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## Forest and Ecology Grants: Way Ahead for the 16<sup>th</sup> Finance Commission

Aniket Bhatkhande\*<sup>1</sup>, Abhay Pethe<sup>2</sup>

### ABSTRACT

*Climate change is dominating risk analysis across governments and businesses and biodiversity conservation is critical mitigation against it. India through the Forest and Ecology grant has the world's largest Ecological Fiscal Transfer. As the 16<sup>th</sup> Finance Commission deliberates it can consider the availability of newer datasets as well as past performance of the grant. We appeal to integration of three principles: Fairness and Equity, Ring-Fencing and Additionality, and Incentivizing Performance. We argue for a more inclusive definition of forest and ecology to include diverse ecosystems like grasslands and deserts. Secondly, we present evidence that communities around ecosystem bear the cost of regulation and thus argue for a separate grant-in-aid for communities around the ecosystems extending the opportunity cost principle to the third tier of governments. Lastly for incentivizing performance we recommend a grant-in-aid for the forest departments of the states who are responsible for maintenance and preservation of these ecosystems.*

Keywords: Ecological Economics, Environmental Fiscal Federalism, Ecological Fiscal Transfer, Indian Finance Commissions, Third-tier Governments

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*Note:* The views expressed here are personal and need not necessarily conform to those of the institutions to which the authors belong. The usual disclaimer applies.

## 1. Introduction

India's forest and ecology grant is the largest ecological fiscal transfer system in the world (Busch et al. 2020). As environmental risks dominate popular perception as well as The Global Risk Report 2024 of the World Economic Forum this funding channel which is the largest of its kind is path breaking. It strengthens India's case for walking the talk on climate change at a time when international transfers under the Paris agreement have been slow moving.

The critical role played by biodiversity has been highlighted by the 'The Economics of Biodiversity: The Dasgupta Review' commissioned by the HM Treasury of the British Government thus alerting the Global North of these concerns. Domestically, the 13<sup>th</sup> FC foresaw these concerns through their report writing *"Ideally, the entitlement of each state should have factored in density of forests and biodiversity contained within it, in the form of data on the growing stock and its composition by species, rather than, as we have done, by area under dense, moderate and open forests, as reported by the Forest Survey of India"* (Thirteenth Finance Commission, 2009). The limitation of data that FC13 faced has considerably eased and as the size of the grant has grown exponentially so is the necessity that the grant is inclusive addressing concerns for an ecologically diverse country. Pethe et al (2024) acknowledge climate and ecology as the elephant in the room and the need for building up on the work of the previous Finance Commissions. Thus, it is critical to acknowledge the institution, constituency and commitment to the Forest and Ecology grant that successive commissions have shown at the same time look at the evolution of the grant, some principles that can further strengthen it and some improvements to the criterion for the FC16.

This paper comprises six sections including this one and is organized as follows. Section 1 is the introduction where we set context of for the role and importance of the Forest and Ecology grant of the Finance Commission. In Section 2 we look at the evolution of the Forest and Ecology grant. This is important to understand the limitations and objectives of successive finance commissions. In Section 3 we look at the various definition of forests. The multiplicity of definitions is a key legislative concern we focus on the fiscal federal implications of this. In Section 4 we suggest how integration of a few principles will further strengthen the grant in achieving its objectives. In Section 5 we state the limitations of our efforts i.e., the exclusion of riverine, marine and other critical due to issues of scale and data. In Section 6 we conclude with recommendations to FC16 for a more inclusive and equitable transfer of resource that targets vulnerable ecosystems and communities and incentivizes performance.

## **2. Evolution of the Ecological and Forest Transfer of Resources**

States well-endowed with forests faced fiscal disability or the inability to generate revenues using their natural resources owing to maintenance of national forestry targets. The Eleventh Finance Commission acknowledged this disability and the need for preservation, prescribing the creation of scientific working plans for management of forests to strike a balance between the two. While some States readily produced and received approval for their working plans, many flagged the financial constraints in fulfilment of the devised endeavors. This was the reason for the Twelfth Finance Commission grant of 1000 crore rupees, transferred to the States based on the total forest acreage in every State, over and above their respective expenditure on maintenance of forests.

As a result, well-endowed States with greater forest area, like- Madhya Pradesh, Chhattisgarh, and Arunachal Pradesh- received higher shares of the total grant. This mechanism disregarded the given state of natural endowment of every State, penalizing the ones with less forested area owing to natural forces.

Despite this caveat, the measure was an important first in terms of actively addressing the monetary needs in maintenance of forests. The grant was directly tied to said maintenance of forests, being specifically designated for it. The commission expected an additional and increased expenditure on forests equivalent to the grant received by every State. This implied guaranteed compensation for forest departments for their activities.

The 13<sup>th</sup> Finance Commission dedicated five times the sum of the preceding Finance Commission, 5000 crores for the preservation and maintenance of forests. Of the total grants-in-aid to States, preservation of forests got 1.5%. A key highlight of the green endeavor in that report incorporated a rule-based purposive devolution of funds. The formula, as presented under, rewarded- in addition to the previous forest acreage in each State- the quality of forests: very dense and moderately dense, and the effort of having conserved more than the national average of forests.

The Commission prefaced this formula with the disclaimer and acknowledgement that forest ecosystems have many beneficial attributes, beyond their density and the biodiversity they inhabit. An ideal formula would significantly benefit from the presence of unique data for said ecosystem for every State, instead of the quality data as reported under Forest Survey of India and State Forest Report. Flagging the standardization issue associated with better variables in both the surveys, the Commission resorted to using the quality and density paradigm given its elaborate measurement under forest cover.

Unlike the 12<sup>th</sup> Finance Commission grant, this grant was not entirely tied to maintenance of forests. To balance the fiscal disability of States and the need for conservation, this Finance Commission proposed a mixed approach- a tied grant for the first two years to facilitate creation of working plans by increasing State capacity and untied for the last three, with a 25% reservation for expenditure on forests alone. The full devolution of calibrated grants was conditional upon the approval of at least 80% of the scientific working plans prepared by the States. With the time horizon of a decade, the emphasis on working plans was laid considering the inevitable forces of climate change and to monitor upkeep of forests.

The issues flagged with respect to 12<sup>th</sup> Finance Commission were retained with the subsequent formulation. The denominator to assess proportion of forest acreage continued to be the States' geographical area, penalizing their physiographic zones. Apart from the limitation mentioned by the Commission itself, the incentive for conservation is too small to generate desirable results.

The 13<sup>th</sup> Finance Commission devolution of funds may be viewed as a transition from a conditional transfer framework to an unconditional transfer framework. The following Finance Commissions, 14<sup>th</sup> and 15<sup>th</sup> did not provide a grants-in-aid for forests and neither did they specify targeted action. The 14<sup>th</sup> Finance Commission observed 'the need to balance management of ecology, environment and climate change consistent with sustainable economic development' in ToR, for the first time. This reflected the clarion call for sustainable development and national recognition of the monetary needs for ecological preservation.

With this inclusion, a concept or framework titled 'Ecological Fiscal Transfers (EFT)' assumes prominence. Prior to the 14<sup>th</sup> Finance Commission, ecology or forests were addressed and made room for, additionally. The Finance Commissions earlier, did not include forests as a criterion for devolution of funds- it was not one among those which determined the States' share in Central taxes. Beginning with a 7.5% weightage in 14<sup>th</sup> Finance Commission and a 10% weightage with 15<sup>th</sup> Finance Commission is an EFT- the States' share of funds now includes an ecological component. This ecology component was represented purely by forests or more precisely tree canopy cover. The need and rewards for conservation have been internalized so far as the limited treatment of forests and ecology is concerned. The distribution of tree canopy cover is not uniform across states due to difference in climate, soil type, i.e., different natural endowments of the states. This calls for a more comprehensive definition of ecology that is inclusive to the ecological diversity of various states. Given the diversity of ecological systems this will call for some ingenuity in design so as to ensure minimal disruption and perverse incentives.

A study conducted by Busch et al. enumerates the impact of EFTs pre- and post the 14<sup>th</sup> Finance Commission devolution states that the forestry budget as share of overall state budget shrank from 0.99% to 0.83% in the three years after the 14<sup>th</sup> FC grant as compared to three years before the grant. The paper highlights another key facet which is the unavailability of cogent state-level forestry budget data. Reasons cited for the lackadaisical approach among states is their lack of confidence in continuation of EFTs and its solemn weightage in the criteria. (Busch, Kapur and Mukherji 2020)

### **3. A Key Gap- Appropriately Defining Forests!**

FC13 clearly mentions the grant as contributing to ecology and biodiversity. The definition of forests in India is an ongoing issue that this paper *per se* doesn't delve into too deeply. We focus rather on the fiscal federal issues and implications for fund flows, created by the varying definitions.

We address two issues one of omission and one of commission. The issue of omission is the exclusion of non-green ecosystems like deserts and grasslands, on the other hand, where it is one of commission is including economic production units like rubber, banana and coconut plantations as ecosystems. To understand the roots of this we look at approach currently used to measure forests as used for the grant.

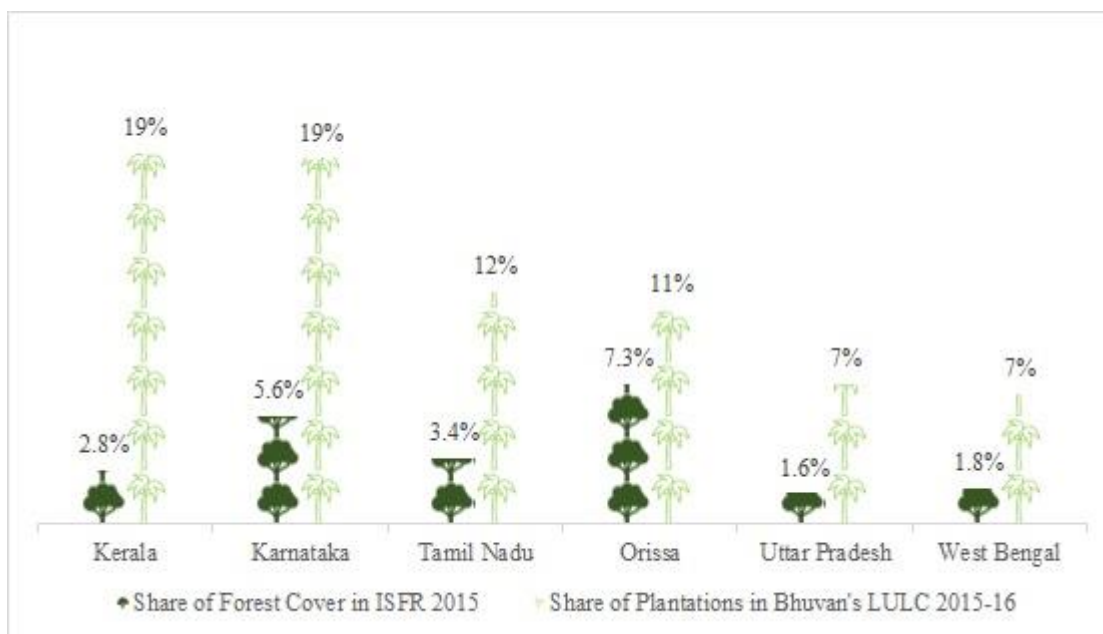
The Indian State of the Forests Report (ISFR) which has been used by all FCs uses a canopy cover metric to define a forest which enables the classification of plantations under the same category. This makes the destruction of primary growth forest cover as long as it is converted to plantations revenue neutral for the purposes of the grant. In other words, all commercial ventures like rubber, banana, coconut, etc. plantations are classified as a forest. As against the Bhuvan dataset which classifies plantations as a separate category. The key difference between plantations and forests is biodiversity. There may be economic reasons as in the case of rubber plantations or politico-optical reasons as in the case of tree plantation drives, but, neither have been known to play a significant role in provision of ecological services, thus, in turn, having no merit for an ecological fiscal transfer.

Forests, on the other hand, have been and are systems, that have coevolved for millions of years. In naturally occurring forests, the variety is spatially unique and a product of a complex process of succession. The ecosystem services derived from a forest are plenty and often unrecognized. These services are a function of their area and as non-linear complex adaptive systems affected by fragmentation. The preservation of these services hence is

dependent on committing large land parcels from other economic activities in provision of this global public good. The financial opportunity cost of conserving a forest, therefore, is high.

Passing off plantations as forests may result in undetectable conversion of the latter to the former. The short-term economic incentives backing monoculture plantations may catalyze the clearing of highly biodiverse natural forests and still wrongly contribute to an increase in ‘forest cover’. The leading States in ISFR 2021, Andhra Pradesh and Telangana, have been largely credited for their increase in plantations.

This mandates a clear distinction between the areas under the two ecosystems. Comparing the ISFR statistics with a dataset which records plantations and forests separately, may help drive the point home. ISRO uses satellite imagery to capture geographical data, freely accessible on its Bhuvan platform. Every five years, it releases the Land Use Land Cover dataset, the latest being for the year 2015-16. This dataset records area under forests, delineating plantations.



*Kerala and Karnataka have 19% of the total area under plantations in the country.*

ISFR 2015 recorded Kerala and Karnataka as having ~3% and ~6% of the total forest cover of the country. The Bhuvan dataset reveals that almost a fifth of their area under ‘forest cover’ was actually plantations. This proportion of plantations is different for each State. Thus, it would be interesting to observe the gainers and the losers once this proportion of ‘planted’ forest area is discounted for. What makes this an important concern is the fiscal implications of this.

The data presented in the ISFR directs national efforts to conserve forests. Quoting the 13th Finance Commission when this criterion was elaborated upon: “The forest grant we

recommend is essentially a reward for contributing to the ecology and biodiversity of India, as well as compensation to states for the opportunity loss on account of keeping areas under forest.” This criterion was included to compensate for the financial opportunity cost of maintaining a forest, which is considered as a global public good. There is enough evidence to show that, like other production activities, plantations that don't consider the local ecology can end up damaging it. Even those plantations that are aligned with local climatic conditions score poorly on the biodiversity front. Rewarding of plantations leads to perverse incentives of converting existing forests to plantations in a revenue neutral manner. This equating of unequal’s penalizes state that harbor primary growth of biodiverse forests and rewards plantations which may generate their own revenue as well as do not produce the same level of ecosystem services.

Thus, the existing devolution of the grant does not explore the full potential of such transfers, as envisioned by the 13th Finance Commission while instituting it. The 13th Finance Commission lamented the lack of data on biodiversity and incentivised its collection. While the biennial publication of the ISFR reports enables availability of latest data for the devolution, its definition and hence assessment of forest cover is problematic as argued above. We recommend exploration of other datasets including the government’s own Bhuvan platform. The presence of such rich and differentiated data paves the way to correctly incentivise future actions of States.

At the core of this issue lies the definition of a forest, the origins of the current definition lie in forest legislation originating in the colonial era Indian Forest Act, 1865. The forest governance since has taken multiple approaches and objectives which leads to the problem of multiple definitions currently restricting a clear delineation of priorities for land use land cover. This will be a larger public policy issue important for conservation of high priority ecological areas, deregulation of allied sustainable activities and allowing for better economic contracts across the sector.

#### **4. A Few Crucial Principles: As we move further**

The 13<sup>th</sup> FC recognised the need of the forest grant as rewarding the past at the same time incentivising the future. The grant in its current form has evolved, as covered earlier, to a large sized untied grant. Acknowledging the forward thinking of the FC’s in increasing the quantum of grants, we highlight the need for integration of a few principles going ahead.



#### **4.1 Equity and Fairness**

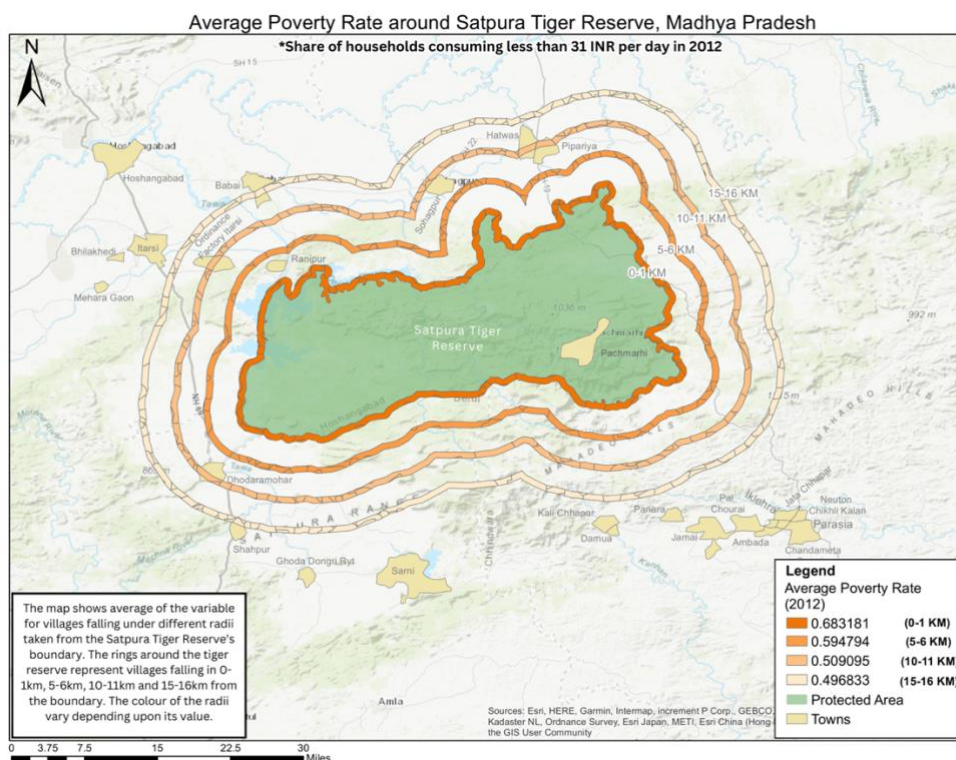
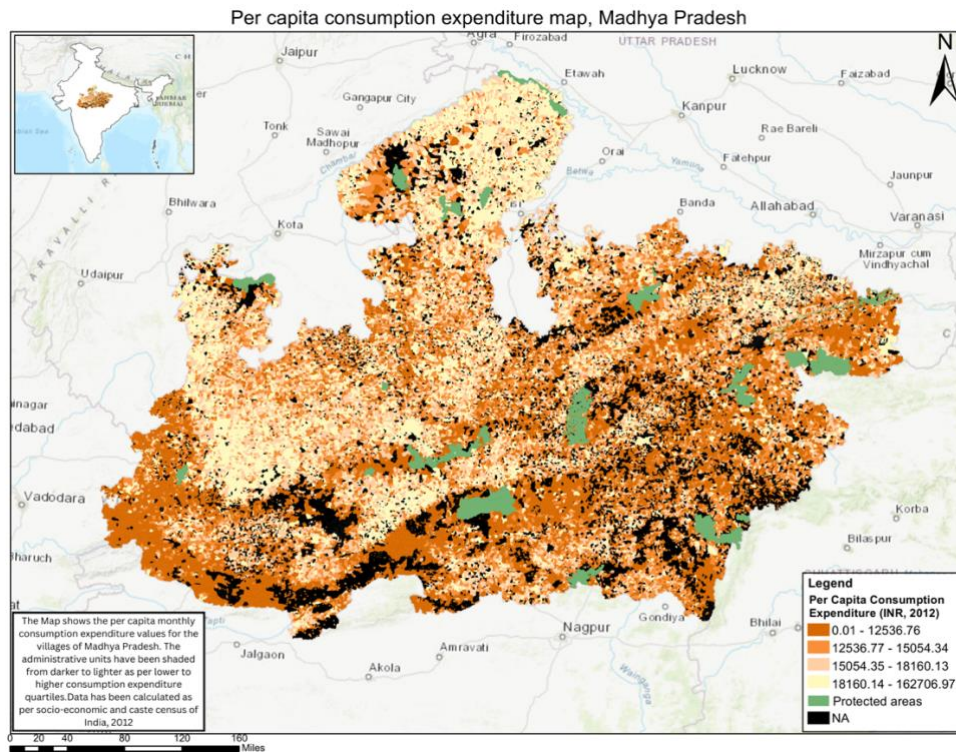
As the quantum of the grant has increased manifold so has the inequity induced through it. The fact that the grant is solely endowment based and doesn't reward effort aggravates this further. The case being made is that of Rajasthan and Gujarat. A green canopy is affected by many endowment factors, the most important being rainfall. Growing or preserving a green canopy with low rainfall is not only difficult but ecologically perverse. Dasgupta (2021) has emphasized the importance of biodiversity and incentivizing the greening of brown landscapes runs contrary to the current understanding of climate resilience and ecosystem services. This is highlighted by the fact that the cheetah, India's only large mammalian extinction, which is now being reintroduced was a grassland specie. The Great Indian Bustard another resident of these brown grassland ecosystem is currently on the verge of extinction. This highlights the vulnerabilities of these ecosystems. The current grant is a perverse incentive for their destruction. It also presents a virtually impossible challenge for Rajasthan and Gujarat to gain more revenue through this criterion and despite the massive ecosystems in the Rann of Kutch and the Thar Desert in these states they get only 1-2% of the grant. Thus, it is critical to move away from the forest centric definition by introducing a minor component of grasslands and deserts. The inclusion of these ecosystems can be a game-changer for these states, the communities that live around these ecosystems, and the biodiversity contained within them. It should be additionally highlighted that the communities in these ecosystems are particularly vulnerable to increasing temperatures due to climate change that can directly affect their survival. This demands that additional budgets are allocated to the third-tier governments of these communities that specifically stand vulnerable to climate change induced changes for which we recommend additionality and ring fencing.

#### **4.2 Ring Fencing and Additionality**

Busch (2020) note that there has been a 16% reduction of forestry budgets as a share of overall budget of the states it also found no statistically significantly correlation between the share of states revenue for the grant and the increase in state's forestry budget. An analysis of the budget of the National Tiger Conservation Authority reveals that there is no real terms increase in budget allocation per square km. of tiger reserves across the country. Apart from functional ring there is no spatial ring-fencing in fund allocation.

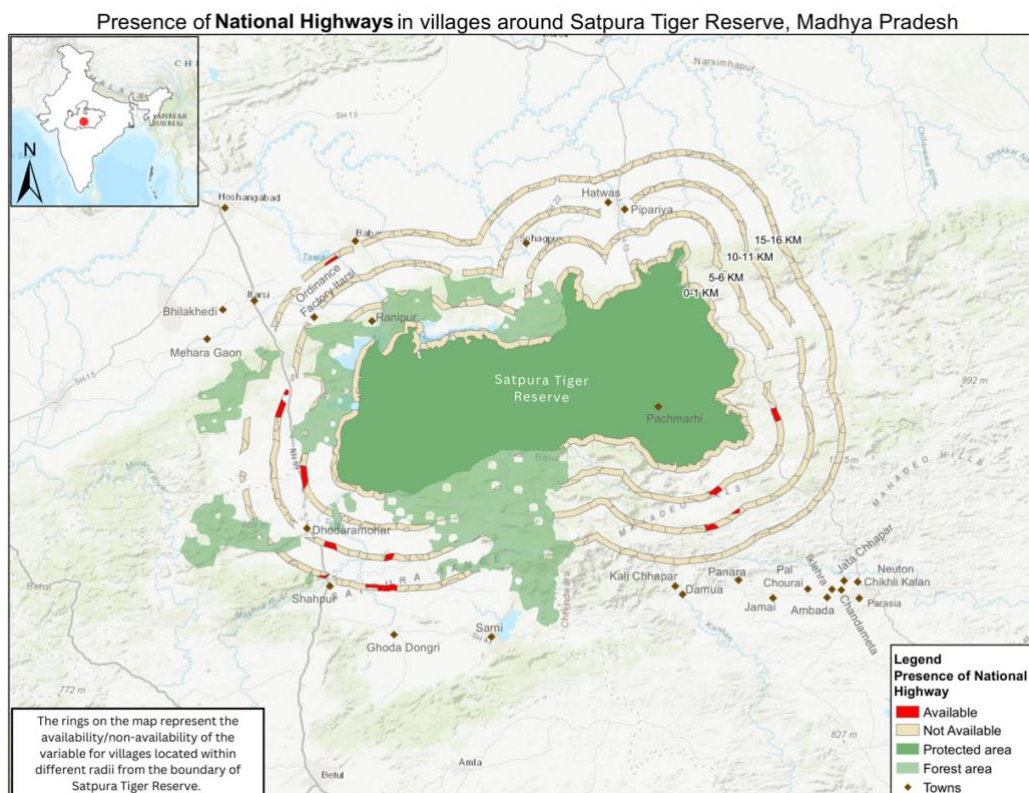
The Wildlife Conservation Trust partnered with the H.T. Parekh Foundation to study the ecosystem governance and the cost of regulation on the communities in light of the Finance

Commission transfers. From that, we take the case of Madhya Pradesh. The locations of its tiger reserves shows that the Protected Areas (PA's) are located in areas that are largely in the bottom quantile in terms of income. Zooming in there is higher poverty in the immediate proximity of these protected areas as against villages even 10 km away.

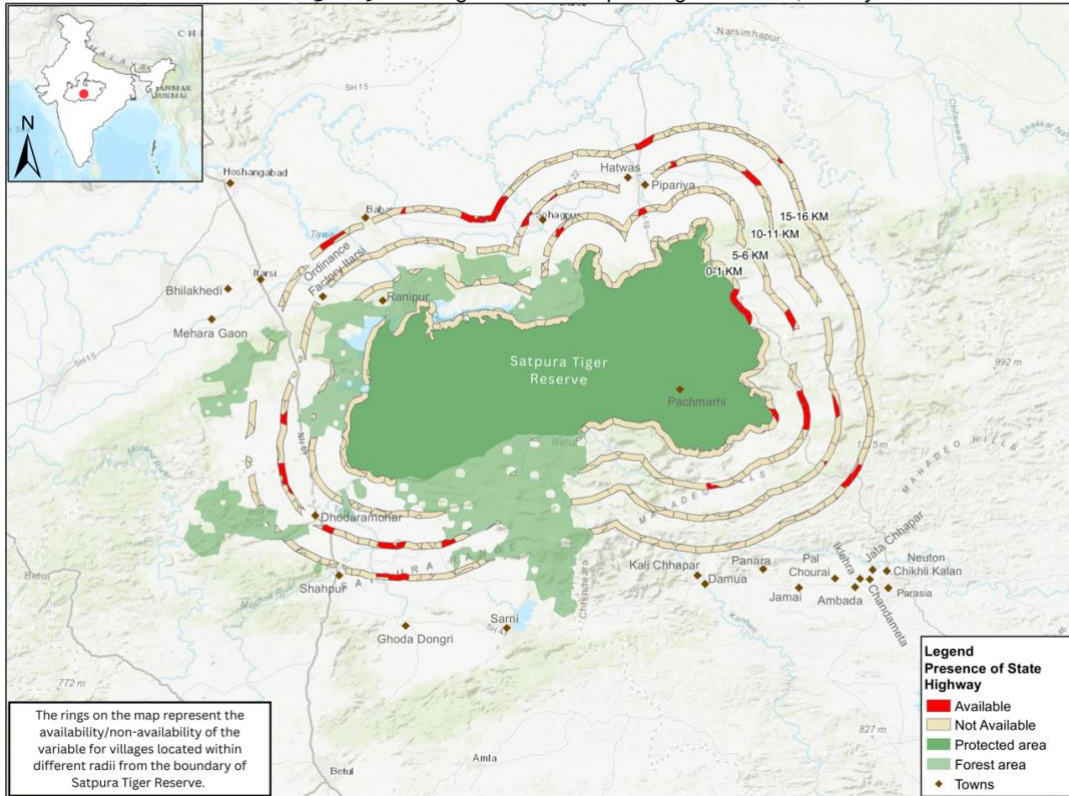


When we explored other parameters like literacy, health and infrastructure we found similar deficits

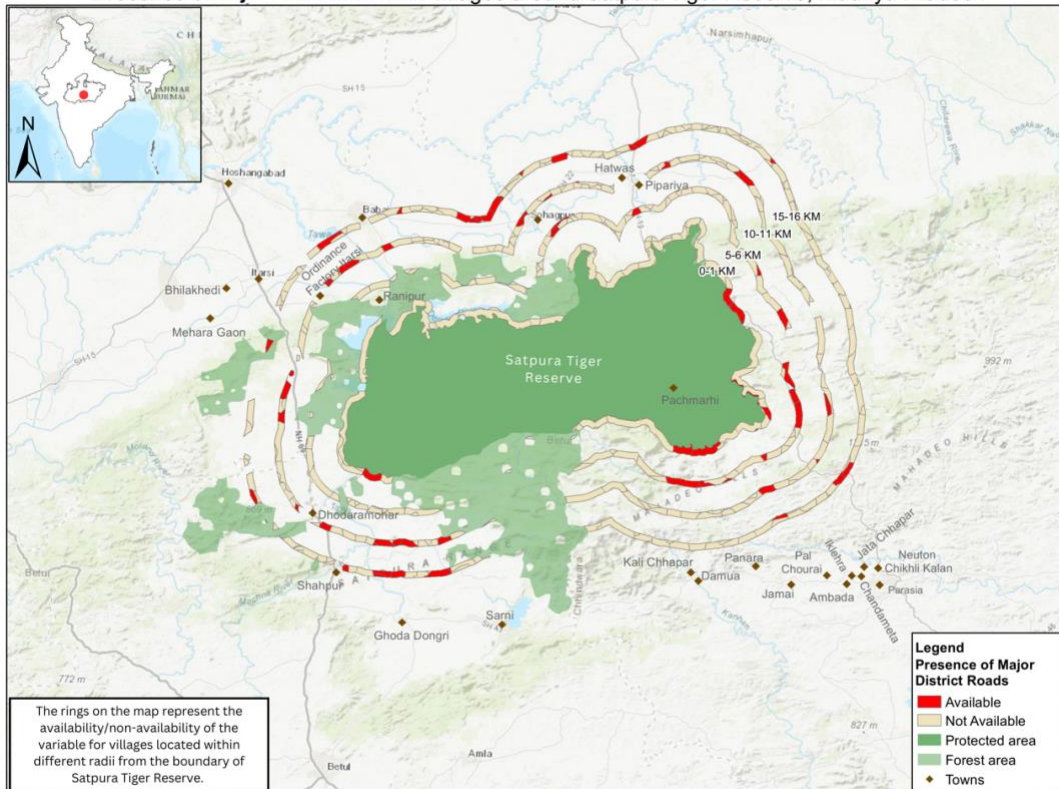
- Literacy increases from 45.48% in the 0-1km bound to 54% in 15-16km bound. Government primary school coverage is almost complete with an average of 91.5% in the region.
- Most health variables such as the number of hospitals, primary health centers have no data. The only other relevant variables are Nutritional Centres- ICDS and ASHA. ICDS coverage drops from 22.72% around the reserve to 13.87% at the farthest bound; ASHA coverage increases with distance from the reserve- 85% to 94%.
- Telephone and mobile phone coverage also increases towards the outermost boundary of the study region- from 16.67% to 28.9% for telephones, and 50% to 80.92% for mobiles.
- Road networks depict a wider coverage as one moves away from the reserve. The red indicates the presence of the road whereas white indicates absence.



Presence of **State Highways** in villages around Satpura Tiger Reserve, Madhya Pradesh



Presence of **Major District Roads** in villages around Satpura Tiger Reserve, Madhya Pradesh



This clearly shows that the opportunity cost principle accepted at a state level should also apply at the third tier of governance and additional revenues should be earmarked for the function of protecting these ecosystems and spatially for the communities that reside around them. There is also the direct cost paid by these communities through loss of lives and property. The implicit costs and structural poverty and deficits may be addressed in the long run, in the short run we recommend a grant-in-aid for to third-tier governments where the explicit costs are borne. Since data for this will be available through compensation paid for these losses. Though spatially ring-fenced by targeting the third-tier its usage can be left to the wisdom of the local governments to cater for the varying needs of each. This can serve as a development grant to address the address the infrastructure and accessibility deficits highlighted above.

### **4.3 Incentivising Performance**

A structure that rewards endowment but also takes into account efforts of the states. The current grant rewards the existing area under canopy cover as a proportion of overall canopy cover in the country. This does not take into account that a lot of states may have actually lost a lot of canopy cover but continue to be highly rewarded by the grant. Theoretically as long as the proportion of loss is less than the aggregate loss the state can also gain revenue despite losing ecosystems.

The ISFR enumerates the absolute area under the 'very dense' and 'moderately dense' forest cover. The FC currently, calculates the proportion of any State has in the forest cover of the country. So, in 2019, Maharashtra had 7.54% of 'Dense Forests' in the country.

Now, focusing solely on the LULC from the Bhuvan data, Maharashtra had 8.3% of the total forest cover. By virtue of its climate and geography, it gains a large piece of the pie. This would be rewarded highly. However, the State has actually lost ~5% of its forest cover. Since considering the delta area of ecosystems will add complications to the current formula that may be self-cancelling thus we recommend no change in the formulaic devolution to include aspects of efforts of the state. Instead we recommend a grant-in-aid to the forest departments of states by rewarding them based on biodiversity contained within the ecosystem. Initially the grant can focus on standardised data collection for biodiversity whereas in the latter part it can be based on biodiversity contained within each state.

## **5. Limitations**

The paper acknowledges its exclusion of other ecosystems like mangroves, wetlands. We have primarily considered terrestrial ecosystems with a similar scale ignoring water-based systems such as riverine, ocean and coastal. The interdependence of ecosystems has been left out of purview- for instance, the presence of mountains attracts precipitation which nourishes the forests around or the relation between forests and grasslands. This is to ensure that the award based on area can be continued. Ecosystems perform different functions at different scales (Chave and Levin, 2004) this has been acknowledged in literature, but current datasets limit its application. Ideally, we should be identifying different ecosystems dominant in different States and bench marking their importance and setting up an equivalence across these to set up a formula for grants to all the States on this count which would be fair. Alas, this is complicated and complex problem which, given the data limitations will have to wait another day, unless if the 16<sup>th</sup> FC can find a way. We see this approach and work around it, very much as work in progress and will be taken up in due course as data and tools are refined and more importantly our understanding of the core domain matures further.

## **6. Recommendations and Conclusion**

The importance of the concerns related to Forest and Ecology was recognised for the first time fairly recently by FC13. This must be seen as a beginning that needed to be applauded although the treatment was fairly simple and the weight that it carried was quite small. This was the result of the paucity of data, unreliability of measurement as well as definitional issues. FC13 itself recognized some of the lacunae but went ahead and introduced the element in the formula in the knowledge that once started it is difficult to stop something in governmental mindset and hope that there would be refinement in proxies for capturing the crucial importance of environment, ecology, and climate. The leap in the quantum of allocations in successive allocations has reflected the growing concerns around these area as well as the need to incentivise the provision of a global public good in ecological services that they produce. We think it's an opportune time that question of fairness and equity amongst states is addressed. This is not only important for strengthening the fiscal transfer but also biodiversity conservation and ecological services provision. Ecosystems vary vastly in India and focus on a single component of forests as a proxy for the general ecosystem is unfair to others and indeed leads to perverse incentives. For example, one may be incentivized to create a plantation in a grassland which are legally classified as wastelands creating an overall ecological imbalance. This will destroy another ecosystem as well as create plantations which disrupts biodiversity,

doesn't contribute ecological services, disrupts local communities' economic activities like grazing. This is the key change we seek in the formulaic flows of the grant. Its continuation will be important for funding continuity as well as India's international climate funding commitments.

The issue of ring-fencing and additionality can be targeted through a grant-in-aid. We recommend a transfer to third tier governments where compensation has been paid to villagers due to losses related to wildlife. A transfer to the third-tier governments can be a recognition of their contribution to the ecosystems and biodiversity conservation. These communities pay a direct cost through crop losses as well as livestock losses. In desperate cases as Chandrapur district in Maharashtra more than 100 lives have been lost to carnivores. Thus, the current analysis shows that it's not merely the direct cost but existence of structural poverty around these areas that will have to be taken into consideration in vertical fund flow design. The usage of the grant can be left to the third-tier governments. Thus it can either address explicit costs of losses of life and property borne by them or more implicit ones like structural poverty. The Shyama Prasad Jan Van Vikas Yojana of the Maharashtra government can be a case study for such fund flows as it transfers a ring-fenced grant for wildlife conflict mitigation directly to villages.

The ideal way to do this, given that resources are fungible and apart from the application of ring-fencing principle both in the sense of magnitude (amount of funds) as well as spatial dimension of expenditure, would be to insist on the play of State Finance Commissions (SFCs). After all, subsidiarity principle implies that SFCs are the constitutionally mandated instrumentality for gauging the local needs and to give them a fillip via devolution and grants. The insistence by the 16<sup>th</sup> FC that this be so will incentivize the States to render SFCs more functional rather than treating them farcically as they are now (see e.g., Pethe and Lalvani 2008, or Pethe et al., 2009)

Lastly for the effort of the states specifically their forest departments we recommend harking back to the recommendations of FC13. Creation of detailed dataset for biodiversity contained within ecosystems is critical for aspects addressed in the paper i.e., better definition of forests and ecosystem, and fair and equitable grounds for horizontal devolution. Thus, we recommend a grant-in-aid to the forest department for creation of datasets for biodiversity. Since FC13 technologies like sensor-based cameras, drones and night-vision cameras have emerged that can better measure these aspects. Thus, the grant can be based on creation of baseline data on biodiversity in the first two years and then based on biodiversity of each state in the next three.

These changes will ensure a more inclusive grant that takes into account the principles laid out by the previous FC's especially FC13. It will ensure all stakeholders have an equitable stake and incentive to protect the ecosystems that they are endowed with. It will also mean higher allocations for addressing the issues that each of the stake-holders face.

### **Acknowledgement**

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