Ecological Fiscal Transfers and Subnational Budgets: Did Forest-Based Fiscal Devolution Lead Indian States to Increase Forestry Expenditure?

Jonah Busch, Avani Kapur, and Anit Mukherjee

Abstract

Later this year, India's 15th Finance Commission will review the formula used by its predecessor to determine how much central tax revenue will be devolved to each state for fiscal years 2020-21 through 2024-25. Currently, 7.5 percent of the fiscal devolution (an estimated $6.9-12 billion per year) is allocated in proportion to their forest area circa 2013. These "ecological fiscal transfers" (EFTs) provide Indian states with the incentive to increase their forestry budgets as an investment in increased future shares of central taxes. In this paper, we look at whether states are yet taking advantage of this opportunity. We find that states increased their forestry budgets by 19 percent in three years after the introduction of EFTs relative to three years prior. However, this increase is considerably less than the 42 percent overall budget increase over the same time period. We surmise that states are not yet certain that EFTs will continue in such a way that increases in forest cover will be rewarded with increases in revenue. We recommend that the 15th Finance Commission resolve this uncertainty for states by (i) keeping forests in the devolution formula, and (ii) updating the reference year (e.g. 2019). By doing so India's EFTs can fulfill their potential as an innovative mechanism for incentivizing states to protect and restore forests, thereby mitigating climate change.

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1. Introduction

In February 2015 India's 14th Finance Commission added forest cover to the formula that determines the amount of tax revenue the Union government distributes annually to each of India's 29 states, alongside historical population, recent population, poverty and area (Busch and Mukherjee, 2017). From fiscal years 2015-16 through 2019-2020, the central government would distribute 7.5% of the divisible central tax revenue that is devolved to states (an estimated $6.9-12 billion per year between 2015-16 and 2019-2020; Government of India, 2015, or around $7.4 billion a year between 2015-16 and 2018-19; authors' calculations) in proportion to states' area of "very dense" or "moderately dense" forest cover circa 2013, as measured by the India State of Forest Report (2013). This transfer amounts to around $174-303 per hectare of forest per year (Busch and Mukherjee, 2017). These funds are not an incentive grant; that is, they are not tied to state forestry budgets and can be spent on any purpose at the discretion of the state. The goals stated by the 14th Finance Commission for adding forests to the tax revenue devolution formula include both compensating states for the "fiscal disability" of forgone economic opportunities caused by maintaining forests, and promoting the ecological benefits that forests provide (Government of India, 2014).

India's forest-proportional tax revenue devolution represents the world's first "ecological fiscal transfers" (EFTs; Ring 2008) for forest cover. The scale of annual funding provided through India's EFTs dwarfs the roughly $1 billion in annual international funding for reducing emissions from deforestation and forest degradation (REDD+; Norman and Nakhooda 2014). It is also many times larger than the incentive grant for forest cover provided by the 13th Finance Commission, which amounted to around $5 billion over five years, came with pre-conditions, and was earmarked for spending on forest-related budget lines (Government of India, 2010).

India's EFTs are potentially a large and innovative financial mechanism for helping India achieve its international climate goals, alongside many other mitigation measures described in India's Intended Nationally Determined Contribution (Government of India, 2015). India's EFTs can also support the achievement of other sustainable development goals provided by forests such as those related to clean water, clean air, energy, and biodiversity. We have discussed various aspects of India's EFTs in greater depth in two previous papers (Busch and Mukherjee, 2017; Busch 2018).

In 2019 India's 15th Finance Commission is conducting the periodic five-year update of the tax revenue devolution formula, including whether or not to maintain forest cover as an element (Government of India, 2017a). Their decision will govern the distribution of tax revenue to states for fiscal years 2020-21 through 2024-25, and consequently whether India continues to prioritize ecological benefits from forest protection and conservation in its fiscal devolution going forward.

2. Effects of India's ecological fiscal transfers

To inform the deliberations and decision of the 15th Finance Commission, it is useful to analyze the effects that the current EFTs are having. Of these effects, the impact on forest cover is the most straightforward and important. Previous analyses found that the states that benefited most from EFTs did not have disproportionately large increases in forest cover (Busch and Mukherjee 2017; Busch 2018).

However, it's probably too soon to detect an effect on forest cover from just 1-3 years of post-reform data. There is a long causal chain between the introduction of EFTs and detection of changes in forest cover by satellites (Figure 1). This could reasonably take between 5-10 years, due to lags in passing and implementing policies, planting trees, and satellite detection and reporting, for example.

In the interim, it's possible to analyze intermediate effects with a shorter causal chain as shown in Figure 1. Interviews with state government politicians and administrators could judge their level of awareness of EFTs and their effect on state budgets (causal chain step 2). Such interviews could also elucidate the extent to which state policymakers expect the EFTs to continue in such a way that *increases* in forest cover will be rewarded by *increases* in future transfers (causal chain step 3), and the extent to which the EFTs' incentives motivate state policymakers to protect and restore forests (causal chain step 4). An exploration of State Action Plans on Climate Change could provide useful insights on state-level policies related to forests (causal chain step 5).

In this policy brief we examine whether states are responding to the reform by increasing their budgets for forestry, as an investment in increased revenue from future transfers. Increased forestry budgets are plausibly a leading indicator of increased forest cover. The causal chain is considerably shorter for budgets (step 5) than for detection by satellite (step 8) because it cuts out three large lags:

- The lag between budget allocation and program or policy implementation
- The lag between program or policy implementation and forest cover increase
- The lag between forest cover increase and detection by satellite

The avoidance of these lags means that the effect of EFTs on state budgets might reasonably be evident within 1-3 years rather than 5-10 years for forest cover detection.

It is worth reiterating that money from the EFTs is untied to forestry budgets and can be spent in any sector (e.g. health, education, infrastructure) at the discretion of state governments. Increasing budgets for forestry certainly isn't the only measure states can take to protect and restore forests as an investment in future revenues from EFTs. It may not even be the step that would have the greatest impact on forest cover. However, increased forestry budgets are probably one of the more likely measures to occur as part of a state-

level forest promotion package, given the political economy of existing institutional claimants to forest-related funds.

Figure 1. Causal chain from introduction of ecological fiscal transfers (EFTs) to outcomes

On the other hand, if states are not increasing forestry budgets in response to EFTs, the causal chain above suggests a breakdown at steps 2, 3, or 4 (*awareness* of the effects of EFTs on state budgets; *expectations* that EFTs will continue in such a way that that increases in

forest cover will be rewarded with increases in revenue received; or the amount of funding offered through EFTs being sufficiently large to provide *motivation* to states to protect and restore forest cover.

3. Methods

We compiled data across Indian states for five state budget accounts:

- 2406-01 Forestry (revenue account)
- 4406-01 Forestry (capital account)
- 2406-02 Environmental Forestry and Wild Life (revenue account)
- 4406-02 Environmental Forestry and Wild Life (capital account)
- 2406-04 Afforestation and Ecology Development (revenue account)

The Forestry accounts include budget lines for Direction and Administration; Education and Training; Research; Survey and Utilization of Forest Resources; Statistics; Communications and Buildings; Forest Conservation, Development and Regeneration; Social and Farm Forestry; Forest Produce; Expenditure on management of Ex- Zamindari Forest Estates; Departmental working of Forest Coupes and Depots; Resin and Turpentine Factories; Assistance to Public Sector and Other Undertakings; and Other expenditure (Ministry of Finance, 2017b). The Environmental Forestry and Wild Life accounts include budget lines for Wild Life Preservation; Zoological Park; Public Gardens; International Co-operation; Other expenditure. The Afforestation and Ecology Development refers to expenditure incurred on the National Afforestation and Ecology Development program. Afforestation and Ecology Development had only a capital account and not a revenue account. Expenditures incurred in the revenue account refers to all expenditures incurred for day-to-day activities which are not used for the creation of assets or repayment of liabilities. Capital expenditures, on the other hand, usually refer to creation of assets or payment of loans and other liabilities.

We gathered these data for six fiscal years (2012-13 through 2017-18).[1] The first three fiscal years immediately pre-dated the reform; the last three fiscal years immediately followed the

[1] It is surprisingly challenging to compile these data across states and years. There is no centrally available data repository on state-level budgets in India. Data on state-level forest budgets are fragmented and can be spread across multiple departments. Each state releases their own state-level budget data. Some do so online; some do not. Some PDFs are machine readable; some are not. Some are in English; some are in other languages. There are also differences in the formats, numbers, and types of different documents. Some provide units in crores, some in hundreds. Some have neat summaries of different expenditure heads; others require manual addition across components. Some states put their budget data online only for a few months or years and then take them down.

reform. To calculate states' budgets for forestry we summed the line items of all five accounts listed above.

While India follows a six-tier accounting system, accounting heads are standardized only up to the second and third level[2] and states have significant discretion in how they classify expenditure. Owing to these differences and to ensure comparability across states, it was not possible for us to compile data across states disaggregated to the level of the individual budget lines listed above. This is unfortunate as we would have liked to be able to distinguish, for example, between funding directly for forest establishment versus funding for non-forest-cover-related activities or funding for direction and administration. Nor did we distinguish the amount budgeted for salaries versus other expenses.

We were able to collect these data for 25 of India's 29 states, representing 90% of 2013 forest cover, 91% of fiscal transfers from tax revenue devolution in 2015-16 (Reserve Bank of India, 2016), and 89% of total state revenue in fiscal year 2015-16 (Reserve Bank of India, 2016). We excluded the states of Andhra Pradesh and Telangana because budget data was not consistent for the periods before and after these states bifurcated in 2014. We were also unable to include Goa (for which budget data was unavailable) and Jammu and Kashmir (due to lack of coherence in budget reporting for the time period of our study).

Indian states are highly heterogenous along many attributes, including current levels of forest area. We tested whether states that are currently benefiting the most from EFTs are increasing their forestry budgets by a larger amount than states with less at stake. Specifically, we tested whether there was a positive and significant correlation across states in the share of a state's budget that comes from EFTs and the state's increase in their forestry budget before and after the introduction of EFTs. This method follows Busch and Mukherjee (2017) and Busch (2018) but substitutes forestry budget for forest cover as a variable.

In addition, there have been changes in recent years in the fiscal fund flow mechanism for key schemes, including Centrally Sponsored Schemes (CSSs) such as the National Afforestation Programme (NAP) that are co-funded by both the federal government and states. Until 2014, expenditures incurred by states on these programs were reflected in the state budgets while expenditures incurred from federal monies were routed off-budget in independently created autonomous societies. Since expenditures for NAP by Government of India were routed directly to these societies, they did not form a part of the States Consolidated fund and thus did not show up in the state budget documents. Instead, they need to be accounted for separately by looking directly at Government of India funds released or spent for these programs. Until 2015, the Government of India's National Afforestation Programme was 100% centrally funded. For this reason we adjusted the budgets for the fiscal years 2012-13 and 2013-14 by adding state-wise releases by Government of India for the National Afforestation Programme. While we account for these releases by GoI in the year they were released to states, in some cases a small portion of these funds may have actually been spent by states in a later financial year.

[2] Officially, up to the third level is standardised. However, there have been a number of differences found even in the third (minor head) level of accounts across states.

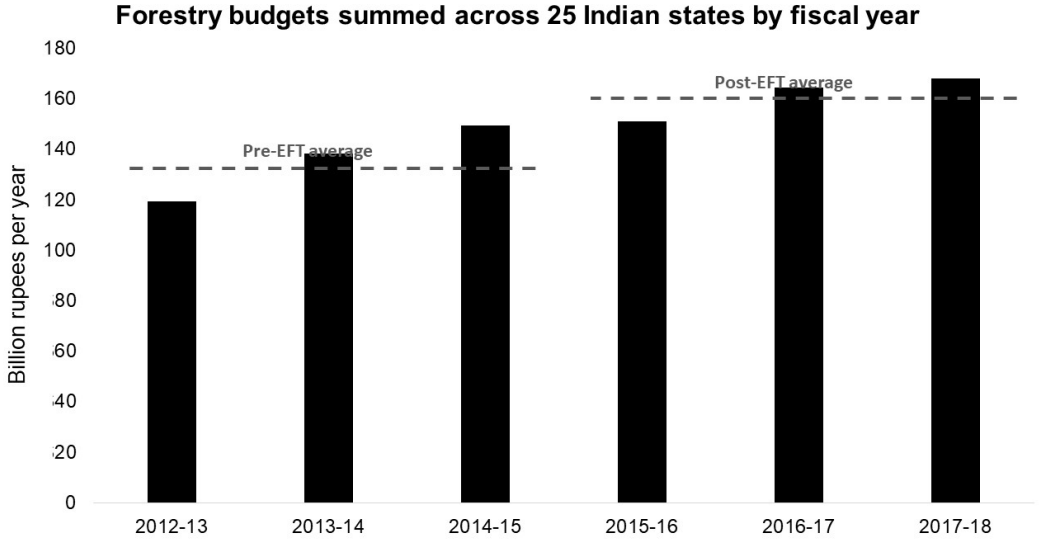
4. Results

Our analysis produced three key findings:

1. **States increased their forestry budgets after the introduction of EFTs:** Summed across the 25 states for which we compiled data, state-level forestry budgets were 19% higher in the three fiscal years after the introduction of EFTs relative to the three years prior to the reform (161 billion rupees after vs 136 billion rupees before; Figure 2). 21 states increased their forestry budgets, led by a maximum increase of 65% in Maharashtra. 4 states decreased their forestry budgets, led by a maximum decrease of 20% in Manipur. The median state increased its forestry budget by 9%.

   The year-on-year increases in states' forestry budgets were: 16% between 2012-13 and 2013-14; 8% between 2013-14 and 2014-15; 1% between 2014-15 and 2015-16; 9% between 2015-16 and 2016-17; and 2% between 2016-17 and 2017-18 (Figure 2). That is, the year-on-year increase in forestry budgets was not above average in the year of the reform (between 2014-15 and 2015-16); indeed it was below average.

Figure 2. Forestry budgets summed across 25 Indian states increased by 19% following the introduction of EFTs

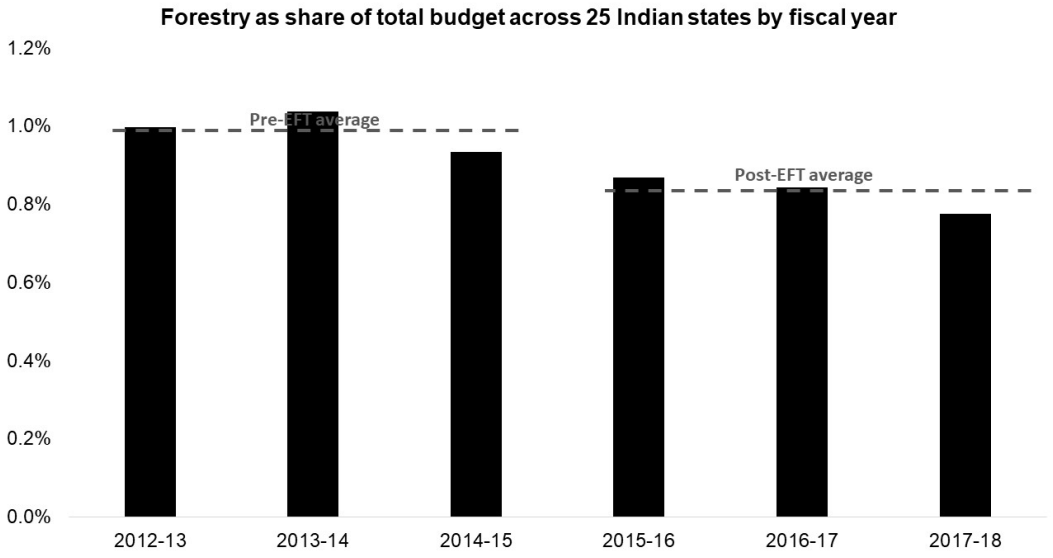


Source: Authors' calculations based on states' budget data.

2. **Budget increases for forestry were below overall budget increases:** The 19% increase in state forestry budgets must be kept in perspective. The same states' budgets went up by 42% across the board over the same time period (revised

estimates; RBI 2013; RBI 2014; RBI 2015; RBI 2016; RBI 2017; RBI 2019)[3], meaning that the share of states' budgets devoted to forestry decreased by 16% following the introduction of EFTs, as shown in Figure 3.

Figure 3. Forestry as share of total budget across 25 Indian states decreased by 16% following the introduction of EFTs



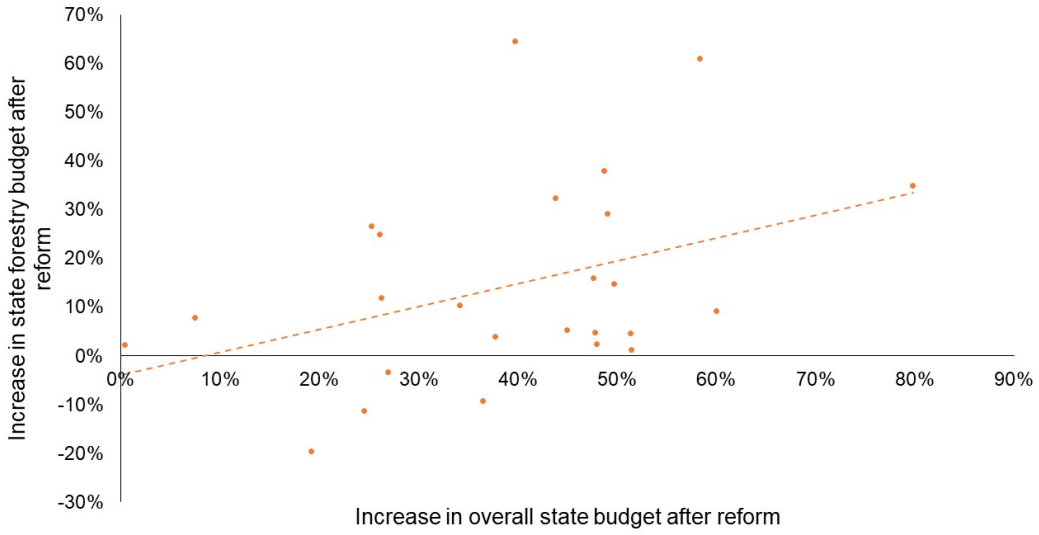
Source: Authors' calculations based on states' budget data.

Overall budgets increased as a result of India's tax base expanding and the 14th Finance Commission increasing the share of central tax revenue devolved to states from 32% to 42%. The same states increased expenditures across all social services by 65% over the same time period. And, the same states' GDP increased by 37% over the same time period, meaning that the states' budgets devoted to forestry as a percent of GDP decreased by 13% following the introduction of EFTs.

Furthermore, there was a significant positive correlation between states' forestry budget increases and overall budget increases ($r=0.40$; $P=0.05$; Figure 4). Based on these pieces of evidence, the introduction of EFTs did not appear to be responsible for a large and immediate increase in state forestry budgets.

[3] A caveat: while states' budgets nominally increased by 42%, their actual funds increased by less than this because state budgets for 2012-13 and 2013-14 did not include off-budget transfers, which amounted to more than 1 lakh crore (1 trillion) rupees, or roughly 7-8% of states' funds in those years. After considering this change in how off-budget transfers, states' actual funds may have only increased by around 39%. Comparing only the fiscal years 2014-15 and 2017-2018 (one year before and three years after the reform), states' forestry budgets increased by 12% while states' overall budgets increased by 44%.

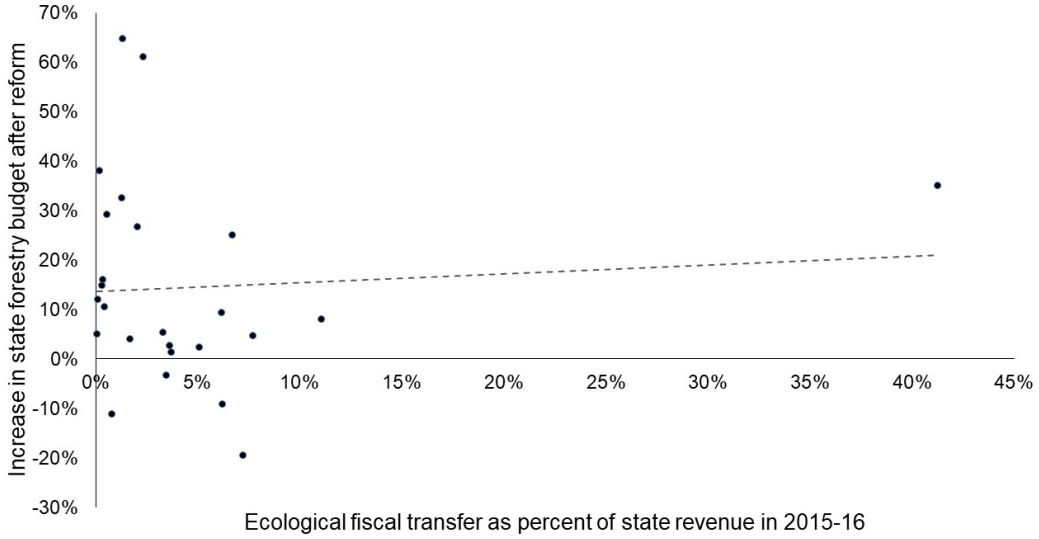
Figure 4. States that increased their overall budgets by more also increased their forestry budgets by more



Source: Authors' calculations based on states' budget data.

3. **The states that benefit most from EFTs didn't systematically increase their forestry budgets didn't systematically do so more than other states:** States that are currently benefiting the most from EFTs did not increase their forestry budgets disproportionately following the reform. There was a slight positive correlation (r=0.07) between the share of a state's revenue that came from ecological fiscal transfers in 2015-16 (based on Reserve Bank of India, 2016) and the increase in the state's forestry budget following the reform, but this correlation was not statistically significant (P=0.74; Figure 5). The slight positive correlation across states was driven by the single state of Arunachal Pradesh where EFTs provided 41% of state revenue in 2015-16 and forestry budget increased by 35% following the reform.

Figure 5. States where EFTs comprised a greater share of state revenue did not increase their forestry budgets by more



Source: Authors' calculations based on Reserve Bank of India (2016) and states' budget data.

A sensitivity analysis showed that the lack of a significant positive relationship between how much a state stood to benefit by increasing its investment in its forestry budget and how much it actual did so was robust to the use a variety of alternative metrics. These included:

- Percent of state fiscal transfer from forest transfer as an alternative measures of how much each state benefits from EFTs ($r=-0.04$; $P=0.85$),
- 2017-18 vs. 2014-15 as an alternative time period of comparison ($r=-0.13$; $P=0.53$)
- Revenue accounts only ($r=0.12$; $P=0.57$),
- Capital accounts only ($r=-0.29$; $P=0.17$),

5. Discussion

States increased their budgets for forestry by 19% in the three years after the introduction of EFTs relative to the three years prior to the introduction of EFTs. However, we do not attribute this increase to the introduction of EFTs for three reasons: 1) state budgets went up across the board over the same time period by a considerably larger amount (42%); 2) the increase in states' forestry budgets can be at least partially explained by increases in states' overall budgets; and 3) the states that currently benefit the most from EFTs did not

disproportionately increase their forestry budgets as an investment in future returns from EFTs.

We can't rule out that some of the 21 states that increased their forestry budgets did so at least partially as an investment in future returns from EFTs. But this phenomenon was not sufficiently widespread across states to be visible in statistical tests.

For states, the opportunity to increase forestry budgets to invest in future revenues from EFTs has yet to be seized *en masse*. The causal chain shown in Figure 1 suggests several hypotheses for why this could be so. In principle state government politicians and administrators could simply be unaware of the effect of EFTs on state budgets (step 2). But this seems unlikely—most state government officials should be aware of the sources of their budget revenues. It seems more likely either that states do not yet expect that EFTs will continue in such a way that *increases* in forest cover will be rewarded with *increases* in revenue received (step 3), or that the amount of funding offered through EFTs is insufficient to motivate states to protect and restore forests (step 4).

Interviews with key informants in state governments could shed light on whether the breakdown is related to expectations, or motivation, or both. However, without the benefit of such work, we are inclined to hypothesize that the breakdown in the causal chain is occurring not due to motivation (because the financial incentive of $174-303 per hectare of forest per year is sizable, amounting to around 2% of states' budgets, with a higher percentage in more-forested states (Busch and Mukherjee, 2017)), but rather due to expectations (because it is not yet certain that the 15th Finance Commission will keep forests in the tax revenue devolution formula and update the year for which forest cover is measured from 2013 to a later date). It would be interesting to supplement our analysis with qualitative research on the importance of other links in the causal chain, but this is beyond the scope of the current paper.

The 15th Finance Commission has an opportunity this year to give states far greater certainty that *increases* in forest cover will be rewarded with *increases* in revenue received. They should do so by 1) keeping forests in the horizontal devolution formula for another 5 years; and 2) updating the year for which forest cover is measured from 2013 to a later year (e.g. 2019). By doing so India's EFTs can fulfill their potential as an innovative mechanism for encouraging states to protect and restore forests—an important element of India's comprehensive approach to mitigating climate change.

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