Bettada Jeeva or The Life of the Hills

We've been maintaining tree cover and calling it a win. But a ship of Theseus, this land is not.

The pleasures, the values of contact with the natural world, are not reserved for the scientists. They are available to anyone who will place himself under the influence of a lonely mountain top — or the sea — or the stillness of a forest; or who will stop to think about so small a thing as the mystery of a growing seed. Rachel Carlson.

I recall a quiet village tucked away between the Arabian Sea and the Western Ghats, I recall its people and animals its trees and its smell and it feels homely. This is strange, for I've lived most of my life far away from the sea and hills, in an ever growing, thirsty and bright metropolis. But the luxury of being a tourist in the countryside have been so profoundly impactful that I claim this (probably false) sense of belonging to it.

Growing up in this ancient land led us to believe that we were children of unending greenery. The plantations and forests that surrounded us were a source of mystique, beauty. We conversed with birds, trees, creepers and flowers through silence, and not so silently with our 4-legged friends.

Verse by Astronaut Leland Melvin. Found, as most great writing is, through the marginalian

But this land was of wild Jasmines and all the fauna that came with them. Our ancestors chose to occupy and engineer stream fed rich plantations. The landmass of these Ghats predates my culture, my people, my nation, even my subcontinent's current place in this world. Giants of this magnitude and temporal resilience are revered as Gods, yet the existence of over 325 species that make up this living entity are threatened. It is one of the 8 major global hotspots of biodiversity, and the protocol that has sustained this network of interconnected life forms, that has given me so much, may need some troubleshooting.

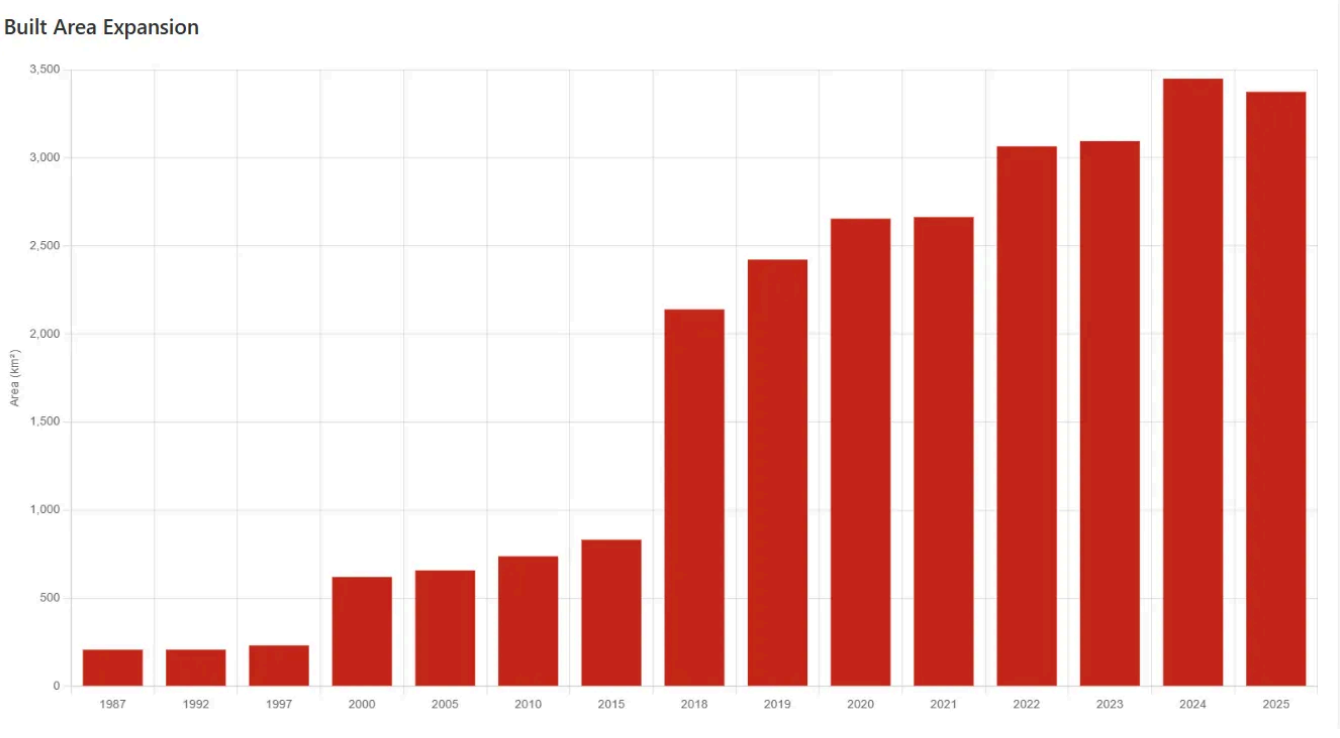
Policy & Politics

The most recent trigger for a dive deep into this subject was 'A Walk Up the Hill', Gadgil's profound biography that gives a sneak peak into the early days of ecological studies in India (and the origins of data driven ecological analysis across the world.) What's most striking, were the events around 2 reports, in a span of 2 years, sanctioned by the Union Government to provide guidelines for the management of the Western Ghats. From an inter-disciplinary perspective the report chaired by a biologist and the same by a guardian of social justice should be complementary, with one borrowing from and building on the other. But the reports, their authors and the politics that surrounded them seemed at odds.

The Gadgil panel suggested treating the entire stretch of the Ghats as ecologically sensitive, with a three-tier zoning system to guide what activities could or couldn't happen in different areas, and it put a lot of emphasis on local community participation. The Kasturirangan panel, in contrast, used satellite data to separate "natural" from "cultural" landscapes, recommending that about 37% of the Ghats, the forested and biodiversity-rich tracts, be given the strongest protection, while leaving more space for human activity elsewhere. Both agreed on banning destructive practices like mining in sensitive zones, but differed in scale: Gadgil cast a wider net, while Kasturirangan zoomed in on core forest areas.

The first report was suppressed, and the second was partially accepted by the union government and some state governments but not implemented in its true spirit owing to political resistance.

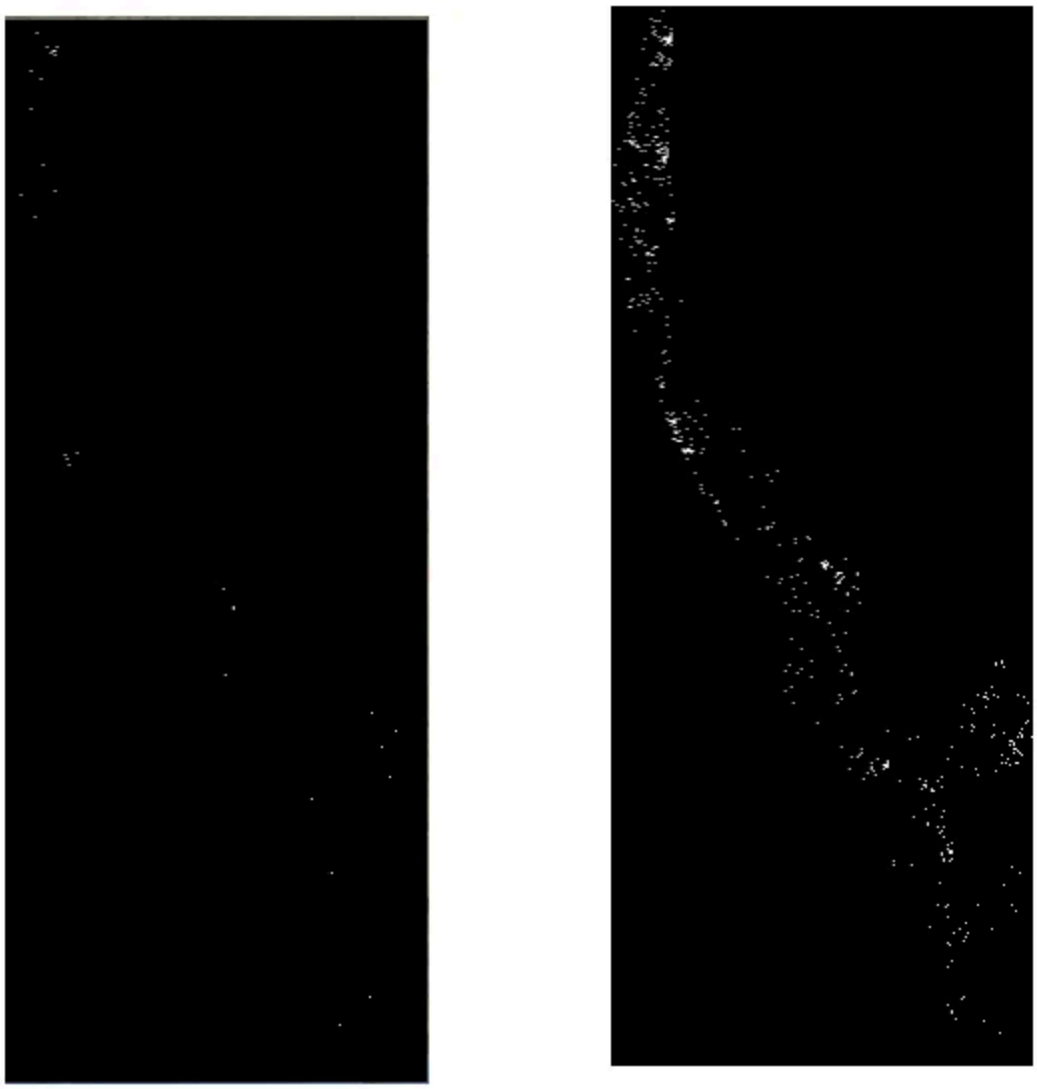
Today, with better instruments collecting data, and easy access to processing and visualization techniques, it's possible for any of us to get One view of how these hills have been living with, because of and despite our presence.



Source: Google Earth Engine analysis on GLC-FCS 30D & Dynamic World datasets. Caveat: We started getting better data after 2016 thanks to the Sentinel program.

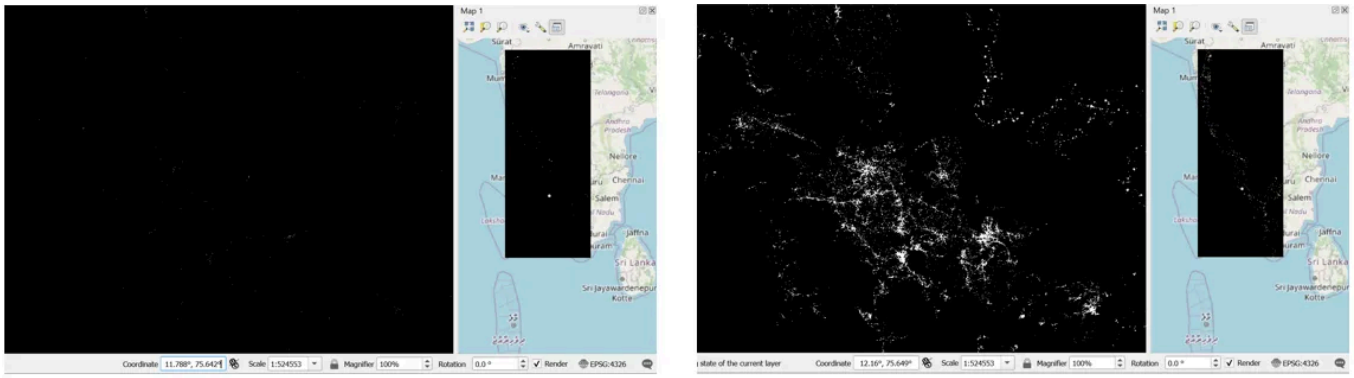
Built up infrastructure (settlements, roads, utilities) seems to be the biggest stressor along these ghats. The development of alternative centers of urban growth is typically positioned as the alternative to the growing demands of mega-cities like Bangalore, where people choose to settle down is often an organic choice, but the direction of public utilities and infrastructure in influencing these choices. This macro-view of the changes in this landmass corroborate the concerns surrounding recreational activities (tourism), irrigation and hydel energy projects in the degradation of ecosystems.

Over 6,000+ elephants migrate through these hills and forests. Their conventional routes are increasingly being lost, or replaced with farmland and herding areas, leading to increased human-wildlife conflict. We trace our origins of coffee cultivation in our subcontinent to these hills, yet making this the epicenter of a globally traded commodity has led to the encroachment of forests and sacred groves.

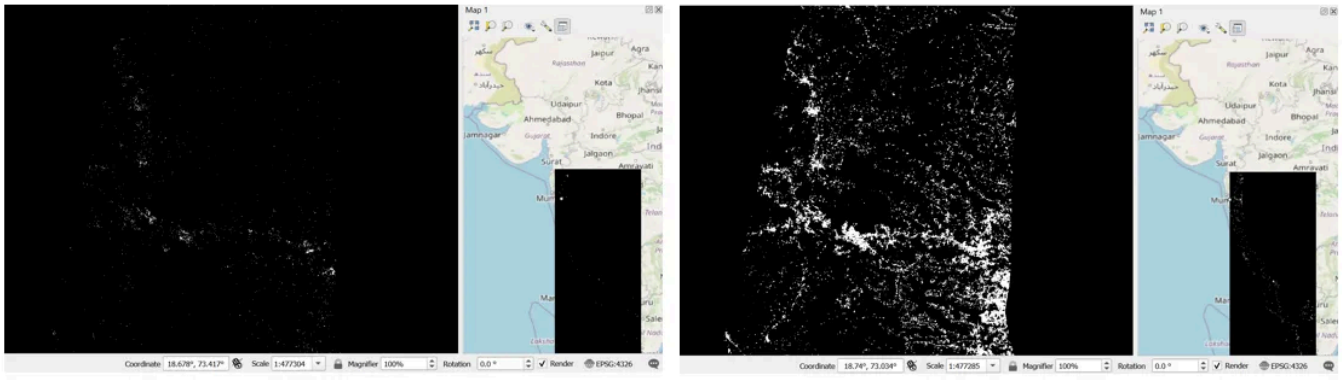


Visualizing the increasing built up area in the ghats from 1987 to 2025

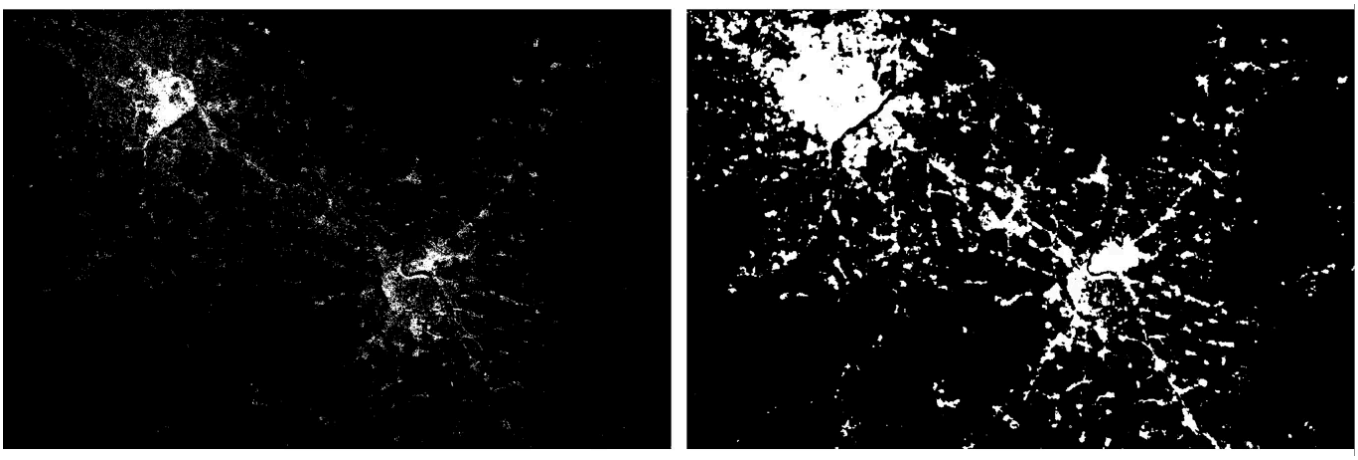
Maps help convey the gravity of 3000+sq km of the natural ecosystems housed by the ghats being lost to urban settlements, resorts and highways. Think of what the cities of Berlin, Moscow and Jakarta mean to their people, their nation and the world, and the impact their complete erasure would have. What's happened in the ghats is akin to this area (same extent of built up area), except that the biodiversity housed in this region means that the impact is compounded several times over.



An anecdotal evidence of increase in built up area picked up randomly, no prioritization in Involved. Left: Wayanad's built up area in 1987 and Right: 2025



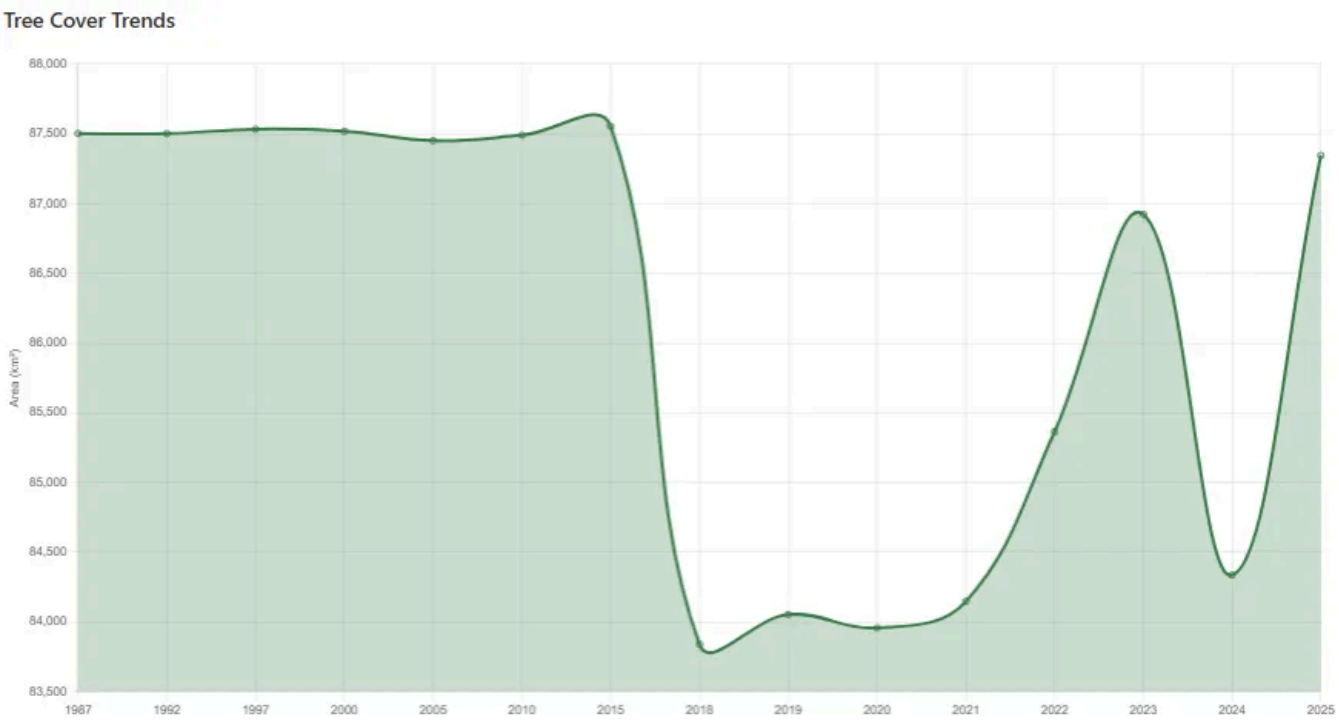
Protected areas in the vicinity of Pune have seen significant increase in built up area, with a protected wildlife sanctuary in the same region not impeding the increase in built up area



Shivamogga in 1987 and 2025

A similar analysis when conducted for tree cover in the same temporal period doesn't align with the changes in built up area for the same region. Relying on

the same sources, the change in tree cover as seen by most satellites between 1987 to 2025 was just a slight decrease by 0.2%. The catch here is in the term ‘tree cover’. Without more granular analysis of seasonal and growth patterns within each year, commercial plantations can be wrongly classified as forest cover. Keep in mind, this analysis hasn’t relied on government surveys and boundaries, rather the standards and resources made more easily accessible by academia and research forums.



While a case for better accesibility of geospatial data collected and formulated by pulic agencies may require a post of its own, for now even the entities with access to these resources seem to be faultering with our definition of forests. Surveyors from the public agencies tasked with mapping and tracking natural ecosystems have historically and recently run into this issue.

This isn’t a problem that a good view through satellites alone can solve. But we can start by choosing not to be apathetic to the problem.

Land Cover Statistics for 1987

Land Cover Class	Area (km²)	Percentage
Water	1146.48	1.1%
Trees	87503.66	80.2%
Grass	758.96	0.7%
Flooded vegetation	720.01	0.7%
Crops	14343.15	13.1%
Shrub and scrub	4403.50	4.0%
Built	207.55	0.2%
Bare	0.59	0.0%

Land Cover Statistics for 2025

Land Cover Class	Area (km²)	Percentage
Water	2904.98	2.7%
Trees	87346.12	81.0%
Grass	918.20	0.9%
Flooded vegetation	180.83	0.2%
Crops	4704.69	4.4%
Shrub and scrub	8410.56	7.8%
Built	3375.01	3.1%
Bare	41.92	0.0%

Are we really loosing one of the worlds richest biodiversity hotspots for barren land?

Next steps:

- Identify commercial plantations and old growth forests
- Stressors on water and aquatic life
- Region specific analysis to find the sort of activity that has contributed to degradation (mining, large infra projects, urban settlements, agri and marketplace activities etc.)
- Collating the required data, tools and stories that can inform local action to minimize our footprint

Point out issues with my work, test the geo-layers and suggest enhancements: https://github.com/tkkr6895/Ghaty/tree/main

> For this unhappy trend there is no single remedy — no panacea. But I believe that the more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction.

Source: https://www.themarginalian.org/2017/09/20/rachel-carson-lost-woods-the-real-world-around-us/

Settings