshold Limits

Empowered Committee	**Task Force (13th FC)**	**13th Finance Commission**
SGST: Gross annual turnover of Rs.10 lakh both for goods and services for all the States and Union Territories CGST: Separate thresholds for goods and services Goods: Rs.1.5 crore and the Services: Rs. 10 lakh.	Threshold: Annual aggregate turnover (excluding both CGST and SGST) not to exceed Rs.10 lakh. Those below the threshold limit may register voluntarily Threshold exemption limit should be uniform for both CGST and SGST and across States. Small dealers with annual aggregate turnover of goods and services between Rs.10 lakh to Rs.40 lakh may opt for a compounded levy of one percent.	A threshold of Rs. 10 lakh and a composition limit of Rs. 40 lakh Sales of goods of local importance will fall within these threshold limits, thus keeping them out of the ambit of GST.

The Empowered committee considers separate thresholds for goods and services and for SGST and CGST. The Task Force and the Thirteenth Finance Commission go for a uniform threshold. The EC considers gross annual turnover whereas the Task Force refers to turnover net of CGST and SGST.

Exemption Lists

The Task Force suggests that the Centre and the States should draw up a common exemption list which should be restricted to the following:

i) All public services of Government (Central, State and municipal/panchayati raj) including civil administration, health services and formal education services provided by government schools and colleges, defence, para-military, police, intelligence and government departments. However, public services should not include railways, post and telegraph, other commercial departments, public sector enterprises, banks and insurance, health and education services;
ii) Any service transactions between an employer and employee either as a service provider, recipient or vice versa;
iii) any unprocessed food article which is covered under the public distribution system should be exempt regardless of the outlet through which it is sold;
iv) education services provided by non-governmental schools and colleges; and
v) health services provided by non-governmental agencies.

The Thirteenth Finance Commission follows a similar approach and observes that no exemptions should be allowed other than a common list applicable to all states as well as the Centre, which should only comprise: (i) unprocessed food items; (ii) public services provided by all governments **excluding railways**, communications and public sector enterprises and (iii) service transactions between an employer and employee (iv) health and education services. It also says that the present area-based exemption schemes should be terminated. The existing schemes should not be grandfathered. Alternative options like refunding taxes paid by industries in these locations could be considered.

f. Determining the Overall Rate and Central and State Components

An important issue is to determine a suitable GST rate. At present goods are taxed at the core rate of Cenvat at 10 per cent and core State VAT of 12.5 percent. This together would be very high although it would be less than 22.5 per cent as the 10 per cent rate applies to value added only up to the manufacturing stage and the GST will have a larger base. The service tax rate is 10 percent. The highest GST rates are in Sweden and Denmark at 25 per cent. At the lower end, Switzerland, Japan, Thailand and Singapore have GST/VAT rates at 5 per cent or marginally above.

The Task Force and the 13th FC suggest an overall rate of 12 percent. The EC has not indicated the overall GST rate. The A related issue relates to decomposing the overall GST rate into its central and state components making sure that the relative pre-transfer revenue levels are not disturbed. The Kelkar Committee had suggested a division of the overall rate of 20 percent into a 12:8 ratio in favor the centre. This may need to be reexamined with current levels of revenues under Cenvat and service taxes and the Statevat and other related taxes that may be subsumed in the GST (Appendix Table A1). GST rate structure as per the three models is shown in Table 5.

Table 5: GST Rate Structure

Empowered Committee	Task Force (13th FC)	13th Finance Commission
SGST For Goods 2 Rate Structure Lower rate: 4-5 percent Core rate: 8-10 percent Services: one rate 8-10 percent	CGST: 5 percent SGST: 7 percent	CGST: 5 percent SGST: 7 percent Stated as the target.

In a recent study Kavita Rao and Pinaki Chakraborty (2008) estimate the revenue neutral GST rate using two methods, namely, a GDP based method and a consumption expenditure based method. Following the GDP –based method she estimates the revenue neutral GST rate to be about 14 with a 10 percent rate of non-rebatable excises on passenger cars and multi-utility vehicles, petroleum products, and tobacco products. Following the consumption expenditure method she observes that the rate of GST required for revenue neutrality would be 20 percent. With improved tax administration, the GST rate can be reduced further.

The Task Force of the Thirteenth Finance Commission has estimated with reference to a comprehensive tax base (as discussed in this chapter) a revenue neutral rate of 12 percent, with 5 percent for the centre, and 7 percent for the states.

Overtime the relative share of the GST components for the centre and the states have been changing marginally away from the centre due to the erosion of buoyancy of Union excise duties (see Appendix Table 2).

The Task Force has recommended a single positive rate, each for CGST and SGST on all goods and services. In addition, there should be a zero rate applicable to all goods and services exported out of the country. The Task Force favours a single rate structure GST and some international experience with VAT in support. States have said that a single rate of State GST for all goods and services will be highly regressive in India with its large low income population. It is mainly the articles of common consumption which are in the lower rate bands of VAT. The single revenue-neutral rate will definitely be much higher than the rate now prevailing at the lower bands. To deal with problem, the Task Force suggests a moderate threshold exemption level for registration of dealers. Consequently, all small dealers would remain outside the purview of the GST. The Task Force Report argues that the tax incidence on products sold through such dealers would be relatively lower. Since the poorer section of the society tend to make their purchases from such small and unregistered dealers, the consumption of any commodity by the poor would bear a relatively lower incidence of tax than the consumption of the same commodity by the relatively richer section of the society.

The Task Force has used the fiscal year 2007-08 as the base year for calculation of the revenue neutral rate (RNR). For the purposes of estimation of the GST base, the Task Force used several alternative approaches and estimated the GST base under these methods. The various estimates of the GST Base for 2007-08 are summarized in Table 3. Since the five estimates are different, the Task Force adopts their average of Rs. 3125325 crore, as the size of the comprehensive GST base for 2007-08 for the purposes of estimating the RNR. Since the tax base for both the CGST and the SGST are proposed to be identical, the Task Force uses the same tax base for calculating the RNR for both levies.

The Task Force estimated the RNR for the CGST at 5.0 percent. Similarly, the RNR in respect of the state level taxes which are proposed to be subsumed in the SGST is estimated to be 7.0 percent. The combined RNR is estimated to be 12 percent. The Task Force also recommended the abolition of all entry and Octroi taxes by state governments and other sub-national governments.

Thus, there are clear differences in the GST rate and its structure between what the Empowered Committee is considering and what has been proposed by the Thirteenth Finance Commission and also it's Task Force. These differences arise because of the coverage of goods and their exemption considered by the Empowered Committee compare to the other two models.

g. Environmental/Demerit Goods

The 13th FC Task Force considers the power sector is to be an integral part of the comprehensive GST. The tax regime for the power sector should be the same as in the case of any other normal good. The electricity duty levied by the States should be subsumed in the SGST. Table 6 shows the provision for environmental taxes/ Demerit goods by the Empowered Committee, Task Force and the Thirteenth Finance Commission.

The tax on vehicles and the tax on goods and passengers levied by the State Governments should also be subsumed in the GST. All transport equipments and all forms of services for transportation of goods and services by railways, air, road and sea must form an integral part of the comprehensive GST base recommended by the Task Force over which both the Central and State Governments would have concurrent jurisdiction. The tax regime for the transport equipments and transport services should be the same as in the case of any other normal goods.

The Task Force refers to the demerit goods as sin goods. The sin goods are listed as emission fuels, tobacco products and alcohol, which should be subject to a dual levy of GST and excise. No input credit should be allowed for this excise duty. However, industrial fuels should be subjected only to GST (both Central and State) with the benefit of input credit like any other intermediate good.

Table 6: Provision for Environmental Taxes/Demerit Goods

Empowered Committee	Task Force (13th FC)	13th Finance Commission
Taxation of Petroleum Products		
Crude, motor spirit (including ATF) and HSD would be kept outside GST Sales Tax could continue to be levied by the States on these products with prevailing floor rate. Centre could also continue its levies. On Natural Gas a final view has not been taken yet. Sales Tax/VAT to continue on alcoholic beverages In case it has been made Vatable by some States, this may continue. Tobacco products would be subjected to GST with ITC. Centre may be allowed to levy excise duty on tobacco products over and above GST without ITC.	The sin goods are listed as emission fuels, tobacco products and alcohol, which should be subject to a dual levy of GST and excise. No input credit should be allowed for this excise duty. However, industrial fuels should be subjected only to GST (both Central and State) with the benefit of input credit like any other intermediate good. tax/fee/charge/cess which is essentially in the nature of a user charge for supply of goods and services (**including environmental goods and services**) also should not be subsumed under the CGST or SGST. Further, both Centre and the States should take steps to consolidate all taxes (other than proposed GST) on the sin goods as a single levy termed as **Central Excises and State Excises**, respectively.	HSD, MS, and ATF could be charged GST and **an additional levy** by both the Central and State Governments. No input credit would be available against either CGST or SGST on the additional levy. A similar treatment would be provided to **alcohol and tobacco**. Such an arrangement to take care of environmental concerns.

Any amount collected through these taxes on the SIN goods should not be subsumed either in the CGST or the SGST. Similarly any amount which is collected as tax/fee/charge/cess which is essentially in the nature of a user charge for supply of goods and services (including environmental goods and services) also should not be subsumed under the CGST or SGST. Further, both Centre and the States should take steps to consolidate all taxes (other than proposed GST) on the sin goods as a single levy termed as Central Excises and State Excises, respectively. All entry and Octroi duties levied by the third-tier of Government must be abolished.

Thus, the Task Force on GST set up by the 13th Finance Commission recognized the issue of negative externalities in a clearer way and collectively refers to these as sin goods and services and makes a distinction between sin goods and non-sin goods. The Task Force defines sin good**s** as goods whose consumption create negative externalities and for the purposes of their Report it, collectively or severally, refers to emission fuels, tobacco goods and alcohol. It observes that emission fuels generate negative externalities, whose consumption needs to be checked. It notes that generally, goods with negative externalities should be subjected to excise duties in respect of which input tax credit is not allowed.

The Thirteenth Finance Commission has suggested that the taxation of petroleum products and natural gas would be rationalised by including them in the tax base. HSD, MS, and ATF could be charged GST and an additional levy by both the Central and State Governments. No input credit would be available against either CGST or SGST on the additional levy. A similar treatment would be provided to alcohol and tobacco. Such an arrangement would ensure protection of existing revenues while taking care of environmental concerns.

5. International Experience with Environmental Taxes

Environmental tax reform in different countries across the world mainly aim at shifting the tax burden from factors of production, such as labour and capital, to pollution and the use of natural resources (EC, 1997). Elements of Strategic tax reform generally involve three complementary activities (EEA, 1996; OECD, 1997): (a) removal of existing taxes and subsidies that have negative environmental impacts; (b) restructuring of existing taxes in an environmentally friendly manner; and (c) introducing new environmental taxes

The international with green taxes indicates that while the initial emphasis was on energy and transport, the tax bases for the environmental taxes have expanded over time. Apart from the fuel taxes that are levied in all countries in Europe, other taxes include waste end taxes (in Austria, Finland, France, Greece, Italy, Sweden, Norway and UK), packaging (in Italy), solvents (Denmark and Norway), PVC/ phthalates (Denmark), and annual car taxes differentiated according to environmental characteristics (Germany) (EEA, 2000). Table 7 provides a summary of the environmental effectiveness of the green shift in taxation across various countries. International experience has shown that environmental taxes can be quite effective in their environmental impact.

Many countries have undertaken formal or informal reduction targets for greenhouse gases emissions. With the Climate Change Act, the UK Government has now legislated into statute the commitment to reduce the greenhouse gases emissions (GHGs) by 80 per cent from 1990 levels by 2050. This will require comparable reductions in emissions of carbon dioxide, the principal greenhouse gas, which are mainly the result of burning fossil fuels. The Climate Change Committee has recommended that to meet this, the UK should reduce its GHG emissions by a minimum of 34 per cent from 1990 levels by 2020. Most of the reductions by 2020 will have to come from the large-scale deployment of new renewables technologies.

Table 7: Impact of the Green Shift in Taxation: Selected International Evidence

Country and Tax	Period Evaluated	Impact	Source
Finland - energy and carbon tax	1990-2005	CO_2 emissions 7 per cent lower than would have otherwise been	Nordic council 2006
		A shift from carbon tax to output tax on electricity in 1997 may have lessened impact	Nordic Council 1999
Norway -carbon and sulphur dioxide taxes	1991-2007	21 per cent reduction in CO_2 from power plants by 1995	OECD 2001
		14 per cent national reduction in CO_2 in 1990's, 2 per cent attributed to carbon tax	OECD 2006
		12 per cent reduction in CO_2 emissions per unit of GDP	Nordic council 2006
Denmark - energy and carbon tax	1992	CO_2 emissions in affected sectors down by 6 per cent and economic growth up by 20 per cent between 1988 and 1997 and a 5 per cent reduction in emission in one year in response to tax increase	OECD 2006
		In 1990s a 23 per cent reduction in CO_2 from as usual trend and energy efficiency increased by 26 per cent	Nordic Council 2006
		Subsidy to renewables may have accounted for greater proportion of emissions reductions than tax	
Sweden-energy & carbon taxes	1990-2007	Emissions reductions of 0.5 million tons per annum	Nordic council 2006
		Emissions would have been 20 per cent higher than 1990 levels without tax	Swedish Ministry of Finance 2004
The Netherlands-energy tax	1999-2007	Emissions 3.5 per cent lower than would have otherwise been	Finance ministry, the Netherlands 2007
		Low tax rates may have limited impact	
Germany-environmental tax reform, taxes on transport , fuels &electricity	1999-2005	CO_2 reduced by 15 per cent between 1990 and 1999 and 1 per cent between 1999 and 2005	EEA 2007
		CO_2 emissions 2-3 per cent lower by 2005 than they would have been without tax	OECD 2006
		German re-unification an important factor in reductions	
UK-Industrial energy tax	2001-2010	UK CO_2 emissions reduced by 2 per cent in 2002 and 2.25 per cent in 2003 and cumulative savings of 16.5 million tonnes of carbon up to 2005	Cambridge Econometrics 2005
		Reduction in UK energy demand of 2.9 per cent estimated by 2010	HMT 2006

Source: Green Fiscal Commission (2009).

Increasing the price of energy is considered to be critical intervention for achieving the GHG emissions reduction targets internationally. Iincreased energy efficiency through higher investment in renewables and reduced demand for energy services will also help India achieve the emission reduction target for which a commitment has been made.

In the past there have been two sources of energy price increases: from markets, as (for example) the oil price increases in 1973 and 1979, and more recently in 2007-08; and from government policy, mainly from taxation such as fuel duty or the Climate Change Levy in the UK. Both these taxes have reduced fuel use below what they would otherwise have been, although in the case of fuel duty even a relatively high rate of duty has not been enough to actually reduce the use of transport fuels. In Germany however, a 90 percent increase in diesel prices and 62 per cent increase in petrol prices over 1997-2006, largely driven by increases in taxation, caused the total consumption of the main road fuels to decrease by 13 percent.

But price increases by government keep revenues in the country and generate tax receipts which allow other taxes to be reduced. There is a very important economic difference between market-driven and taxation-driven increases in energy prices. In the case of the former the extra revenues accrue to energy companies and energy-producing countries, at the expense of energy-consuming countries. With the latter the government of the energy-consuming country keeps the revenues from the price increase, which, for a given level of government expenditure, allows it to reduce other taxes, with greatly reduced negative impacts on its economy.

Another important difference is that market-driven increases in, for example, oil prices will stimulate investment into high-carbon substitutes for crude oil (e.g. oil shale and tar sands - as indeed has happened with the relatively high oil prices over 2006-08) as well as into low-carbon energy sources. Government taxation, in contrast, can target carbon emissions through a carbon tax, which would penalize high-carbon oil substitutes and be far more effective in promoting new investment into low-carbon energy sources.

There are important lessons for India from the international experience. First, the tax on energy should be allowed to continue to cascade and polluting goods and services should be differentially taxed at higher rate. Further, India should develop capacity in environment industries where there is the potential of considerable growth of demand rather than concentrating on polluting industries where already there is considerable excess capacity globally.

6. Integrating Environmental Taxes into GST Design

a. Three Forms of Environmental Taxes in GST Framework

Looking at the three versions of the GST, it appears that three routes for the environmental taxes can be part of the overall scheme of indirect taxes in India the core of which can be the GST. These are: non-rebatable excise duties by the centre and the states on selected polluting products, environmental cesses where a link can be established between the revenue from the cess and the environmental promoting activity, and user charges. In addition, at the local government level environmental taxes like the congestion charges can be levied. The most important of these will be the non-rebatable excises and the selection of goods that can be

placed under these. The 13th Finance Commission has made reference to all of these but the coverage of goods for non-rebatable excises is limited to petroleum products, alcoholic beverages, and tobacco. The mention regarding cesses is about cesses for emergency conditions. In other places, the Commission says that all cesses should be merged. The Task Force asks for subjecting all environmental polluting goods to a non-rebatable excise.

b. Taxation of Petroleum Products

Taxation of petroleum products will be a key component of the taxes that can serve an environmental objective. The 2009-10 Union Budget has not only restored the earlier customs duty rate and excise duty rate but also given the signal that the government will move towards de-administering the pricing regime and making all subsidies transparent. In this regards, the three GST models discussed above have different propositions. The Empowered Committee model keeps taxation of petroleum out of the GST framework while the other two make a distinction between emission fuels and others. The first step in rationalizing the scheme is to establish a clear distinction between international/ producer's price of petroleum products, subsidy elements if any, and the overall tax component with and without cascading. The second step is to take into account any increase in the tax component and consequent increase in the tax revenues to reduce fully or partially the core GST rate. International evidence indicates that Indian retail prices of petroleum products are some where around the average and not the highest. The same applies to other demerit goods like alcohol and tobacco.

c. Coverage of Other Polluting Goods

A select number of other polluting goods should be subjected to either a non-rebatable excise over and above the GST or a cess. When a cess is levied, the revenue should be earmarked for the same industry for environmental promoting activities. It may be noted that in the GST, effective tax rate of some of the polluting goods are bound to come down compared to present tax rates, central and state rates taken together. This is bound to encourage pollution. This needs to be corrected in moving to GST by a non-rebatable excise or cess.

Table 8 indicates that many of the polluting good suffered a higher indirect tax rate in 2006-07. By that time many states had accepted and implemented Statevat. Only a few states implemented it after 2006-07. Clearly, a lowering of the GST rate from these high levels would encourage greater used of the polluting goods. The Thirteenth Finance Commission based on the NCAER report has observed that the move to GST will have positive environmental outcomes. This is base mainly on estimated lower energy consumption while growth takes place. Since the NCAER report uses 2003-04 input-output coefficient matrixes and since these coefficients remain fixed any substitution effects induce by lowering of effective tax rate on the polluting goods are not captured. On the aspect of energy intensity of growth both international and India experience indicates that with technological improvement energy intensity has been going down. GST has no direct bearing on it.

Table 8: Effective Tax Rates for Selected Polluting Goods/Industries

Indirect Taxes Net of Subsidies as percentage of Gross Value Added					
	2003-04	2006-07		2003-04	2006-07
Electrical industrial machinery	112.8	81.8	Fertilizers	24.7	28.1
Batteries	81.8	61.9	Motor cycles and scooters	30.0	27.5
Electrical wires & cables	73.6	59.5	Soaps, cosmetics & glycerin	22.7	26.4
Petroleum products	31.9	56.9	Drugs and medicines	23.3	25.0
Iron and steel foundries	52.0	56.7	Non-ferrous basic metals	32.0	24.1
Electrical appliances	70.0	56.2	Other chemicals	23.3	23.7
Plastic products	42.9	39.8	Pesticides	20.1	23.4
Iron and steel casting & forging	35.5	35.0	Coal tar products	24.3	21.6
Paints, varnishes and lacquers	30.3	34.4	Printing and publishing	21.3	19.4
Motor vehicles	37.0	34.1	Iron, steel and ferro alloys	9.1	17.1
Synthetic fibers, resin	28.1	32.7	Leather and leather products	8.2	17.0
Inorganic heavy chemicals	29.9	31.5	Cotton textiles	10.1	10.1
Paper, paper prods. & newsprint	35.3	31.4	Cement	12.5	9.9
Organic heavy chemicals	28.8	30.8	Electricity	-31.5	-20.3

Notes: 1. 2003-04 rates are based on commodity by commodity matrix
2. 2006-07 rates are based on commodity by industry matrix
3. Negative value means that the good/industry is net subsidized.
Source: Based on Input-Output Tables of India, CSO.

d. Taxation of Coal

A key component of the environmental taxes will have to relate to taxation of coal. In the Union Budget of 2010-11, for the first time the central government has taken the initiative of levying a cess of Rs. 50 per tonne on domestically produced and imported coal. The revenue of this cess will form the resource pool for a 'clean coal fund'.

e. Other State and Local Taxes

In addition to the GST there would be other state and local taxes which may be used to serve as environmental purpose. Congestion taxes and preferential treatment to green properties in the case of property tax are two examples.

f. Pricing of Polluting Goods

The effect of environmental taxes are often negated and almost always difficult to work out when important polluting goods like petroleum, coal, and fertilizers are characterized by administered pricing regimes and non-transparent subsidies. Market-determined prices and transparent subsidy regime is a necessary condition for working out an effective design of environmental taxes.

g. Complementary Subsidies

Apart from subsidies that may be linked to cesses, environment promoting subsidies should also be drawn from the general budget. The Union Budget of 2010-11 has taken several initiatives in their directions including support for installing a zero liquid discharge system as Thirupur in Tamil Nadu and support for National Ganga River Basin Authority. Similarly, the Thirteenth Finance Commission has recommended three specific grants for promoting environment in addition to various state specific grants. These grants are aimed at increasing the forest cover in India promoting connectivity of renewable energy to National grid and better management of water resources. At the same time, many of the environmentally perverse subsidies like those for fertilizers need to be curbed.

The main reason for resisting environmental fiscal reforms is the perception that it would slow down growth. Growth is energy-intensive and environmental taxes make energy costlier. However, many international studies (see, Ekins, 2009 for a perspective) have shown the effect of environmental tax reform with the green shift may have negligible adverse effect on growth and positive effect on employment. The Central Ministry of Power (2007) notes that in the high growth period of 2004-08, an economic growth rate of over 9 percent per annum, which has been achieved with an energy growth of less than 4 percent per annum. With subsidy interventions, a steady reduction in the energy-intensity of growth can be achieved over and above the trend in order to meet India's self-commitment of reducing the carbon-intensity by 20-25 percent by 2020.

7. Concluding Observations

In this paper we have highlighted that inspite of efforts for reforming indirect taxes in India over a period of two decades, the system remains highly segmented where cascading continues between Statevat and Cenvat, and between taxation of goods and services. Inter-state barriers of trade also continue because of the central sale tax. Although taxation of petroleum products at high rates serves an environmental purpose also pricing and taxation in this sector suffers from considerable non-transparency. Coal and coal products have also been taxed at relatively lower rates. A systematic policy for many indirect taxes for curbing pollution and promoting environment has not been put in place. The forthcoming introduction of GST provides the relevant context were the overall design of GST should incorporate the environmental taxes with a view to imparting a green shift to India's tax system in line with comparable international experience. Although there are considerable differences among the three models of GST that are currently under discussion viz., the model proposed by the Empowered Committee of the State Finance Ministers, The Task Force of Thirteenth Finance Commission and the model GST recommended by the Thirteenth Finance Commission, in all cases there is a clear recognition of the need for environmental taxes, an reference has been made to demerit goods/sin goods/environment (polluting) goods.

The Thirteenth Finance Commission has made reference to three forms of environmental taxes" Non-rebatable excise duties, cesses, and user charges. These three forms of environmental taxes can be used to serve different purposes. Non-rebatable excises add to overall GST level, and this should be used to at least partially reduce the core GST rate. Cesses should be earmarked for environment promoting activities in industries to cover cost of specific publically provided environmental services were beneficiaries are identifiable.

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Appendix Table A1: Revenue Importance of Central and States Taxes for Determining GST Rate Shares

(Rs. crore)

Central and State Taxes	2000-01	2001-02	2002-03	2003-04
Central Taxes (Union Excise Duties + Service Tax + CVD + SAD)	90990	93692	105963	119116
State Taxes: Group 1#	104824	112054	124556	142613
State Taxes: Group 1+ Group 2##	116010	125039	139981	160474
Centre + State I	195814	205746	230519	261729
Share of Centre (%)	46.5	45.5	46	45.5
Share of States (%)	53.5	54.5	54	54.5
Centre + States II	207000	218731	245944	279590
Share of Centre (%)	44	42.8	43.1	42.6
Share of States (%)	56	57.2	56.9	57.4

Central and State Taxes	2004-05	2005-06	2006-07	2007-08	2008-09
Central Taxes (Union Excise Duties + Service Tax + CVD + SAD)	135470	164031	203841	234826	233469
State Taxes: Group 1#	164478	182077	213714	247495	284153
State Taxes: Group 1+ Group 2##	186785	209744	249687	290186	333448
Centre + State I	299948	346108	417555	482321	517622
Share of Centre (%)	45.2	47.4	48.8	48.7	45.1
Share of States (%)	54.8	52.6	51.2	51.3	54.9
Centre + States II	322255	373775	453528	525012	566917
Share of Centre (%)	42	43.9	44.9	44.7	41.2
Share of States (%)	58	56.1	55.1	55.3	58.8

Source: Reserve Bank of India: State Finances and Union Budget Documents (Receipts Budget).
Central taxes include Union excise duties, service tax, additional duties of customs and special CVD.
Group 1: All sales taxes, state excise duties, motor vehicle tax, tax on goods and passengers, taxes and duties on electricity, entertainment tax, other taxes on goods and services
Group 2: land revenue, stamps and registration fees, urban immovable property tax

Appendix Table A2: Buoyancy of Direct and Indirect Tax Revenues with respect to GDP at market prices

	Total direct taxes	Total indirect taxes	Central indirect taxes
	b(TTR)	B(ITR)	B(CITR)
1990-91	0.584	0.799	0.702
1991-92	2.400	0.983	0.785
1992-93	1.097	0.637	0.577
1993-94	0.798	0.384	-0.124
1994-95	1.905	1.078	1.029
1995-96	1.378	0.995	1.090
1996-97	0.942	0.938	1.085
1997-98	2.142	0.587	0.008
1998-99	-0.191	0.552	0.469
1999-00	2.085	1.414	1.489
2000-01	2.326	1.206	0.743
2001-02	0.223	0.401	-0.241
2002-03	2.531	1.477	1.616
2003-04	2.077	1.084	1.032
2004-05	1.755	1.208	1.099
2005-06	1.604	1.265	1.294
2006-07	2.514	1.342	1.449
2007-08	2.185	1.125	1.125
2008-09	1.539	1.189	1.191
Average			
1990-95	**1.357**	**0.776**	**0.594**
1995-2000	**1.271**	**0.897**	**0.828**
2000-04	**1.782**	**1.075**	**0.850**
2005-09	**1.961**	**1.231**	**1.265**

Source (Basic Data): Indian Public Finance Statistics and National Income Accounts, Various Issues