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Compensating for the Fiscal Loss in India's Energy Transition

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Compensating for the Fiscal Loss in India's Energy Transition

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List of Abbreviations

| | |
|-----------------------|---|
| B&D | Bhandari and Dwivedi |
| BP | British Petroleum |
| CBAM | Carbon Border Adjustment Mechanism |
| CIT | Corporate Income Tax |
| CTR | Carbon Tax Revenue |
| CO₂ | Carbon Dioxide |
| CRM | Compliance Risk Management |
| DISCOM | Distribution Company |
| EVs | Electric Vehicles |
| FC | Finance Commission |
| FC-XV | 15 th Finance Commission |
| GDP | Gross Domestic Product |
| GHG | Green House Gases |
| GPS | Global Positioning System |
| GST | Goods and Services Tax |
| IEA | International Energy Agency |
| IMFL | Indian Made Foreign Liquor |
| MOEFCC | Ministry of Environment, Forest and Climate Change |
| NPCI | National Payments Corporation of India |
| OECD | Organization for Economic Cooperation and Development |
| PIT | Personal Income Tax |
| PJ | Peta Joules |
| PPP | Purchasing Power Parity |
| RBI | Reserve Bank of India |
| RFID | Radio Frequency Identification |
| STEPS | Stated Policies Senario |
| TCS | Tax Collected at Source |
| TDS | Tax Deducted at Source |
| USD | United States Dollar |
| VAT | Value Added Tax |
| WTO | World Trade Organisation |

Abstract

The global shift from fossil fuels to renewable energy sources is transforming energy production and consumption worldwide. As countries intensify their efforts to combat climate change and reduce greenhouse gas emissions, the transition to clean energy is gaining momentum. India has committed to ambitious targets, aiming to achieve net-zero emissions by 2070, aligning itself with this global shift. However, this transition away from fossil fuels presents significant fiscal and institutional challenges that warrant careful examination.

This study primarily explores the dynamics of tax revenues and the fiscal implications of India's transition. As fossil fuel consumption declines over time, government revenues generated from fossil fuels are also expected to decrease relative to GDP. This scenario demands a sense of urgency due to India's ongoing efforts to reduce its reliance on fossil fuels.

The research examines the institutional challenges related to enhancing existing tax systems and considers the viability of implementing a carbon tax as an alternative revenue source to replace fossil fuel taxes. The study assesses various tax revenue options, evaluating their effectiveness in revenue generation, long-

term sustainability, required institutional changes, and the preservation of state autonomy. Allocating revenue between the Union and individual States can be intricate, given that States have limited revenue sources that provide them with substantial autonomy.

The study highlights the potential of carbon taxes as a valuable medium-term solution to address revenue loss. However, it also underscores the challenges associated with their implementation, including institutional barriers and political-economic complexities, particularly within India's fiscal-federal structure. Active engagement from institutions like the Finance Commission and the GST Council is emphasised, recognising their critical roles in managing this transition and mitigating its impact on state-level fiscal autonomy.

The study argues for the need to consider multiple factors, including efficiency, equity, sustainability, institutional considerations, and the possibility of reducing expenditures on non-essential goods. This recognition underscores the importance of further research in this area, as India navigates the intricate landscape of fiscal and environmental policy changes.

1. Introduction

The global energy landscape is undergoing a significant transformation as countries strive to transition from fossil fuel-based systems to more sustainable and renewable energy sources. This shift, commonly referred to as the energy transition, is driven by the pressing need to address climate change by reducing greenhouse gas (GHG) emissions created by conventional fuels such as coal, petroleum, and natural gas. India is in the midst of a transformative energy transition as it seeks to move away from fossil fuels and embrace clean, sustainable energy sources. India has committed to achieving its goal of reaching net-zero emissions by 2070. This shift poses significant fiscal and institutional challenges that require careful consideration. In this study, we will explore a crucial question: how to effectively handle the fiscal transition accompanying the move away from fossil fuels.

Fossil fuels have long served as a significant source of revenue for both the Union and state governments in India. These revenues primarily stem from the consumption of petroleum products, with coal contributing to a lesser extent, while income generated from production (extraction) is relatively lower. Laan and Maino (2022) estimate that about 87% of total revenues are generated from consumption. The key issue, however, lies in the magnitude of these revenues. Bhandari and Dwivedi (2022a, 2022b) estimated that the total revenues from fossil fuels in 2019-2020 accounted for 3.2% of India's GDP, which respectively translated into 15.0% and 6.2% of total Union and aggregate State government budgetary expenditures.

As India moves away from fossil fuels, a significant part of its revenue will reduce. So, both the Union and State governments will need to find alternative methods of revenue collection. This paper focuses on identifying these sources of additional revenue. The objective is not to identify a single solution, but to consider the range of possible solutions.

The issue is not simply of tax revenue collection, but also of what is feasible under India's federal structure that divides various powers of taxation between Union and State governments. Moreover, some states are more dependent on fossil fuel revenues, such as Jharkhand, Orissa, and Chhattisgarh, the key coal-producing states. These states will benefit more from any alternative sources of income identified by this study. This fact poses another challenge: income generated from any new sources would either need

to be allocated more to States that stand to lose more, or States should be granted autonomy to choose their own tax rates. While the Constitution of India provided significant tax collection powers to State governments, the introduction of a nationwide Goods and Services Tax (GST) regime has reduced it, and individual States are not free to change GST rates for items that are covered under it. Some may argue that allowing differential rates across States is an avoidable measure. In this paper, our objective is not to advocate for a specific viewpoint, but rather to comprehensively outline the array of available options and examine their implications. There is growing discussion in India about introducing taxes based on carbon emissions. However, it is not clear how these might be instituted under its federal structure. It's also unclear who would levy these taxes, who would collect them, and how they would be distributed.

Therefore, to ensure the long-term sustainability of the energy transition and support India's economic growth, new revenue sources and institutional frameworks must be identified and developed. This necessitates modifications in the existing institutional setup and warrants a thorough review of the roles played by bodies such as the Union and state government departments, Finance Commissions, the GST Council, etc. The fact that their role, structure, and operations are mandated constitutionally also implies any solutions will either have to fit within these constitutional boundaries or the Constitution of India itself might need to be changed. While the latter isn't implausible, it should be avoided if possible because it would involve lengthy discussions and negotiations between many parties at the national level and in each of India's 28 states.

The discussion above makes it evident that a key step that precedes India's energy transition is a better understanding of the resultant fiscal challenge and compensatory options available to the country. This is precisely the aim of this paper, and it proceeds as follows.

Section two seeks to better understand how revenues from fossil fuels will fall over time. To achieve this, a time path of India's transition is necessary, and we rely on figures from the International Energy Agency for India (IEA, 2021) up to 2040, with the goal of reducing the use of fossil fuels to insignificance by 2070. Under fairly plausible assumptions, it identifies the key challenge for India within the

2020-2040 period. After 2040, the annual loss in fossil fuel revenues would be relatively low. It makes the point that tax reforms should be evaluated in the context of (a) a medium-term strategy of making up for the shortfall, and (b) a long-term strategy of identifying other revenue possibilities for both state and Union governments.

Section three examines aggregate tax revenues in India, comparing them over time and with those of other countries. It finds that tax revenue growth in India has been accompanied both by economic growth as well as tax reforms or changes. It suggests that the Indian experience should align with global experience over an extended time frame, albeit with some qualifiers. While there may be divergences from the global trend and experience for some time, India can achieve higher tax revenues to GDP ratios with the right kind of taxation and economic policies.

However, achieving an adequate increase in general tax revenues might take some time, and carbon emission taxes could play a medium-term role, both in terms of revenue generation and in accelerating the transition to more sustainable and renewable energy sources. It is apparent that carbon taxes can, at best, serve as a medium-term measure. As fossil fuel consumption falls with India's march towards net zero, so will the capacity of carbon taxes to generate adequate revenues. Therefore, carbon emission taxes represent a short to medium-term solution. India will need to explore alternative sources of tax revenue in the long run.

Section four examines various possible avenues for the implementation of carbon taxes in India and the challenges they might face. The section evaluates the possibility of carbon taxes substituting fossil fuel tax revenues and underscores the importance of monitoring emissions as the foundation for such taxation. Furthermore, it highlights the contrast between existing fossil fuel taxes in India and a potential carbon tax, which would be predicated on emissions-related criteria. It discusses the issues involved with various

forms of carbon, including whether they can work in tandem with the GST, and explores their potential ramifications.

Section five concludes with a brief discussion of the various options available to India. It refrains from singling out the best option, as each would have differing impacts on the economy. The section ends by calling for a more comprehensive study and understanding of the potential environmental, equity, and growth impacts of taxation options. This information can contribute to the debate on superior taxation alternatives for India.

2. Falling Fossil Fuel Revenues

The IEA (2021) studied different factors impacting India's future energy requirements and proposed three potential scenarios.¹ Among these, the base case (STEPS) was considered a scenario where India gradually reduced its dependence on fossil fuels. Based on this assumption, the IEA estimated the quantity of different fuels required. Bhandari and Dwivedi (2022a), hereinafter referred to as B&D (2022a), adopted scenarios from the IEA and projected the current revenues generated by both the Union and State governments from fossil fuels, as well as how these revenues would change over time. The IEA's horizon extended until 2040, predating India's commitment to achieve net-zero status by 2070, and the target of 500GW capacity from renewable energy by 2030, among other goals.² Using the base case scenario from IEA, B&D estimated that as of 2019, fossil fuel revenues for both Union and State governments accounted for 3.2% of India's GDP. They projected that this figure would decline to 1% by 2040 (for details on the range of taxes imposed on different fossil fuels in India, please refer to Appendix 2). Under ceteris paribus assumptions from 2019 to 2040, they estimated a reduction from 15% to 4.5% of Union government fossil revenues as a proportion of total budgetary expenditure, and from 6.2% to 2% for the combined State governments (refer to Table 1).

¹ The IEAs are not the only such estimates, others such as BP (2023) different estimates which B&D (2022a) did not consider, however, the broad trends and deductions remain the same (see Appendix 1).

² Prime minister's Panchamrit commitments at COP26 include: First- India will reach its non-fossil energy capacity to 500 GW by 2030; Second- India will meet 50% of its energy requirements from renewable energy by 2030; Third- India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030; Fourth- By 2030, India will reduce the carbon intensity of its economy by less than 45%; And fifth- by the year 2070, India will achieve the target of Net Zero. The Panchamrit will be an unprecedented contribution of India to climate action. (PIB, 2021a)

Table 1: Revenues from Fossil Fuels

| Year | In Rs. 000 Crores | Share of GDP (%) | Share of Government Expenditure (%) |
|---|-------------------|------------------|-------------------------------------|
| Union Government Fossil Fuel Revenue | | | |
| 2019 | 404.75 | 2.0 | 15.0 |
| 2030 | 703.03 | 1.1 | 10.8 |
| 2040 | 995.37 | 0.6 | 4.5 |
| State Government Fossil Fuel Revenue | | | |
| 2019 | 242.71 | 1.2 | 6.2 |
| 2030 | 434.75 | 0.7 | 5.4 |
| 2040 | 625.38 | 0.4 | 2.0 |
| General Government Fossil Fuel Revenue | | | |
| 2019 | 647.46 | 3.2 | 9.8 |
| 2030 | 1,137.78 | 1.8 | 7.8 |
| 2040 | 1,620.75 | 1.0 | 3.0 |

Note: Overall government budget figures have been projected at a nominal GDP real growth rate of 10%; the same levels of taxation on fossil fuels. Future budgetary expenditures are also projected at a 10% nominal growth rate in the table above.

Source: B&D (2022a).

For both the Union and State governments, the majority of the decline in revenue shares would occur during the first two decades. During this period, even though aggregate revenues from fossil fuels may increase, the rate of increase in fossil fuel usage and the resulting revenues would be significantly lower than the rise in GDP and the expected budgetary expenditures.³

What this also indicates is that fossil fuel revenues, equivalent to 1% of the GDP in 2040, would then fall to zero by 2070, the net zero date. In other words, the key challenge for Indian State and Union governments is to address the rapidly reducing fossil revenue shares until the year 2040. After 2040, if India can manage a steady improvement in overall tax revenues through other means, it should be relatively easy to compensate for the loss of fossil tax revenues.

Another related issue that is not understood very well is the major differences between states. On the revenue side, different states are differently dependent on revenues from fossil fuels. B&D (2022b) examines this aspect and finds that state-level energy transition would also impact each state differently and fairly significantly (Appendix 3 displays their results). It is therefore apparent that adequate flexibility will be

required to address the variations in scale and scope of challenges at the state level. An important criterion in addressing this issue has to do with flexibility, which could be addressed through state autonomy in designing the tax solution, or flexibilities built into the solutions designed at the Union government level.

3. Tax Revenues in India

To better understand how aggregate tax revenues in India may change over time, let's first consider the global scenario. Figure 1 shows data on the general government (national plus sub-national) tax-to-GDP ratio and charts that against per capita GDP. The chart reveals a few well-known relationships. First, taxes as a share of GDP are positively correlated with incomes, as reflected in per capita GDP. Second, India's tax-to-GDP ratio is lower than what one might expect for its income levels. Third, while the link between tax revenues to GDP and per capita GDP is robust, there is still significant variation. This variation is attributed to various factors, including the efficiency of tax collection, the structure of the economy, and path dependence, among others. These factors suggest that while India has the potential to significantly increase its tax revenues over time, especially with rapid economic growth, the growth is not guaranteed.

³ In a subsequent study, B&D (2022b) estimated the impact on individual states and found large differences between them as different states have different energy consumption and energy source profiles.

It is not the focus of this work to look at these issues in detail. However, we can straightforwardly deduce that for India to ensure greater revenue collection that outpaces GDP growth, it requires broader tax coverage, improved efficiency in tax collection, tax rates aligned with the nature of the economy, and the ability to collect taxes.

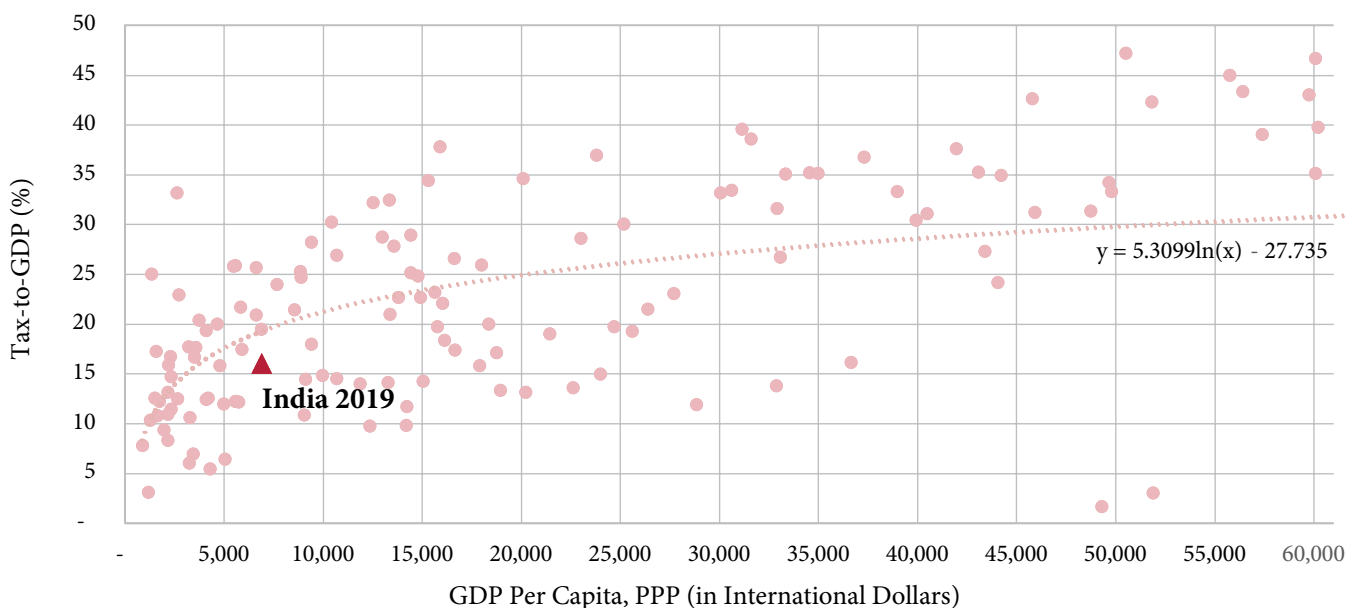
Figure 1 graphically represents the tax-to-GDP ratio in PPP terms for the year 2019. India's value for the year 2019 is denoted by a triangle. The graph indicates that India has a lower tax-to-GDP ratio than one might expect. However, it is also evident that as India's GDP grows, the tax-to-GDP ratio can be expected to increase. Historically, the tax-to-GDP ratio in India has increased. To illustrate this point, Figure 2 maps the tax-to-GDP ratio for direct, indirect, and total taxes for India, encompassing both Union and State tax revenues. The figure shows that India's aggregate tax revenues have been growing since independence, albeit not always in a smooth or linear fashion and have been stable between 16-18 per cent in the last 15 years.

Let's now consider the period from independence to 1990, which saw modest economic growth, interventionist indirect taxation policies, and high levels of direct taxation. High tax rates are known to contribute to tax evasion and avoidance. While

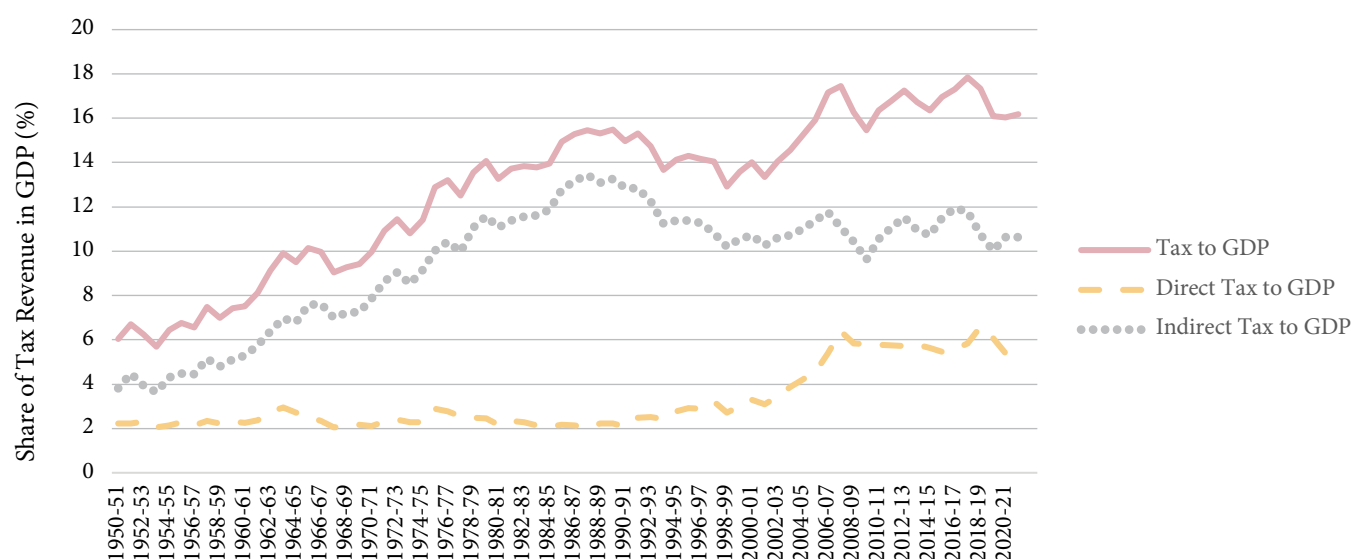
the proportion of direct taxes as a share of GDP remained relatively stable during the 40 years from 1950 to 1990, hovering between 2% to 3%, the share of indirect taxes rose from about 4% to more than 12% as a share of GDP. This shift also drove the aggregate Tax-to-GDP ratio to greater than 15%.

Next, let's consider the period from 1991 to 2008. The economic reforms during this period aimed to enhance efficiency and release resources for investment and growth. One of the intended outcomes was to improve efficiency, making the increased role of direct taxes a desirable result. The Chelliah Committee Report was submitted in 1992-93, and a sequence of direct tax reforms were subsequently introduced. These reforms included, among other things, (a) the rationalisation of tax rates, including a reduction in some, (b) fewer direct taxation slabs, and (c) an improved coverage of the TDS mechanism (Singh, 2019). In later years, customs tariffs and excise duties were reduced as a part of India's tax reform program. While this may have initially contributed to the decrease in overall tax revenue shares, the 2000s saw a significant increase in the proportion of direct taxes in total tax revenues. Since the aforementioned reforms preceded the surging economic growth rates in the 2000s, direct taxes as a share of GDP increased from a historically stable 2% to about 6% by 2008.

Figure 1: Tax Revenue to GDP and GDP Per Capita in 2019



Source: UNU-WIDER (2022) & World Bank (n.d.).

Figure 2: Share of Direct and Indirect Tax Revenue in GDP for General Government

Note: The share of tax revenue in GDP for 2022-23 is based on budget estimates and has been taken from the Economic Survey (2022-23).

Source: Ministry of Finance (2019, 2023) & RBI (2022).

After 2008, there has been a period of stagnation, extending into the early 2020s, with some fluctuations. The tax-to-GDP ratio is estimated at 17.6% in 2022-23. Stagnating growth has been identified as the primary cause of this medium-term trend (see, for instance, Rao (2016) and Singh (2019)). However, this remains one of the major unanswered questions, despite significant tax reforms, including the introduction of VAT, GST, digitization, etc. Nevertheless, it is evident that if we consider global experience, an increase in the aggregate tax-to-GDP ratio is plausible. As tax revenues from sources like fossil fuels decline, other measures will be required. The trends and fluctuations in the tax revenue-GDP ratio also shed light on the importance of tax policies, economic conditions, and structural reforms over time.

We can conclude the following from the discussion above. One, international and recent experience suggests that the tax-to-GDP ratio may increase; however, it is uncertain how this increase will play out in terms of its time path and quantum. Two, historical evidence suggests that there is a significant time gap between cause and effect; that is, reforms, whether structural or tax-related, take some time to manifest

in terms of tax revenue generation. Therefore, economic growth may not automatically lead to tax revenue growth, especially at a rate high enough to cover the loss of revenues from reduced usage of fossil fuels.

For illustrative purposes, let's conduct the following exercise. We estimated the trend growth rate of tax-to-GDP ratio for India and found that there may have been a stagnation in recent years, even though over a longer-term horizon, there has been an increase in the ratio. This is in line with global experience, as discussed above (Refer to Table 2). Our question is, for what time horizon would fossil fuel revenues be a significant part of the total revenue? We find that by 2040, fossil fuel tax revenues would be about 0.9% of the GDP, and fossil fuel non-tax revenues would be 0.1%. Under standard growth assumptions, the overall tax-to-GDP ratio is expected to be about 23% by 2040. In other words, after 2040, fossil fuel revenues are not likely to be a significant part of the total revenue, as the share of fossil fuels in the menu of energy sources would have also reduced. By 2070, fossil fuel revenues would be insignificant given India's net-zero commitments.

Table 2: Projection of Tax Revenues As % of GDP (2019-70)⁴

| Year | Total Tax Revenue | Non-Fossil Tax Revenues | Fossil Fuel Tax Revenue | Fossil Non-Tax Revenues |
|------|-------------------|-------------------------|-------------------------|-------------------------|
| | I=II+III | II | III | IV |
| 2019 | 16.1 | 13.2 | 2.9 | 0.3 |
| 2030 | 21.2 | 19.5 | 1.7 | 0.1 |
| 2040 | 23.0 | 22.1 | 0.9 | 0.1 |
| 2070 | 28.5 | 28.5 | 0.0 | 0.0 |

Source: Authors' Calculations for I and II, B&D (2022a) for III and IV. Tax revenues have been estimated by using the information in Figure 1.

To summarise this section, as fossil fuel use growth reduces over time, the bulk of the relative fall in fossil fuel revenues will occur between 2019 to 2030 and 2030 to 2040. However, without explicit action, natural growth in tax revenues may not be rapid or certain enough to compensate for this decline. Therefore, India faces two revenue challenges. First, in the long term, overall tax revenue growth is feasible but it will require proactive efforts. However, these efforts may take time to yield results, as international and national experience have shown. Second, during the intervening period between the fossil fuel transition and increased revenues through growth and reform, there will be a revenue gap.

The question concerning how effective carbon taxes can be to address the medium-term gap motivates the discussion below.

4. Taxation Alternatives

The previous sections provide three key elements for further discussion. First, the revenue challenge is more pronounced for the period spanning the next two decades, the period 2019-2040. Second, carbon taxes have a limited effective lifespan, and beyond a certain point, their ability to compensate for the fossil fuel revenue loss is limited. And finally, tax revenues rise over time with incomes and improved economic and taxation policies.

There has been significant discussion in the literature (see appendices) on potential avenues for increasing tax revenues. The topics include expanding the tax base, improving tax efficiency, rationalising tax rates,

reducing deductions, and more. These issues have been addressed for both for direct and indirect taxes. In addition, there is a growing momentum towards imposing greater user taxes, such as electricity duties and tax on distance travelled. This is a rich discussion with significant revenue generation possibilities in the long run. However, as the discussion in Appendix 5 and 6 reveals, these are all long-term and uncertain possibilities. There are other revenue generation possibilities as well, such as generating revenue from property taxes. However, these are under the purview of local governments, which we do not consider.

Table 3 provides a brief overview of the discussion therein as well as the following discussion. In broad terms, there are limited avenues for rapidly increasing revenues from direct taxes, and they are unlikely to yield the desired results. On the indirect taxes front, due to India's federal nature and related mechanisms, the rationalisation of rates and the inclusion of additional items do not appear likely either. However, we find that User Taxes, such as Electricity Duties and Distance Travelled tax, have some potential, but they come with numerous implementation challenges.⁵

In this context, carbon taxes can yield relatively high returns. However, they are not a long-term solution as the revenue from these taxes will reduce as fossil fuel dependence decreases. What seems to be a more significant issue is that unlike fuel taxes, which provide a high level of autonomy to State governments, carbon taxes typically do not. Therefore, obtaining buy-in from State governments would be a challenge *unless* special measures are undertaken to protect state government autonomy.

⁴ Appendix 4 discusses the method used to project tax revenues.

⁵ It is sometimes argued that a cess can be levied over the existing GST. However, there are limits to what amount can be generated from them, moreover, state government may not have the same level of autonomy as fuel taxes.

Table 3: Tax Revenue Options before India

| Taxation Heads | Potential Options Available | Significant Additional Revenue Generation | Long-Term Revenue Potential - Continuity | Institutional Change Required | State Autonomy over Additional Resources | Miscellaneous |
|------------------------|--|---|--|--------------------------------|--|--|
| Personal Income Tax | Increase tax rate at higher income levels | Low to moderate | Yes | No | Low | Revenues less sensitive to higher tax rates |
| Personal Income Tax | Reduce minimum thresh-hold | Low | Yes | No | Low | Generally believed to be costly to implement with little returns |
| Personal Income Tax | Include agricultural income | Moderate to high | Yes | Yes | Low | Constitutional amendment required |
| Corporate Income Tax | Increase tax rate | No | No | No | Low | Globally comparable rates currently, foreign investment sensitive to tax rates |
| Goods and Services Tax | Rate Rationalisation | Moderate | Yes | No | Low | Difficult to get a common agreement with the GST Council |
| Goods and Services Tax | Inclusion of more goods and services ex. electricity, liquor | Moderate to high | Yes | Yes | Low | Moving from state VAT/sales tax to GST reduces state autonomy |
| User Taxes | Distance Travelled Tax | High | Yes | Perhaps | Low | Monitor distance travelled by vehicles required. Central Gov only - No (Article 248 applies). Central + State Govs – Yes (Constitutional amendment) |
| User Taxes | Electricity Duties | High | Yes | Perhaps | High | State Govt only – No (Elect duties in the state list) Central + State gov – Yes (Constitutional amendment) |
| Carbon Tax | Single national carbon tax (all fuel taxes subsumed) | High | No* | Yes (Constitutional Amendment) | Low# | *Carbon taxes will eventually become negligible. #States will lose autonomy over fuel taxes. |

| Taxation Heads | Potential Options Available | Significant Additional Revenue Generation | Long-Term Revenue Potential - Continuity | Institutional Change Required | State Autonomy over Additional Resources | Miscellaneous |
|----------------|--|---|--|--------------------------------|--|--|
| Carbon Tax | Dual carbon tax - separate for centre and states (all fuel taxes subsumed) | High | No* | Yes (Constitutional Amendment) | High# | # States have autonomy, but a double taxation regime will be inefficient |
| Carbon Tax | Implemented by the centre under Article 248 (state-level fuel taxes continue) | High | No* | No | Moderate | States retain some autonomy as fuel taxes are retained, but a double taxation regime will be inefficient |
| Carbon Tax | Subsumed under GST (on the basis of emissions by fossil fuel users) | High | No | Not clear | Low | Emissions monitoring + mapping of emissions to notional output value required. |
| Carbon Tax | Subsumed under GST (on the basis of potential emissions of fossil fuel seller) | High | No | Not clear | Low | Mechanism to monitor and map potential emissions to tax rate |

Source: Authors Representation.

Consider four aspects to evaluate potential tax revenues:

1. The likely capacity to generate significant revenues in the future (revenue potential).
2. Whether the potential for tax revenue generation is of a long-term nature (labelled for our purposes as 'continuity').
3. Whether a significant institutional change would be required, such as a constitutional amendment.
4. Whether potential taxation solutions provide the flexibility and control to the State governments of generating funds (state autonomy).

Each of these are important for different reasons. Some possible options may not provide significant enough revenues to cover the gap caused by the reduced share of fossil fuels. It is essential to determine whether these revenues can increase in the long term for tax sustainability. Deep institutional changes, such as constitutional amendments or requiring broad consensus, are difficult and time-consuming (For instance, the implementation and conceptualisation of GST took a decade and a half).⁶ As discussed in Appendix 5, India's ongoing concern is the need to reduce its reliance on indirect taxes due to the consistency of the direct tax-to-GDP ratio. Finally, state autonomy will be an important criterion to consider in achieving a timely consensus and response to the revenue challenge facing India.

⁶ Transfer mechanisms between the union and the states are discussed in Appendix 7.

4.1 A New Mechanism for Emission or Carbon Taxes

One possible approach to increase revenue is implementing an emissions-based tax on polluting sectors. The tax increases the production costs of undesirable by-products (pollution, carbon dioxide emissions, etc.) and therefore can accelerate the shift towards greener technologies. Therefore, the primary objective of such taxes is not revenue generation but correcting negative externalities. If successful in enabling the shift towards greener technologies, they are aimed at generating *fewer* revenues over time. Pollution/emission-based taxes can be imposed on specific sectors or the entire economy. They can target carbon emissions and/or other emissions or effluents as well. Moreover, like any tax, these taxes increase costs for businesses, reduce output, and have a consequent negative impact on growth. Therefore, without a serious impact on output and growth, the feasibility of taxation is limited (Verma, 2021; Bohringer et al., 2018).

The discussion in this section focuses on the question of how well carbon taxes revenues could help cover the fossil fuel tax revenues gap. The Union and State governments tax different fossil fuels under distinct laws and constitutional arrangements.⁷ Carbon taxes can potentially take many forms, but the key underlying factor is that these taxes are quantified

on the basis of harmful emissions. Therefore, carbon taxes (as well as other similar pollution-related taxes) require appropriate monitoring of emissions.⁸ Currently, India taxes both coal and petroleum differently. However, these taxes cannot be labelled as carbon taxes because their taxation criteria are not based on emissions. We will discuss this in greater detail later. The discussion in the following section presupposes that a carbon tax is imposed separately from the GST. The possibility of imposing GST on GHG-generating activities will be discussed in a later section on GST.

Revenue Generation

Consider the three key fossil fuels: Coal, Oil and Natural Gas. IEA (2021) estimated the use of these fuels under various scenarios and reported their CO₂ emissions. Table 4 shows that the growth rates of the consumption of various fossil fuels decline over the periods of 2019-2030 to 2030-2040. Beyond 2040 to 2070, however, there will be a decline in total consumption, implying negative growth. We haven't identified the exact period for this potential decline in total consumption, as Table 4 focuses on the next two decades. To reiterate, we recognise that by 2070, consumption will eventually become insignificant, but that horizon is not pertinent for this analysis.

Table 4: Growth of Fossil Fuels and CO₂ Emissions from 2019-40

| Fossil Fuel | Primary Demand (PJ) | | | CO ₂ Emissions (Mt) | | | Annualised Growth Rates of Primary Demand | |
|-------------|---------------------|--------|--------|--------------------------------|-------|-------|---|---------|
| | 2019 | 2030 | 2040 | 2019 | 2030 | 2040 | 2019-30 | 2030-40 |
| Coal | 17,292 | 20,851 | 22,652 | 1,622 | 1,951 | 2,108 | 1.87% | 0.86% |
| Oil | 10,133 | 14,026 | 17,209 | 612 | 842 | 1,030 | 3.49% | 2.27% |
| Natural Gas | 2,303 | 4,731 | 7,244 | 84 | 156 | 220 | 9.59% | 5.31% |

Source: IEA (2021) & Authors' Calculations.

⁷ Union levies excise duty and CGST on fossil fuels. Excise consists of cess, special additional excise duty and road and infrastructure cess which depends on the type of fuel. While the States charge varying rates, they largely generate their revenues from VAT. The other revenue sources are SGST/IGST, Octroi, duties, entry tax etc. For a detailed description, please refer to the appendix 2 or/and B&D (2022a and 2022b).

⁸ Arguably, we could also envisage carbon taxes as based on output if credible emission-to-output parameters are monitored and updated regularly.

Table 5: Carbon Tax Rate

| Scenarios | 2019 | 2030 | 2040 |
|---|-------|-------|-------|
| <u>Case 1</u> – Revenue gap if fossil fuels taxes are replaced by carbon tax (% of GDP) | 3.2 | 3.2 | 3.2 |
| CTR – Rs. per tonne of CO ₂ | 2,793 | 4,029 | 5,633 |
| In current USD | 34.1 | 49.1 | 68.7 |
| <u>Case 2</u> – Revenue gap if carbon tax is on top of current fossil taxes (% of GDP) | – | 1.5 | 2.2 |
| CTR – Rs per tonne of CO ₂ | – | 2,053 | 4,046 |
| In current USD | – | 25.0 | 49.3 |

Note: The Carbon Tax Revenues (CTR) are in real terms assuming a 5% inflation rate from 2019.

Source: IEA (2021) & Authors' Calculations.

Using these figures and the corresponding carbon emissions for each fuel, we can estimate potential revenues from carbon taxes under different emission-based tax rate assumptions. Table 5 shows the revenue target for each of the years. In Case 1, all fuel taxes currently imposed on fuels are removed and replaced with a carbon tax on CO₂ and GHGs, respectively. In Case 2, current fuel taxes are retained, and carbon taxes are imposed on top of them.

We find that in Case 1, where fuel taxes are replaced by carbon taxes, a tax rate of Rs. 2,793 per tonne of CO₂ needed to be levied in 2019 to cover the revenue gap. Over time, this rate will grow and reach Rs. 5,633 (in real terms) by 2040 to match the decline in fossil fuel revenue share. In Case 2, where existing fuel taxes are not removed, and carbon taxes are imposed on top of them, the initial tax rates would be lower. However, they would become significant by 2030 and subsequently, rising from Rs 0 to 2,053 per tonne of CO₂ from 2019 to 2030 to Rs 4,046 by 2040.

As discussed earlier, beyond 2040, carbon tax revenues will start to decline due to the reduced use of fossil fuels. However, this paper doesn't estimate when that will occur, as it would require us to make assumptions about the time path and divert from the main objective of this story: to better understand the various fiscal possibilities for India. Nevertheless, it is clear that carbon taxes can be a significant revenue source, but their rates will need to rise significantly to bridge the expected revenue gap.

It's important to note that carbon taxes will need to be consistently increased over time, not only to increase the incentive to shift to greener technologies but also from a revenue equalisation perspective. Another

significant aspect is that these taxes will involve much higher taxation of coal and a much lower taxation of petroleum and natural gas compared to the current situation in India.

In other words, depending on their imposition, carbon taxes may result in *reduced* tax revenues from petroleum products in India, and increased taxes and subsequent revenues from coal (see Table 6). Column V shows that in Case 1, where carbon taxes are imposed and all other fuel taxes removed, overall revenues for oil and natural gas would have fallen from 5.5 lakh to 1.9 lakh crore in 2019, while that for coal would have risen from 0.9 lakh crore to 4.5 lakh crore. By 2030, this difference narrows as petroleum consumption would have risen. Column VI shows the case for when carbon taxes are imposed on top of the existing the fuel taxes, where the difference between coal and petroleum is less for the year 2030 but still substantial.

Continuity and Constitutionality

Currently, there is no legal mandate for a comprehensive or partial carbon taxation regime. However, Article 248 of the Constitution of India allows the Union government to impose taxes on any item not mentioned in the state or the concurrent list. Therefore, the Union government could impose a carbon emissions tax, but it does not enable it to stop State governments from taxing fuels.

There are two potential alternatives for implementing a tax on carbon emissions in India. The first option is to mandate the removal of all fuel taxes and empower both the Union and the State governments to levy a carbon tax, which could be economy-wide or to

Table 6: Estimation of Carbon Tax Revenue

| Fossil Fuel | Quantity (PJ) | Emissions (Mt CO ₂ Emissions) | Current Tax Revenues (Rs. Crores) | Carbon Tax Revenue – In Rs. Crores and as Share of GDP (%) | |
|------------------------|---------------|--|---|---|--------------------|
| | | | | Case 1 | Case 2 |
| I | II | III | IV | V | VI |
| 2019 | | | | | |
| Coal | 17,292 | 1,622 | 91,935 (0.5%) | 4,53,057 (2.2%) | – |
| Oil and Natural Gas | 12,435 | 696 | 5,55,528 (2.7%) | 1,94,406 (1.0%) | – |
| 2030 | | | | | |
| Coal | 20,851 | 1,951 | 63,959 (0.2%) | 7,86,009 (2.1%) | 4,00,618 (1.1%) |
| Oil and Natural Gas | 18,758 | 998 | 5,18,572 (1.4%) | 4,02,069 (1.1%) | 2,04,929 (0.5%) |
| 2040 | | | | | |
| Coal | 22,652 | 2,108 | 29,861 (0.1%) | 11,87,596 (2.0%) | 8,52,939 (1.4%) |
| Oil and Natural Gas | 24,452 | 1,250 | 5,33,234 (0.9%) | 7,04,220 (1.2%) | 5,05,775 (0.9%) |

Note: The tax revenues are in real terms, assuming a 5% inflation rate from 2019. The numbers in parentheses represent corresponding tax revenues as a proportion of GDP at 2019 prices.

Source: IEA (2021) for Columns II and III, B&D (2022a) for Column IV & Authors' Calculations for Columns V and VI.

specific sectors or items. This would require introducing a Constitutional (Amendment) Bill in both houses of the Parliament and obtaining ratification from at least half of the state legislatures. After the amendment, new legislation for the tax would need to be drafted and passed by the Union and each of the states. While this may be more acceptable to the States, it could lead to another source of inter-state differences that the introduction of GST sought to undo.

The second possibility is that only the Union government can levy a tax. It can utilise the Article 248 of the Constitution for framing a new legislation for the proposed tax on polluting sectors. The latter option can empower the Union government to unilaterally impose the tax, in addition to the fuel taxes that are already in place at the Union and state government levels. Both these possibilities, whether a constitutional amendment or the utilisation of the Article 248, would no doubt be a significant break from past practices.

Sharing, Flexibility and Autonomy

In the case of empowering both Union and State governments to levy a tax through a constitutional amendment, we must consider two alternatives. The Union and State governments can levy carbon taxes separately, similar to how states have their respective VATs on petroleum products, along with excise duty levied by the Union. Each government can independently set its own tax rates and collect revenue from carbon taxes. This approach ensures complete autonomy for the States to determine the tax rates and utilise the generated revenue as per their specific needs and priorities. This could result in significant variations in carbon tax rates among different states. Alternatively, the carbon tax could be included within the ambit of Goods and Services Tax (GST), an option we will discuss later.

Finally, the Union government may use its fiscal powers, as defined by Article 248, to unilaterally levy a carbon tax. In this route, only the Union government will have the authority to levy the carbon tax. The revenue generated from this tax would go into

the divisible pool through which the funds may be allocated to the Union and State governments based on the tax devolution formula recommended by the Finance Commission (refer to Appendix 7). In this case, the Union government would have absolute control over the tax rate and its base. However, fuel taxes at the state level will continue, and therefore it would reduce state autonomy but not eliminate it.

4.2 GST and Carbon Taxes

There are many forms of indirect taxes, including excise duties imposed and collected by the Union government, VAT collected by State governments, and taxes on specific products and activities such as intoxicants, among others. Some of these taxes persist for certain items despite the co-existence of GST for most goods and services. Additionally, the Union government imposes and collects import tariffs. Among the indirect taxes, excise duties, VAT, import tariffs, and GST constitute the major components.

At present, crude oil and petroleum products such as diesel, petrol, aviation turbine fuel, and natural gas are not subject to GST. Instead, the Union government levies excise duty, while the states impose VAT on these items. Petroleum-related products significantly contribute to state government revenues, as discussed in Section two. For example, Mukherjee (2020) found that between 2010 and 2017, the petroleum sector accounted for an average of 45% of the total Union taxes collected. During the same period, an average of 26% of the state taxes collected from sales tax or VAT was attributed to the petroleum sector.

In the discussions between the Union government and the States that preceded the levying of GST, they had achieved the consensus that taxes on petroleum and alcohol for human consumption were left out of the GST fold, among other things. States may not have been willing to include these for fear of losing independent authority and autonomy over these revenue collections, as well as uncertainty over the adequacy and continuity of compensation mechanisms (see Dutta, 2020).

On the surface, the GST is not a carbon tax. However, since it is already well implemented, we examine how and whether the current GST mechanism can be adjusted to include some form of carbon taxes. We consider two possibilities, using coal as an example. Carbon taxes are imposed on emissions and are not levied on inputs, outputs, or the technology utilised. The GST, however, is levied on an ad

valorem basis. For instance, the GST on coal is currently imposed at the rate of 5% of the sale value of coal. Therefore, the current GST cannot be classified as a carbon tax and would need to be feasibly altered if possible. The first case involves levying a charge on the coal producer, while the second involves levying a charge on the coal user.

Consider the first case where the coal seller is taxed on its potential emissions (Case A). Since coal is predominantly used in thermal power plants and industrial furnaces, we can estimate the average emissions per unit of coal used. The GST rate on coal paid by the coal producer can be made proportional to the per-unit emissions of the users. Applying this principle, we estimate that the current GST on coal can be equated with Rs. 1,392 per tonne of coal for it to be equivalent to a carbon tax of USD 25 per tonne of CO₂. In this scheme, some authority would need to regularly monitor users' emissions and impose a GST rate on the seller based on the users' emission parameters. Moreover, in this scheme, the GST would be a tax on a bundled product: the sales value of coal plus the value of the potential harm caused by its buyer.

However, please note that the above is not an ad valorem tax, and therefore, does not fit well in the GST scheme. Furthermore, it would require a high degree of credibility to frequently monitor and update the tax rates. Finally, the GST mechanism is not designed to support rapidly varying rates, so it is not clear how and whether this can be implemented.

Next, let's consider the case where a charge is levied on the coal user for its emissions (Case B), such as in a thermal power plant. Since GST is an ad valorem tax, it is imposed on the output value. Carbon emissions are a form of output, albeit a 'bad' and not a 'good.' This type of carbon-tax regime under the GST scheme would; therefore, need to take a form where the tax is imposed on a notional value that is either proportional to the emissions or inversely proportional to the amount of 'bad' being caused by the emissions. That is, the carbon tax revenue, C_t , is the function of a tax rate, k , imposed on the notional value $n(\cdot)$, levied on the CO₂ or GHG emission (e), or $C_t = k \cdot n(e)$. In this scheme, the greater the emission, the greater the notional value and greater the C_t paid, though the rate k may remain the same. Since it is based on a regular and firm-specific monitoring process, the notional value may differ across firms and over time. Therefore, an authority will have to be assigned the responsibility with built-in accountability for high-quality monitoring and valuation capacities.

In this case, as well, the system would rely on high-quality monitoring. A standardised mechanism where, for instance, specific technology and inputs are mapped against different notional values may work. Moreover, in this case as well, the GST would be a tax on a bundled product; in the case of a thermal power plant, it would be based on the value of electricity produced plus the notional value of emissions. However, it is not clear whether a GST based on a notional value is feasible within the current legal framework.

In other words, while it may be feasible, conceptually, to incorporate a carbon tax mechanism under the current GST, there will be significant implementation and institutional challenges that will need to be overcome. Moreover, as earlier discussion shows, an efficient carbon tax regime will tend to reduce state autonomy over fossil fuel revenues unless other corrective mechanisms are designed.

5. Way Forward

In any tax reform, it is evident that the Union and State governments will need to arrive at a common agreement on design, implementation, and sharing. Such a consensus would be easier to achieve if the instrument under consideration is (a) placed under a currently operational mechanism such as the FC or GST council, or (b) centralised under the Union government with a good compensation scheme built in for States with a greater dependence on fossil fuels.

This study has examined the dynamics of tax revenues and fiscal implications of energy transition in the context of the advancement of developing economies towards developed status. The analysis of tax revenue-GDP ratios has highlighted the potential for higher ratios for developing economies as they transition towards development. The role of non-conventional taxes such as carbon tax has shed light on alternative revenue sources that can reduce India's reliance on fossil fuel taxes. A carbon tax is a potential source of revenue generation that can either be levied on the CO₂ emissions under two distinct scenarios: over and above the existing taxation on fossils, or by removing these existing taxes; however, there will be significant implementation and political-economic challenges.

The implementation and institutional challenges associated with both conventional (existing taxes such as personal income tax, corporate income taxes and GST) and non-conventional taxes emphasised the need for institutional changes to effectively raise

revenues through these sources in the long run. India needs to develop a comprehensive revenue strategy for the immediate future. This strategy should consider the unique context of India and focus on enhancing revenue collection through measures such as expanding the tax base, increasing tax rates, and introducing new taxes while also incorporating the key objectives of equity sustainability and growth. Furthermore, strengthening tax administration systems, enhancing taxpayer compliance, and establishing effective governance mechanisms are crucial steps in ensuring the successful adoption and execution of these fiscal measures. Overall, the transition from developing to developed status requires a strategic and proactive approach to revenue generation. By embracing alternative revenue sources, addressing institutional challenges, and adopting innovative fiscal policies, India can navigate the challenges posed by declining fossil fuel revenues, and establish a sustainable and resilient fiscal framework for long-term growth and development.

However, there will be significant implementation, institutional, and political economic challenges given state autonomy considerations. Since the bulk of the fall in fossil revenue shares is frontloaded (over the next two decades), it is imperative that additional revenue generation options be identified and implemented urgently. Further work needs to focus on some such possibilities that include the analysis of dearth of property tax revenues, whether electricity duties can become the main component of government revenues from energy etc. Other smaller revenue potential items but important revenue sources, nevertheless, include vehicle registration, parking fees etc.

Another possibility are taxes based on the distance travelled, the rate for this can be varied depending upon the type of vehicle (and its emissions and/or energy efficiency). Here, as well, a mechanism for monitoring would be required. Therefore, fossil fuel-based vehicles could be taxed at a significantly higher rate than other. The greatest advantage of this mechanism is that it would be technology agnostic and therefore revenue need not reduce as fossil fuel use goes down.

This paper focused on various possibilities related to carbon taxes, which were found to be fairly challenging for India to implement smoothly and in a short span of time. However, some possibilities exist though it is unclear whether that would be most feasible and effective options. Another possible source of revenues is that of a cap-and-trade mechanism for

GHG/carbon emissions, as is the case with carbon taxes these would be difficult to implement given the lack of emission monitoring capacity and nascent emission trading mechanisms. But if we focus on the larger emitters initially, it may be a more feasible option to implement.

While this study has looked at many options, needless to say, further work is required on the above.

Finally, further study is required to better understand the revenue, equity, environmental, and efficiency implications of the range of possible solutions available to India. A comparison of the efficacy of carbon pricing approaches to that of subsidising renewables is also an important area for further research. In addition, the experiences of the countries that have effectively designed carbon taxes within their exist-

ing structures of VAT can provide pragmatic ways of designing these taxes for India. This requires careful examination. The possibility of utilising these revenues to lower the tax rates from other distortionary taxes such as CIT, PIT, and indirect taxes is yet another possibility that needs to be explored. Since it creates an additional burden on the exchequer, curbing expenditures on non-merit goods also requires a closer examination. We propose to undertake further study on some of these issues in future work. More specifically, what could be the possible path for India, which would depend on how each option measures against the multidimensional objectives of equity, employment, growth, and emissions reduction. Without a better understanding of these aspects, it would be difficult to ascertain what the superior taxation options are for India.

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Appendices

Appendix 1: IEA and BP Estimates of Energy Forecast for India

| Year | IEA (in PJ) | | | BP (in PJ) | | |
|------|-------------|--------|-------------|------------|--------|-------------|
| | Coal | Oil | Natural Gas | Coal | Oil | Natural Gas |
| 2019 | 17,292 | 10,133 | 2,303 | 19,000 | 10,000 | 2,100 |
| 2030 | 20,851 | 14,026 | 4,731 | 22,605 | 11,815 | 3,654 |
| 2040 | 22,652 | 17,209 | 7,244 | 26,471 | 13,749 | 6,045 |
| 2050 | 25,759 | 22,147 | 12,502 | 31,000 | 16,000 | 10,000 |

Source: IEA (2021); BP (2023).

Note: The International Energy Agency (IEA) provides estimates for energy forecasts up to 2040, while BP's estimates are available only for 2050. To enable a comparison between the energy forecasts of these two organisations, we employed a methodology. We calculated the compound annual growth rate (CAGR) using the base year of 2019 and the latest available year from each dataset. This CAGR represents the average annual growth rate during the specified period. Utilising this calculated CAGR, we extrapolated the energy forecast for the missing year(s) beyond the available estimates. This approach allowed us to estimate the energy projections for the respective year(s), facilitating a comprehensive comparison of the energy forecasts between the two entities.

Appendix 2: List of Taxes on Fossil Fuels in India

| Fossil Fuel | Tax | Imposed by |
|---------------------|-----------------------|------------|
| Oil and Natural Gas | Cess on Crude Oil | Union |
| | Customs Duty | Union |
| | Excise Duty | Union |
| | GST | Union |
| | Corporate Income Tax | Union |
| | Sales Tax/VAT on POL | State |
| Coal | Stowing Excise Duty | Union |
| | Clean Energy Cess | Union |
| | Excise Duty | Union |
| | Basic Custom Duty | Union |
| | Countervailing Duty | Union |
| | Central Sales Tax | Union |
| | GST Compensation Cess | Union |
| | Corporate Tax | Union |
| | VAT | State |
| | Entry Tax | State |
| | State Cess on Coal | State |

Source: B&D (2022a) & Authors' Elaboration.

Appendix 3: Fossil Fuel Revenue for States

| State | Fossil fuel revenue as a percentage of OR | | | Fossil fuel revenue as a percentage of GSDP | | |
|-------------------|---|-------|------|---|------|------|
| | 2019 | 2030 | 2040 | 2019 | 2030 | 2040 |
| Andhra Pradesh | 16.99 | 2.9 | 1.31 | 1.06 | 0.29 | 0.13 |
| Arunachal Pradesh | 1.25 | 7.06 | 3.19 | 0.09 | 0.45 | 0.2 |
| Assam | 13.01 | 11.6 | 5.83 | 1.24 | 0.81 | 0.41 |
| Bihar | 16.41 | 2.19 | 1.07 | 1.07 | 0.15 | 0.07 |
| Chhattisgarh | 22.14 | 9.69 | 4.51 | 2.2 | 0.94 | 0.43 |
| Delhi | 9.63 | 3.71 | 1.8 | 0.47 | 0.2 | 0.1 |
| Goa | 8.95 | 7.55 | 5.07 | 1.02 | 0.91 | 0.61 |
| Gujarat | 15.05 | 13.62 | 5.88 | 1.05 | 0.98 | 0.42 |
| Haryana | 14.37 | 4.64 | 2.02 | 1.07 | 0.35 | 0.15 |
| Himachal Pradesh | 4.28 | 6.22 | 3.31 | 0.27 | 0.45 | 0.24 |
| Jharkhand | 23.15 | 8.85 | 4.03 | 2.36 | 0.69 | 0.32 |
| Karnataka | 14.32 | 3.33 | 1.41 | 0.96 | 0.25 | 0.11 |
| Kerala | 11.95 | 3.72 | 1.87 | 0.96 | 0.31 | 0.15 |
| Madhya Pradesh | 22.35 | 3.97 | 1.36 | 1.56 | 0.34 | 0.12 |
| Maharashtra | 13.69 | 16.67 | 9.02 | 1.05 | 1.24 | 0.67 |
| Manipur | 13.76 | 16.93 | 7.95 | 0.61 | 0.72 | 0.34 |
| Meghalaya | 0.01 | 19.94 | 14.5 | 0 | 1.32 | 0.96 |
| Mizoram | 8.92 | 4.89 | 1.49 | 0.37 | 0.23 | 0.07 |
| Nagaland | 8.87 | 13.47 | 6.47 | 0.39 | 0.55 | 0.26 |
| Odisha | 17.98 | 5.15 | 2.14 | 1.58 | 0.45 | 0.19 |
| Puducherry | 0.12 | 1.86 | 0.97 | 0.02 | 0.24 | 0.12 |
| Punjab | 13.61 | 8.04 | 4.86 | 1.05 | 0.63 | 0.38 |
| Rajasthan | 15 | 7.18 | 3.71 | 1.35 | 0.6 | 0.31 |
| Sikkim | 7.53 | 2.42 | 0.98 | 0.42 | 0.17 | 0.07 |
| Tamil Nadu | 14.29 | 3.9 | 1.91 | 1.07 | 0.31 | 0.15 |
| Telangana | 14.38 | 3.88 | 1.59 | 1.26 | 0.33 | 0.14 |
| Tripura | 16.05 | 8.41 | 3.22 | 0.72 | 0.4 | 0.15 |
| Uttar Pradesh | 12.68 | 9.76 | 4.9 | 1.27 | 0.9 | 0.45 |
| Uttarakhand | 8.63 | 6.02 | 3.28 | 0.59 | 0.37 | 0.2 |
| West Bengal | 14.4 | 2.76 | 1.34 | 0.83 | 0.16 | 0.08 |

Source: B&D (2022b).

Appendix 4: Projection of Tax Revenues

We conducted a trend analysis to develop an equation that can predict the tax-to-GDP ratio based on GDP per capita using the data available from 2019, including the tax-to-GDP ratio and GDP per capita of various countries. By examining the relationship between these two variables, we derived an equation that enables us to forecast the tax-to-GDP ratio when provided with the GDP per capita figure (see Figure 1). To project the future tax-to-GDP ratio for India, we made specific assumptions. Firstly, we assumed a real growth rate of 3.5% for India's GDP per capita. Based on this assumption, we generated forecasts for India's GDP per capita figures in 2030, 2040, and 2070. Using the equation derived from the trend analysis and the projected GDP per capita figures, we then estimated the tax-to-GDP ratio for these future years for India.

Appendix 5: Direct Taxes

Developed countries tend to exhibit a high direct tax-to-GDP ratio, with greater incomes, mostly formalised economies, and a greater ability of the state to administer direct taxes. Many idiosyncratic country-level factors contribute to the variation between countries. In India, there has been an increase in direct tax revenues as a share of GDP. After a stagnation through much of the 1900s, about 5.5% to 6% of the GDP was collected as direct taxes in recent years as per the latest figures. For both the two key components of direct taxes—corporate and personal income taxes—there are natural limits to the rates that can be imposed if effectiveness is to be maintained. Therefore, the focus will need to be on expanding the base. This section looks at some of these issues, as well as those of continuity and autonomy.

A. Revenues Generation - Personal Income Tax

There is a positive relationship between the share of Personal Income Tax (PIT) in total tax revenues and a country's GDP per capita (see OECD (2018, 2022) for instance). But that is the result of both the rate

and coverage. Table 7 displays the tax threshold levels for various countries at purchasing power parity (PPP) terms, along with their corresponding range of tax rates and per capita gross national income. The data reveals that India's threshold level of the personal income tax rate is similar to major developing nations, such as Brazil and Indonesia.

One route to raise revenue from the personal income tax is to increase the tax rates for the highest income bracket (Tanzi and Zee, 2001; Singh, 2019; Christensen et al., 2023), which has the advantage of being more notionally equitable and therefore politically feasible. However, inordinately high tax rates are also susceptible to widespread tax evasion, as was the case in India during the pre-1991 era.⁹ An alternative to raising revenue is to reduce the minimum threshold level, thereby broadening the tax base. However, lowering the minimum threshold level of personal income tax is unlikely to have a significant impact on tax revenue (Hope and Limberg, 2022). In the long term, however, this approach is likely to further instil and improve tax-paying behaviour and bring more individuals under the tax bracket, leading to better compliance and tax base expansion. Since the threshold affects a relatively small portion of the total income, the potential increase in revenue from including more individuals in the tax net may be limited.

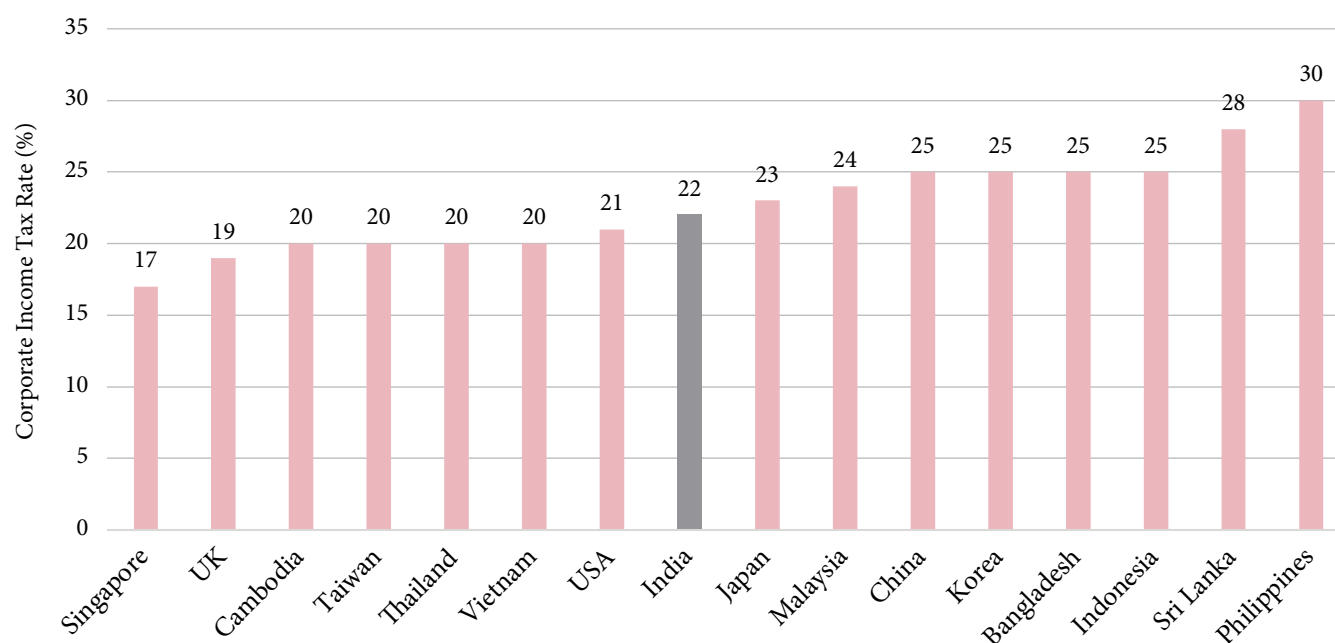
Tax revenues could also be increased by broadening the tax base, including previously exempted categories of income, such as agricultural income, in the tax slab (Chelliah and Rao, 2002; Bagchi et al., 2005). However, this may not be politically feasible, as was also reflected in the recent farmers' protests against the new agricultural laws (Li and Roy, 2021; Sriram, 2021). Moreover, tracking agricultural income can be challenging, as it is often difficult to determine the true value of crops and livestock, which could undermine the effectiveness of such inclusions in the tax system. The administrative capacity for implementing such a policy is also limited, especially in developing countries like India, where the economy is predominantly informal and unorganised.

⁹ Evasion routes include underreporting or manipulating deductions to reduce tax burden (Datt et al., 2022)

Table 7: Personal Income Tax Comparison Across Countries (2019)

| Country | Minimum tax rate (%) | Maximum tax rate (%) | Minimum threshold level (\$ PPP) | Per capita Gross National Income (GNI) (\$ PPP) in 2019 |
|--------------|----------------------|----------------------|----------------------------------|---|
| China | 3 | 45 | 12,000 | 16,740 |
| Brazil | 7.5 | 27.5 | 10,139 | 14,850 |
| South Africa | 18 | 45 | 12,418 | 12,630 |
| Indonesia | 5 | 30 | 12,886 | 11,930 |
| Sri Lanka | 4 | 24 | 9,931 | 13,230 |
| India | 5 | 30 | 11,788 | 6,960 |
| Zambia | 25 | 37.5 | 8,621 | 3,580 |

Source: FC-XV (2020).

Figure 3: Comparison of Corporate Income Tax Base Rates across Countries in 2019

Source: Adapted from Business Today (2019).

B. Revenue Generation - Corporate Income Tax (CIT)

The reduction of India's corporate tax rate brought it in line with the rates of emerging and advanced countries, aligning it with global standards (refer to Figure 3). This adjustment aimed to ensure that India

remains competitive in attracting investments compared to other emerging market economies. Therefore, increasing the corporate tax rate may not be a feasible option for India, given its potential adverse effects on investments and growth (Chakraborty, 2019).¹⁰

¹⁰ The government has slashed the corporate income tax rate from 30% to 22% for all companies in 2019. The effective corporate tax rate, inclusive of cess and surcharges, came down to 25.17%. Newer companies, which are set up after October 1, 2019, are subjected to an even lower effective tax rate of 17%. (PIB, 2019b)

Broadening the tax base or reducing exemptions, improving the tax administration, and simplifying the tax system are other possible routes to increase revenue. A large part of the Indian economy continues to operate in the informal sector. Greater formalisation can, to some extent, enhance the ability to collect more revenues. However, despite many reforms, including enhanced digitalization of payments and tax administration, the informal sector remains a significant part of the economy and is arguably unlikely to change dramatically in the next few years.

Eliminating incentives that allow for ambiguous interpretations and evasion is another necessity. It is commonly believed that it is crucial to swiftly extend the provisions related to Tax Deducted at Source (TDS) and Tax Collected at Source (TCS). These tools will help capture more transactions and types of income (FC-XV, 2020). This will create an audit trail that serves as a deterrent to tax evasion. It is also commonly believed that the introduction of GST (discussed in later sections) made it more difficult to evade direct taxes because it compelled firms to regularly share details of their transactions with the tax authorities.

The 15th Finance Commission also addressed these issues and argued in favour of maintaining current threshold limits, as they provide stability in the tax regime, enhance predictability, and enable better tax planning for taxpayers. Furthermore, the efficiency of the income tax department, which includes compliance risk management (CRM) practices, the use of third-party data, digitalization of services, service orientation, public accountability, etc., is closely linked to tax collection (Chang et al., 2020). Significant ongoing changes related to digitization are currently underway in India, with the transformation of various tax-related processes and services (see Bhasin, 2022).

C. Continuity and Constitutionality

i. Personal Income Tax

The taxation of agricultural income falls within the jurisdiction of the State governments, as specified in Entry 46 of List II in the Seventh Schedule of the Constitution of India. To incorporate agricultural income taxation under the personal income tax regime would require a constitutional amendment. It is hard to foresee how this would be feasible in the near future, given India's federal structure and politi-

cal-economic realities. However, that does not negate its importance.

ii. Corporate Income Tax

There is little in the underlying institutional structure that prevents a change in corporate income taxes, except for those related to agriculture and associated incomes. Corporate income tax falls solely within the domain of the Union government, and the constraints are not related to tax rates, various exemptions, or the taxation of the informal sector. Instead, the limitations stem from the inability to monitor informal transactions and the prevailing political-economic conditions in the country.

D. Sharing, Flexibility and Autonomy

As discussed before, revenues from direct taxes are allocated between the Union government and the States, and among the States, by the Finance Commission of India (FC). The FC is a constitutionally mandated independent body designed to ensure that revenues are impartially allocated in an unbiased and credible manner (see Box 1). It provides specific recommendations on how to allocate these revenues, which become a part of the divisible pool. States are highly reliant on transfers through these mechanisms, which have both conditional and unconditional components. It has been argued that conditional transfers from the Union government are in the form of matching grants, and those from the FC are Specific Purpose Grants (subject to state governments meeting some criteria). These also restrict state autonomy over their own actions.

Another aspect of FC allocation that needs to be flagged is that the FC's allocations are based on a formula that includes a set of measurable variables, such as population, area, fiscal efforts by the state, income levels, etc., which will be described in greater detail later. The advantage of this mechanism is that it leads to a systematic and observable method of allocation that cannot be questioned regarding its intent.

Within the context of compensating for the loss of fossil fuel revenues, the allocations between states based on the above method will not match the fossil fuel revenue loss. In this sense, some States may face a shortfall. To address this issue, the FC will need to additional special allocations to offset the discrepancy. While not impossible, this challenge should be acknowledged from the outset.

Box 1: Finance Commission and Energy Transition

In India, the Union government is responsible for national taxes, redistributive measures, money supply, and borrowing funds, while sub-national governments are better equipped to provide local services. This creates vertical fiscal imbalances. Additionally, there is a horizontal imbalance due to variations in revenue generation and expenditure capacity among states. To address these imbalances, Finance Commissions (FCs) have been established to facilitate fund transfers. The FCs have ensured stability in the fiscal framework by consistently distributing revenue and expenditure between the Union and the State governments. While the FCs primarily focus on tax revenue devolution and grants-in-aid, their role can potentially expand to address imbalances resulting from the energy transition.

In the case of the energy transition, vertical imbalances arise as the States heavily reliant on fossil fuels face adverse effects. This further creates horizontal imbalances between the states which do not rely on primary energy extraction/filtration and those whose economies rely heavily on these activities. For example, Jharkhand's economy significantly relies on coal production, with 10% of its gross state domestic product coming from coal mining itself (Spencer et al., 2018). To mitigate these imbalances, future finance commissions can consider **incorporating a just transition parameter into the tax devolution formula**, thereby reducing vertical imbalances. This, at best, would only partially address the issue, as other factors would still be at play.

Another approach involves the use of specific purpose grants. These grants would offer targeted financial assistance to states heavily impacted by the transition. Instead of relying on the traditional tax devolution formula, specific purpose grants can be tailored to address the unique circumstances and needs of states facing increased vertical and horizontal inequities due to their historical dependence on fossil fuels. By directing funds through these grants, the Union government can directly support initiatives and projects related to the energy transition in affected states. This approach provides greater flexibility in the utilisation of funds and enables states to undertake measures to mitigate the adverse impacts of the transition. Furthermore, specific purpose grants can ensure that the financial assistance aligns with the specific objectives and priorities of the energy transition, such as investments in renewable energy infrastructure, the development of sustainable industries, and the implementation of measures supporting a just and inclusive transition.

Source: Authors' Analysis.

Appendix 6: Indirect Taxes

Indirect taxes have played a pivotal role in generating substantial government revenue, facilitating the financing of various public initiatives and developmental projects. Among the notable avenues for raising revenues through indirect taxes in India, GST stands as a prominent reform that has streamlined and harmonised the taxation structure across the nation. Additionally, taxes on electricity consumption and distance-based levies also offer potential means for the government to bolster its revenue streams.

A. Revenue Generation – GST

GST rates and coverage are set by the GST Council, a body representing all the states, Union territories and the Union government. Starting in July 2017, the GST Council introduced multiple rates determined based on revenue-neutral rates for different commodities and services.¹¹ Over the past six years, the GST Council has made some adjustments to these rates, moving certain goods and services from one bracket to another after a process of discussion and voting. It is argued that a more comprehensive rate rationalisation is necessary, which should also lead to an increase in GST revenues (Mukherjee, 2021).

¹¹ The structure included nine rates: nil, 0.25%, 1.5%, 3%, 5%, 7.5%, 12%, 18%, and 28%. The specific rate for each item was determined based on its category and the tax rates applied in the preceding indirect tax regime which consisted of Central Excise, Value Added Tax (VAT), or Service tax, etc.

i. Restructuring GST Rates

Currently, items taxed at 12% and 18% contribute to approximately 75% of the tax revenue. Subramanian (2015) recommended splitting these rates into 12% and 18% to avoid inflationary impacts. Rao (2023) proposes merging the current 12% and 18% GST rates into a single rate of 15% and increasing the lowest rate to 8% as one potential solution to improve revenue collection. Mukherjee (2021) proposes three possibilities. The first is to increase the highest tax rate, currently at 28%, to around 38%. The second option involves raising the lowest tax rate to approximately 9%. The third option is to adopt a three-rate structure for the GST, with rates set at 8%, 15%, and 30%. This arrangement may help provide a more streamlined and simplified tax system. The first possibility could lead to a greater incentive for tax evasion due to the relatively high upper tax rate. The second option has equity considerations, as low GST rate items are typically consumed more by the less privileged. The third possibility, while challenging to embrace given the numerous parties and products involved, offers an efficient and relatively equitable way forward.

ii. Greater GST on Polluting Sectors

A fourth possibility is to increase the GST rates for specific polluting sectors, such as iron and steel, aluminium, etc., which may also align with those of other countries, such as the EU's Carbon Border Adjustment Mechanism (CBAM). Compared to fossil fuel usage, these sectors are much smaller, and therefore, the revenue possibilities of a higher GST on these items cannot yield comparable revenues.

iii. Increasing GST Coverage

A fifth possibility is to broaden the GST base by including items initially left out of the GST fold. Among these, the three main ones are petroleum, liquor, and electricity. Taxes, including GST on electricity, are discussed in the next section. The exemptions were initially implemented as a risk reduction measure to safeguard certain sectors and facilitate affordability, among other reasons (Rao, 2023; Ghosh and Kheterpal, 2023). However, some time has passed since its introduction, and GST has been successfully implemented across the Indian economy. A stronger case can now be made for bringing these items under the GST regime. Potentially, a large share of products can be included, including (a) agriculture: Goods such as

fresh and dry vegetables, fish, eggs, and fresh milk; (b) services: agricultural services, public transportation, healthcare, educational services, and banking services; and (c) intoxicants: liquor and alcohol products for consumption (CBIC, 2023).

iv. Increasing all GST Rates

There is a sixth possibility as well, of a general increase in all GST rates to compensate for the loss of revenue from fossil fuels. Since this would involve an increase across the entire spectrum of GST products, the impact on rates of any one segment should not be too significant. For instance, in the year 2019, the total GST collections stood at Rs 11,01,944 crores, and total revenue from all sources related to fossil fuels was Rs 6,51,232, of which Rs 22,865 crores came from GST on coal (Ministry of Coal, 2021 & Dutta, 2021). That is, GST rates would need to more than double in the year 2019 to cover the revenues from fossil fuels.

Rao (2022) argues that including items into the GST fold may not necessarily lead to greater revenue productivity simply because many of these items are currently taxed in other ways. The key advantage, as per this argument, is in terms of efficiency, in which GST excels over other indirect taxes. We find this argument compelling. Therefore, if the GST route is considered, it may be better to call for a general increase in GST rates rather than for some rates or product segments.

B. Revenue Generation – Electricity Tax

There is a significant opportunity to increase tax revenue through electricity taxes. The inelastic demand for electricity (Bose and Shukla, 1999; Tran and Sahu, 2023), coupled with the broadening of the tax base, should result in higher tax revenues. The introduction of varying electricity tax rates based on electricity consumption, time-of-day charging, and other factors, may also promote greater tax progressivity. However, there are substantial challenges in implementing higher electricity taxes in India. India's regulated retail pricing involves significant subsidies and cross-subsidies. Subsidies provided to consumers lower the effective price of electricity, which conflicts with the idea of imposing additional taxes. Another significant challenge in implementing higher electricity taxes in India is the lack of proper metering infrastructure, particularly in rural areas. Moreover,

Box 2: Transport-Related Taxes

Raising the toll rates and potentially including two/three-wheelers and higher registration fees are two additional possibilities that we do not delve into in great detail due to non-commensurate revenue-generating possibilities. Each of these would be relatively easy to implement. For instance, the Union holds complete powers over national highways (Entry 23 of List I in the seventh schedule of the Constitution of India) and is the sole authority to set the rates and collect revenues. Vehicle registration taxes, however, falls solely within the purview of State and UT governments. They currently impose relatively low rates of vehicle registration fees, and there is a case for these fees to be higher and more proportional to the value of the vehicle under consideration. Moreover, many states provide exemptions for EVs. However, the implementation of taxes on EVs should be approached cautiously. For instance, Denmark's experience illustrates that when registration taxes on EVs were introduced, vehicle registration plummeted after the tax's introduction (Paizs, 2017). Ideally, taxes on EVs should be introduced when they become cost-competitive with traditional motor vehicles.

Source: Authors' Analysis.

non-payment of electricity bills and rampant electricity theft are prevalent issues in India. These practices lead to revenue losses for power distribution companies (DISCOMs) and undermine efforts to implement effective taxation measures. Devaguptapu and Tongia (2023), for instance, found that unpaid dues to the DISCOMs over a 15-year-period, ending in 2020, amounted to upwards of Rs 10 lakh crore.

Under the present circumstances, there are limitations on the feasibility of implementing extensive taxation measures. It could be argued that imposing a tax on electricity would create the right incentives for both DISCOMs to collect revenues and implement a comprehensive metering scheme and for customers to promptly pay what is billed.

There can be no doubt that, in the long run, taxation on electricity is both an effective and viable solution. The total consumption of electricity in India in the year 2021-22 was reported to be 1624 billion units (BU),¹² and the price ranges roughly between Rs 0 to 10 per unit, depending upon the type, size, and location of the consumer. To illustrate, if a tax of Rs 1 per unit is levied, it could lead to revenues of Rs 162,400 crores. Of course, there are many challenges, and these have been discussed above, but the revenue potential is significant.

C. Revenue Generation – Distance-based Tax

Distance-based taxes, also referred to as mileage-based taxes, are based on the distance travelled by vehicles rather than traditional fuel-use-based taxes. This approach offers a more direct and accurate way to capture road usage and allocate the associated costs. Distance-based taxes traditionally involve physically checking the odometer, which can be prone to errors in measurement and, of course, meter tampering. However, advancements in technology have provided solutions to address these challenges. Such a system may, for instance, involve utilising GPS tracking technology to determine the number of kilometres travelled by road users and consider factors such as vehicle type, time, and location of road usage. While there may be initial technological challenges, it is expected that within our timeframe of declining fossil revenues, these measures are likely to become feasible due to rapid technological advancements (Harikumar et al., 2022). A notable example of a successful revenue collection measure enabled through improved monitoring technology is the implementation of FASTag in India (Box 3).

¹² <https://powermin.gov.in/en/content/power-sector-glance-all-india>

Box 3: The Case of FASTag in India

FASTag is an electronic toll collection system used on national highways in India. It utilises radio frequency identification (RFID) technology to enable automatic checking and collection of toll charges. Vehicles equipped with FASTag have a small electronic tag affixed to their windshields, which is scanned as they pass through toll plazas. The toll charges are automatically deducted from a prepaid account linked to the FASTag, eliminating the need for physical checking and cash transactions. The introduction of FASTag has significantly improved the efficiency and effectiveness of toll collection in India. It has reduced congestion at toll plazas, minimised the reliance on manual processes, and streamlined the overall toll collection system. The automatic checking mechanism ensures accurate and consistent collection of toll charges, enhancing transparency and reducing the possibility of fraud or manipulation.

Table 8: FASTag Statistics

| Year | Tag Issuance (in Millions) | Volume of Transactions (in Millions) | Amount Collected (in Rs Crore) |
|---------|-------------------------------|---|-----------------------------------|
| 2017-18 | 9.89 | 127.04 | 3,352 |
| 2018-19 | 38.75 | 254.35 | 5,760 |
| 2019-20 | 105.38 | 582.57 | 11,294 |
| 2020-21 | 256.45 | 1327.26 | 22,762 |
| 2021-22 | 485.52 | 2441.29 | 38,084 |
| 2022-23 | 714.69 | 3402.43 | 54,144 |

Source: NPCI (n.d.).

D. Continuity and Constitutionality

i. Existing GST

One of the possibilities considered earlier was to increase the GST on polluting sectors. The sustainability of revenue in this option could be a challenge, whereas the revenue from other options, such as restructuring GST rates, increasing overall GST rates, and expanding the GST coverage, will ensure continuity of revenue. For these options, there is no requirement for a constitutional amendment to increase revenue as they fall within the existing GST framework.

ii. Electricity Tax

There has been ongoing discussion regarding the inclusion of electricity within the GST framework in India (Mukherjee and Rao, 2014). Currently, electricity is listed as a concurrent subject in Entry 38 of List III of the Seventh Schedule of the Constitution of India. However, taxes on the sale or consumption of electricity fall under the jurisdiction of States, as per Entry 53 in List II. Therefore, it will be necessary to

amend the Constitution to bring electricity taxation under the concurrent list if it has to be imposed by the Union.

Note that the Union will lose a relatively higher share in the fossil fuel revenue in the energy transition process as compared to the states. Moreover, the Union government has, from time to time, come to the rescue of state-level DISCOMs, indicating that it is bearing some part of the burden of their poor performance. Therefore, a case can be made for enabling a greater central role in this space.

iii. Distance Based Taxes

The taxation related to goods and passengers transported by road (Entry 56) and the taxation on vehicles (Entry 57) is categorised under the State List (List II) within the seventh schedule of the Constitution of India. Therefore, for these matters to be included in the concurrent list, allowing both the States and the Union government to have jurisdiction, a constitutional amendment would be necessary. This implies that the States would have to relinquish their autonomy on these issues.

Arguably, it would be best to include distance-based taxes within the ambit of the GST. Therefore, these issues will have to be deliberated within the GST Council for the successful incorporation of distance-based taxes and vehicle registration taxes into the GST framework.

E. Sharing, Flexibility and Autonomy

Indirect taxes are divided between Union and States and between States through three key routes: directly from the Union government for its schemes and programs, through the GST council for GST revenues, and the Finance Commission. The allocations made by the Union reflect its the priorities and are not of direct relevance to this discussion. Those allocated through the GST council follow a well-laid-out mechanism. Similarly, funds are allocated through the Finance Commission to the States.

i. Existing GST

The GST has a well-established method of allocating revenues between Union and States (vertical) and between the States (horizontal). Increasing GST rates and consequent revenue distribution across States will not match the current fossil fuel revenues, even if overall revenue neutrality is maintained.¹³ The GST compensation cess route or the Cess on GST route are possibilities that could be considered. No constitutional amendment or legal reform would be required.

ii. Electricity Tax

Either of two possibilities exist. First, electricity is included under the GST regime. In this scenario, the revenue generation would have a different profile than fossil fuel taxes currently. Therefore, an additional state-level cess (such as Jharkhand a state highly dependent on dependent from coal mining) could circumvent the problem. The fact that this is unadvisable from an efficiency principle is another matter. The second possibility is for the electricity tax to remain outside the domain of the GST as it currently is. In this case, if the Union also needs to share in the revenues, a method will need to be negotiated between the Centre and the States; if, for instance, it needs to be placed under the concurrent list, a constitutional amendment would be required.

The inclusion of electricity in the GST would imply that the states' share of revenues would only be half of those collected. To compensate for this, it would require either placing it in a higher tax bracket or increasing the GST rates. Ensuring revenue neutrality would help both the States and the Union government come to a satisfactory cooperative solution. Moreover, the implementation of an additional compensation cess to manage the revenue loss could also help achieve such a solution.

iii. Distance-based Tax

Distance-based taxes will be a form of road usership tax, which is currently not specified under any legislation, and this requires further enquiry. Three issues need further elaboration.

First, how distances are monitored will be an important issue. If the monitoring is only of the total distance travelled, then a single entity at the national level will need to impose and collect the tax, and it is not clear what the division criteria could be. However, if the monitoring can be distance travelled on different types of roads (belonging to Union, State, and Local governments), then the taxes could potentially be imposed nationally but can directly be shared with different levels of government.

Second, there is the question of whether distance-based taxes be included under the GST regime. The GST is a consumption tax and is typically imposed on an ad valorem basis. The use of the road infrastructure can be considered as consumption, and therefore, an ad valorem charge can be issued on a notional value of distance travelled. While this is possible, issues such as inter-state road usage and consequent sharing of revenues with multiple States and the Union need to be better understood under the current GST regime. However, there are inherent efficiency advantages of being included under GST.

Finally, inter-state distribution of these revenues would be different from those of fossil fuel taxes, and therefore the political-economic process may be a challenge. These are interesting possibilities given the potential scale of revenues possible and the fact that they will cause the least disruption in replacing fossil taxes. Finally, such a tax could also potentially be included under GST.

¹³ Because fossil fuel taxes differ across States but will be standardised under the GST.

Appendix 7: Finance Commission

The Union government collects taxes like personal income tax, and the States receive a proportionate share from the divisible pool. In India, the divisible pool refers to the portion of tax resources that are shared between the Union and the States. It is determined by deducting the expenses related to tax collection, cesses, and surcharges, as well as the tax revenue generated from Union territories, from the gross tax revenue (FC-XV, 2020). The cost of collection has remained stable at approximately 0.7% of gross tax revenue in recent years, and it is expected to remain at that level. The 15th Finance Commission recommended a formula for the distribution of revenue between the Union and the States for the period of 2021-2026. Based on the projection of all taxes and items to be excluded from the divisible pool, the FC-XV (2020) has estimated that this pool will constitute around 76.2% of gross tax revenue and 67.2% of gross revenue receipts (gross tax revenue plus non-tax revenue) during the projection period.

According to the recommendation of the FC-XV (2020), the vertical share of States should constitute 41% of the divisible pool from 2021-22 to 2025-26. Likewise, the Finance Commission also provides

recommendations for the inter se distribution¹⁴ of the divisible pool among the states. The Commission suggests that the distribution among States should be based on various factors, including population, area, forest and ecology, income distance, tax and fiscal efforts, and demographic performance. The Commission provides the weightage of each of these factors in calculating the total devolution to a particular state (as shown in Table 9), and based on these factors, the inter se share of States is determined (presented in Table 10).

Table 9: Criteria and Weights Assigned for Devolution of Revenue among States

| Criteria | Weight (%) |
|-------------------------|--------------|
| Population | 15.0 |
| Area | 15.0 |
| Forest and Ecology | 10.0 |
| Income Distance | 45.0 |
| Tax and Fiscal Efforts | 2.5 |
| Demographic Performance | 12.5 |
| | 100.0 |

Source: FC-XV (2020).

Table 10: Inter se Shares of States

| State | Share (%) | State | Share (%) |
|-------------------|-----------|---------------|-----------|
| Andhra Pradesh | 4.05 | Manipur | 0.72 |
| Arunachal Pradesh | 1.76 | Meghalaya | 0.77 |
| Assam | 3.13 | Mizoram | 0.50 |
| Bihar | 10.06 | Nagaland | 0.57 |
| Chhattisgarh | 3.41 | Odisha | 4.53 |
| Goa | 0.39 | Punjab | 1.81 |
| Gujarat | 3.48 | Rajasthan | 6.03 |
| Haryana | 1.09 | Sikkim | 0.39 |
| Himachal Pradesh | 0.83 | Tamil Nadu | 4.08 |
| Jharkhand | 3.31 | Telangana | 2.10 |
| Karnataka | 3.65 | Tripura | 0.71 |
| Kerala | 1.93 | Uttar Pradesh | 17.94 |
| Madhya Pradesh | 7.85 | Uttarakhand | 1.12 |
| Maharashtra | 6.32 | West Bengal | 7.52 |

Source: FC-XV (2020).

¹⁴ Inter se distribution refers to the horizontal distribution of tax revenue among states.

Appendix 8: Goods and Services Tax (GST)

In July 2017, the Union government implemented the GST, which was seen as a significant reform in unifying tax administration across India. States from different political parties supported the Union government's move on GST, leading to a rare moment of federal cooperation. Consequently, several entries in the State List under Schedule 7 of the Constitution were abolished, and state legislative assemblies lost their authority to legislate on matters such as the sale and purchase of goods, with only a few exceptions like petroleum and liquor.

A. Sharing of Revenue

The responsibility of determining the tax rate for each good or service lies with the GST Council. The tax rate decided by the council is split equally as the Central Goods and Services Tax (CGST) and the State Goods and Services Tax (SGST), and both the Union government and the State governments collect these taxes, respectively. The revenue generated from CGST is placed into a divisible pool, which is then shared among the State based on the FC's recommendations. This mechanism ensures that the States have a stake in the revenue generated through CGST. Further, the GST system allows States to independently collect revenue through SGST. This provision grants States a degree of fiscal autonomy, as they can utilise the revenue generated from this source based on their individual requirements.

B. States' View

In a study by Mukherjee (2023), the revenue implications of GST on Indian State finances were assessed. During the Post-GST period (2018-19 to 2020-21), the average share of State Revenue Basket in GSDP has declined for all major States, except when compared to the Pre-GST period (2014-15 to 2016-17). Additionally, for all major states except Maharashtra and Telangana, there is a decrease in the average share of Own Tax Revenue (OTR) in GSDP during the post-GST period. Even after receiving GST compensation, states such as Andhra Pradesh, Bihar, Gujarat, Madhya Pradesh, and Tamil Nadu have not been able to match their pre-GST revenue levels. The introduction of GST has restricted the fiscal autonomy of states to raise their own revenues.

Further, States view the decision-making process of the GST Council as dominated by the Union government (Ghosh, 2022). The Council operates on a voting system, with one-third of the voting power (i.e., 11 votes) held by the Union, and the remaining 22 votes are distributed among the 31 States and Union Territories (UTs) based on a share of 0.71 votes per state or UT. A decision of the GST Council requires a three-fourth majority, equivalent to a minimum of 25 votes. Due to its one-third share of the total votes, the Union effectively holds veto power in the decision-making process.

C. Fiscal Alternative to Restore States' Autonomy

There is a discrepancy between the current revenues and GST revenues of States. The restoration of States' autonomy can be achieved through three alternatives: firstly, by GST compensation cess, secondly, by implementing a cess on GST, and thirdly, by allowing States to impose a cess on products that fall outside the scope of GST.

- i. *GST Compensation Cess*: GST (Goods and Services Tax) Compensation Cess is a levy imposed on certain goods and services to compensate the States in India for any revenue loss incurred due to the implementation of the GST system. When the GST was introduced in India on July 1, 2017, it replaced various indirect taxes levied by the Union and State governments. To ensure that the States did not face any financial loss during the transition, a compensation mechanism was established. Under this mechanism, the Union government levied a compensation cess on specific goods and services, such as luxury goods, tobacco products, coal, and certain automobiles. The proceeds from the GST Compensation Cess are used to compensate the States for any revenue shortfall they may experience during the five-year-period after the implementation of GST. In June 2022, the levy of GST Compensation Cess was extended to March 2026.
- ii. *Cess on GST*: The Kerala Flood Cess was imposed to raise funds for state reconstruction after the devastating floods in August 2018. This cess came into effect on August 1, 2019, and was proposed to be enforced for a period of two years. However, implementing the cess

on the Goods and Services Tax (GST) required the approval of the GST Council. In the 32nd meeting of the GST Council, the imposition of the Kerala Flood Cess was approved (Kerala Taxes, 2019). The levy of this cess ended on July 31, 2021 (The Hindu, 2021).

- iii. *Non-GST Cess*: In addition to the Goods and Services Tax (GST), States in India have the authority to levy their own cess or surcharges on certain goods and services. There have been some cases where the State governments imposed a cess, as discussed below:
- a. *Gau Vansh Cess*: In February 2019, the government of Himachal Pradesh established the 'Gau Seva Aayog' to safeguard and rehabilitate cows. To generate financial resources for the effective functioning of Gau Seva Aayog, the State government decided to impose a cess of Rs. 1 on sale of each liquor bottle since March 2018. The revenue collected from this cess is deposited into the account of Gau Seva Aayog (Business Standard (2020)).
 - b. *Cess on Petrol and Diesel*: In February 2023, to generate additional revenue, the Government of Punjab has decided to levy a cess of 90 paise per litre on

petrol and diesel (Livemint, 2023). Similarly, to mobilise an estimated annual revenue of Rs 500 crore, the State government has levied a road development cess of Re 1 on each litre of petrol and diesel in 2020 (The Hindu, 2020). The revenue collected from this cess will be transferred to the A.P. Road Development Corporation.

- c. *Social Security Cess*: Kerala Government imposed a cess of Rs 40 per bottle of Indian Made Foreign Liquor (IMFL) priced over Rs 1,000 MRP in February 2023, resulting in an estimated revenue boost of Rs 400 crore. Furthermore, as an additional measure to bolster the Social Security Seed Fund, the government introduced a Social Security Cess on the sale of petrol and diesel, at a rate of Rs 2 per litre. The implementation of this measure is anticipated to generate supplementary revenue of Rs 750 crores towards the Social Security Seed Fund. Rao (2023).

However, the third option may not remain viable in the long term due to the potential inclusion of exempted goods and services under the purview of GST in the future.

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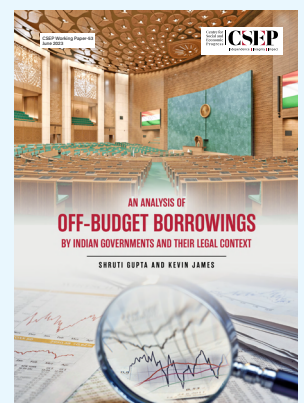
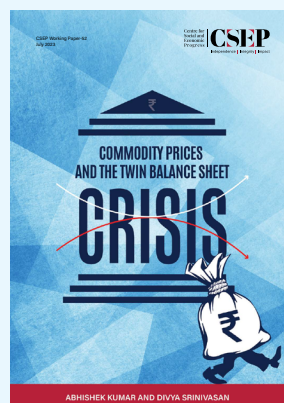
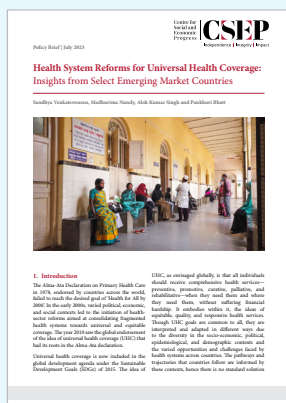
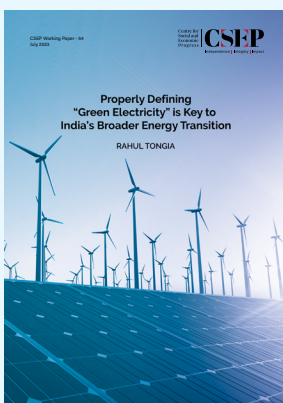
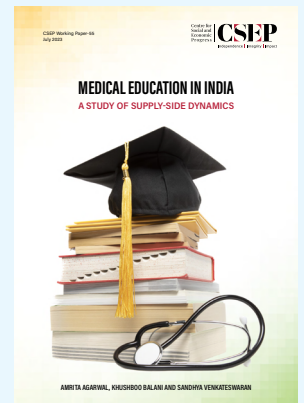
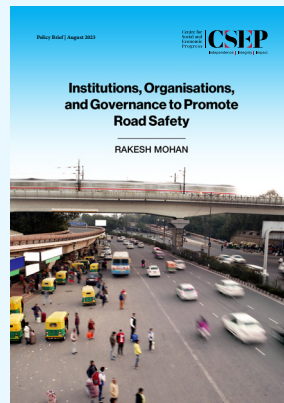
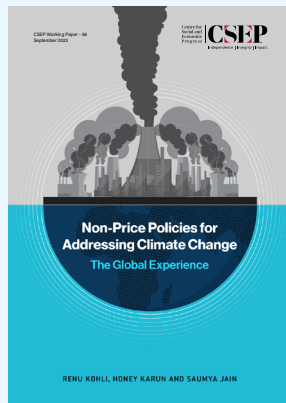
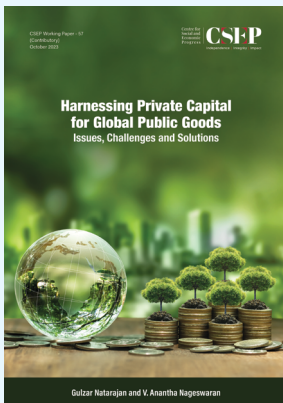
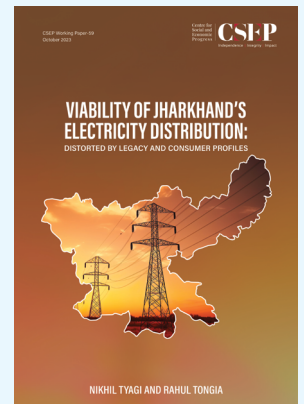
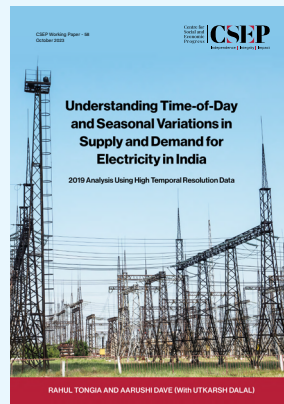
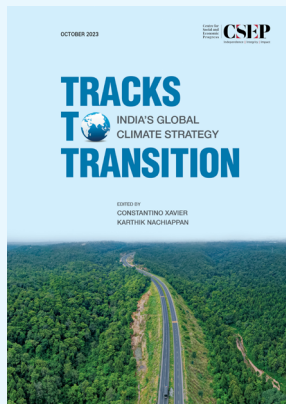
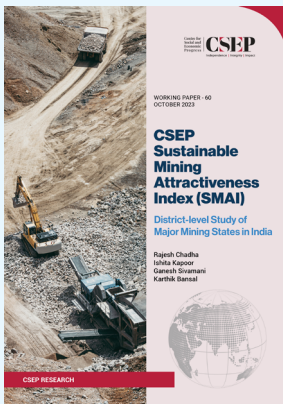
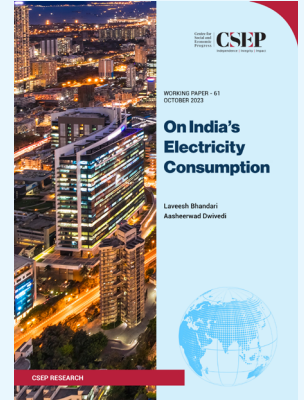
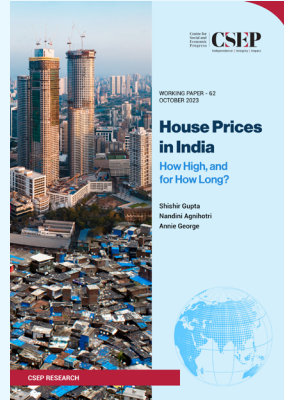
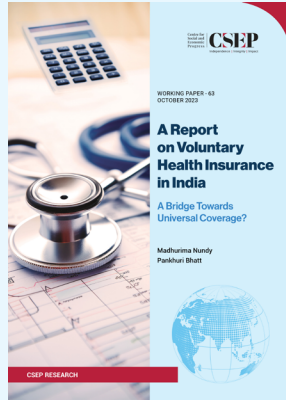
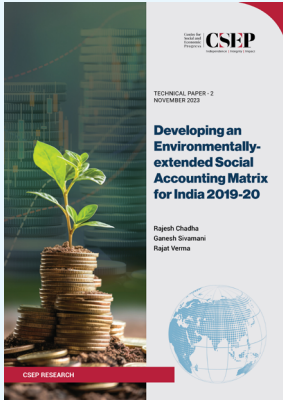


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