

AN INCENTIVE MODEL FOR THE REJUVENATION OF THE LOW PRODUCTIVITY OF FORESTS

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INTRODUCTION

Our forests have been significantly and radically damaged, and discovering undistributed forests as produced by Mother Nature is challenging. Forests are unable to provide intrinsic protection, multiple product production, or environmental and human roles in the current system. To avoid an ecological disaster and the inevitable national tragedy that would follow, drastic changes are required. Clear cutting has proven to be a harmful and unsuitable method for tropical forests. The The Forest Survey of India estimates that 33.61 million cum of wood is consumed annually in three sectors: house construction, furniture, and agricultural tools, with a Round Wood Equivalent (RWE) of 48 million cum, in its State of Forest Report 2011. Following that, two biennial reports were published, but neither of them mentioned wood consumption. According to a study conducted by the South Carolina Forestry Commission, India consumed 50.1 million cubic metres of industrial roundwood, 23.2 million tonnes of paper, paperboard, and other fibre, and 11.16 million cubic metres of sawn wood and panel wood in 2014.

REASONS FOR THE LOW PRODUCTIVITY OF FORESTS AND FACTORS CAUSING MAJOR PRODUCTIVITY ISSUES

Nearly a quarter of India's geographical area is covered in forest. Apart from the conventional tangible benefits of timber, firewood, fodder, and other non-timber forest resources, Because of their relevance in carbon sequestration, climate improvement, and ecological security, the conservation of these rich resources has become more important.

However, if we look at the productivity of Indian forests, we can find that they are significantly underproductive. Indian Forest has a production of only 0.7 million m³/hectare/year, compared with an average of 2.1 million m³/hectare/year. Poor management, inadequate planning and implementation, policy changes, and lack of investment, to name a few, are all factors contributing to low productivity, and forest administrators/managers bear a share of the blame. However, a few significant reasons are causing big losses in forest resources and their capacity to generate more, affecting production like no other. The country is making the utmost effort to improve the people's standard of living. The rising standard of living and expanding population necessitate a significantly increased supply of forest products—timber for house construction, packing boxes for industrial goods, and a variety of other uses. The forests of India would be unable to meet the needs of the population in the near future if current management practices are followed. The gap between supply and demand for forest products is growing by the day. The question arises as to why India's existing forests are unable to generate enough resources to meet the needs of the population.

India continues to lose forest cover, according to the most recent official estimates (Forest Survey of India, 2003 State of Forests Report). According to estimates from 2003, almost three million hectares of 'dense forests' have been lost, signifying significant and ongoing deforestation in forests with canopy densities of 40% or more. Because the satellite images used to generate these statistics are still designated as 'classified' in the country, and 'ground-truthing' (if any) exercises are also conducted in a secret¹Anyway, no one knows exactly how much forest is lost each year or where it is lost.

The reasons for the depletion of Forest resources and their low productivity are as follows:

1) Unregulated Grazing:

In India, the cattle population peaked at 350 million in 1950 and has since risen to 520 million. At least half of this population (260 million) relies on forests for grazing, which is mainly unregulated and unrestricted in many Indian states, affecting not only forest speciesⁱⁱ regeneration but also soil quality due to trampling and compacting, making the soil more prone to erosion. According to one study, 78 per cent of India's forests are vulnerable to excessive grazing, illegal felling, and other forms of deforestation. The problem is getting worse every year as the number of livestock increases.

2) Fuel Wood Collection:

Nearly half of the fuel demand in rural India is met by nearby trees. Fuel wood consumption is anticipated to be betweenⁱⁱⁱ 250 and 300 million m³ per year. Only 17 million m³ of firewood has been reported from Indian forests, leaving a massive gap of around 260-270 million m³ of fuelwood unaccounted for. So, where does this massive demand gap come from? Only the adjacent forest regions are subjected to frequent fuel wood extraction, contributing to the already damaged state of the forests.

3) Lack of road and transport facilities:

Large-scale investments used in transportation infrastructure minimise the total costs of transporting goods and people across space and are a major pillar of economic development. Roads are the most popular^{iv} type of transportation investment. There is a significant focus on the impact of road construction and the extension on forest loss as it is considered one of the most significant environmental and forest issues associated with new road construction. Global and local forest cover loss contributes to global greenhouse gas emissions (IPCC, 2007; Jayachandran et al., 2017) and local health externalities (Bauch et al., 2015; Garg, 2017). According to the IPCC, restoring and protecting forests could provide about a sixth of the emissions reductions needed to avoid runaway global warming by 2030. (IPCC, 2019).

Theoretically, road investments can have a positive or negative impact on local forest cover. New roads can contribute to the loss of forest cover by:

- Giving external markets for forest resources, particularly timber and firewood;

- Giving markets for agricultural products, motivating agricultural expansion into forested land; and
- Giving in increasing the value of land for settlement and industry, resulting in a forest clearing. Paved roads, on the other hand, could reduce forest cover loss by,
- Improving local household and industry access to substitutes for local forest resources, particularly firewood; and
- Giving access to external output and labour markets, lowers the relative returns to clearing forests for agricultural land and harvesting other forest products such as firewood. We can also expect the importance of any of these channels to change depending on the type of road, given the significantly different character of rural feeder roads and national highways.^v

4) Forest Depletion through Fire:

Fire has always been an important component of the forest environment, altering the flora and fauna. Fires burn millions of hectares of forest each year throughout the world. Fires are an inevitable part of life, but damaged forests are especially vulnerable. This also has extensively logged forest covers, forests on soil areas, and places where forests have experienced fires that have been suppressed for years, allowing an unnatural accumulation of vegetation to fuel the fire. The loss that results has far-reaching implications for biodiversity, climate, and the economy. There is a significant loss of Indian forests due to forest fires.

5) Illegal and unsustainable logging:

In certain forest lands and areas that have been organised illegal logging has become routine. Forest legislation in the country has failed to make even a dent in the mobster nexus's operations. Instead, this nexus—the most serious threat to Indian forests—is growing stronger by the day and causing major forest productivity issues. Several significant wood scams have been discovered in various sections of the country during the previous 5-6 years. As a result of a scam, the Buxa Tiger Reserve, a biodiversity hotspot in West Bengal's extreme north-eastern region, lost around 10 square kilometres of forest cover in 1998-1999 alone. Authorities in the Protected Areas supplied fake transit passes for illegally felled trees. ^{vi}The Tiger Reserve's timber was mislabeled as private forest timber causing major issues.

MEASURES TO ADOPT FOR THE FULL UTILISATION OF THE FOREST POTENTIAL IN INDIA

Although India has taken positive steps to scale back dioxide emissions by promoting renewable energies, temperature change continues to cause huge challenges for the country's growth. The restoration and conservation of forests that fight climate change have been for the most part ignored. The govt. itself acknowledges through it across the country-outlined prognostication contributions conferred to the UN in 2015 that conversion can cause quite thirty-three per cent of the world's CO₂ emissions. India's Intended Nationality Determined Contributions emphasise that increasing the country's inexperienced coverage will create an extra 2.53 billion heaps of carbon sink between 2021 and 2030. At a similar time, activities such as legal and ineligible logging, deforestation for development functions and unreal forest fires continue intensely and contradict the goals of the official climate protection declarations. inexperienced roofing through property planning, which might solely be solved by a radical amendment in forest management and nature conservation within the country. Modern economists emphasise the chemical change role that technological change plays in the development of a country, particularly for developing countries like India, which act as an insulation behind the development of such technologies. Biology is another sector that would benefit from these technological applications. Supported by the conception of the Internet of Things, an intelligent and practical network of interconnected devices is created through a dynamic world infrastructure network so as to attach and exchange information between locations at any time in order to preserve the forests of Asian countries and at a similar time give data that may act as catalysts for a service a lot of property forest management. Using data on soil and climate conditions, these intelligent sensors can support nature conservation and sustainable forest management with prognostication analytics. ^{vii}

A solution to the vital challenges we have a tendency to face in India: Sensible Sensors.

At the international level, the utilization of "Smart Forestry Interventions" to observe forest action plans has been mentioned for many years. Many countries have pioneered this. In Brazil, for example, whose forest space makes up around sixty-four per cent of the entire land area: The startup Treevia developed an overseas forest observation system referred to as sensible Forest in 2014. Treevia has developed wireless electronic sensors to monitor the expansion of Brazilian forests in real time. The information collected by these sensors is analyzed and

accustomed to formulate guidelines. The solutions offered by SmartForest embrace digital inventory registration systems, high-precision data forest research, hazard assessment and professional recommendation on forest management. A few months have shown that SmartForest is a lot more fortunate than ancient sources at collecting information.

Legal Logging

Legal work In India it's legal to fell bound trees, however it is vital to properly establish these trees. For example, if Associate in Nursing recent or sick tree isn't hewn, it will unfold parasitic infections or vie for more nutrients that support healthy tree growth in your neighborhood. inexperienced bots can facilitate formulating a wise cutting arrangement that enables individuals to sift through data to see that a tree in a very forest ought to be felled to support its health. inexperienced bots also can facilitate lazy logs. assess a tree' susceptibleness to fossil fuel leaks at the basic level; and check for alkane series leaks, that spend chemical elements at the root level and might cause a tree to die so settled trees are relocated in a very timely manner.

The Tribal Community Flourishment

Many endemic communities in india suffer severe discrimination and impoverishment despite living in areas that are wealthy in natural resources. The modernization of Indian society and business has resulted within the exploitation of those resources adore forests, marginalizing native communities. At constant time, this modernization has become a vital supply of financial gain for the states. massive forests are selected as "Reserved" and placed below the management of the State Department for the regulated gathering of timber and different products. Communities have been denied access to those resources that have semiconductor diodes to conflict between the community and also the state's claim to any or all forest wealth. It is important that governments formulate effective methods to deal with these conflicts through development activities. In its Policy Draft 2018, the Indian government projected putting in the Community Forest Management Mission to boost the management of community forest resources through a democratic forest management approach. The draft directive additionally contains specific provisions to make sure that the interests of native communities are protected and viewed as partners in forest management. During this regard, the province pioneered the event of the Joint Program Forest Management (JFMP) which has since been adopted by numerous states adore Himachal Pradesh, Andhra Pradesh and Madhya Pradesh. As a part of the JFMP, communities living close to forests in the province are currently to blame for

protecting forests, plantations and wildlife; and preventing break-ins, forest fires, and different activities not mentioned within the Indian Forests Act 1972. In return, part of the harvest is distributed to the community.

Institutions established to aid the purpose:

Compensatory Afforestation Fund Management and Planning Authority -

The(CAMPA) was created in 2009 as a national planning board chaired by the Minister for Setting and Forests of the Union to monitor, give technical help and value counteractive conversion measures. and regeneration activities to atone for forest areas that don't seem to be used for forest purposes. The order was passed for the establishment of a fund by the Apex Court of Republic of India in 2006 and was approved in 2009 to disbursement of roughly \$ five billion. Funds collected by user agencies for compensatory afforestation, extra compensatory afforestation, penal compensatory afforestation, internet gift value (NPV) and the other amounts collected by such agencies below the Forest (Conservation) Act of 1980; They use the collected funds for compensatory afforestation, supported natural regeneration, conservation and protection of forests, infrastructure development, conservation and protection of wild animals.

National Mission for a Green India

GIM is one among the government' eight national missions below its National Action arrange on temperature change several hectares of non-forest land under forest cowl through social and agricultural forestry. In 2014, the Cupboard Committee on Economic Affairs (CCEA) approved an outlay of Rs thirteen billion (\$ 2.1 billion) to revive plantations and forests within the country over successive 5 years, marking the beginning of the program. ^{viii}

National Afforestation Program (NAP)- The NAP program started in 2006 and aims to support the continued method of delegation of forest protection, management and development functions to localised establishments of the Joint Forest Management Committee (JFMC) at the village and development level agency (FDA) at the forest department level. The overall objective of the program is to develop forest resources with community participation, with a spotlight on the livelihoods of open forest communities, particularly the poor.

IMPACTS OF LOW PRODUCTIVITY OF FORESTS AND PREVENTION MEASURES

The low productivity of forests is one of the significant issues that we face in this era. It affects our daily lives and has an impact on the economy of our country. India faces a massive decrease in forest productivity compared to other countries. For example, annual productivity of Indian forest is only 0.5 cubic metres per hectare while it is 1.25, 1.8, 3.9 cubic metre per hectare in the USA, Japan and France respectively.^{ix} This research paper tries to look into the problems that are caused due to low productivity in Indian forest and tries to find possible measures that can be adopted to increase forest productivity.

Low Productivity of Forests - Data Analysis

The forest productivity is measured through the Net Primary Production (NPP) of a particular forest. Increase in the size of the trunk of trees in a forest, growth of their tissues, etc are the factors which are used to calculate Net Primary Production. Low productivity of forest means the reduced amount of biomass and less resistance of forest cover against irreversible transformations. To be more precise, it is the loss of biological productivity, increased complexity in woodlands and forest covers due to unethical soil use that can cause wind and water erosion, decreased transformation in properties of soils in physical, chemical and biological aspects.^x After phytosociological study that was conducted in the forests of Central Himalaya, it was found out that forest biomass decreased from 308.3 ton/ha to 40.5 ton/ha over the past several years. This is a massive reduction of forest biomass that can pose a great threat to coming generations. Mines and mineral excavators, timber merchants and communities in and around the forests are the key players in reducing forest productivity. Other major factors include corrupt-minded economic and political powers, high population growth, shortcomings in the market system, inefficient government policies, etc.

Low productivity of forests can occur in different forms; most importantly, it happens in open forest transformations or takes place as a result of human actions such as overgrazing, over exploitation, deposition of waste or due to attack of insects or due to natural disasters such as cyclones, forest fires, heavy rainfall, etc. In most cases, these factors do not decrease the vegetation cover of huge trees but rather will decrease the biomass or composition of the soil.

In reality, long chains of interlinked causes eventually lead to the low productivity of forests. Many studies show that individual causes occurred due to higher causes or are the after-effects of phenomena as a result of these higher causes.

Impacts of Low Productivity of Forests

Various studies conducted on the decline in forest produce show that the problems affecting our country due to low productivity are countless. This is affecting various categories of people who depend on forests directly or indirectly.

In the case of farmers and shifting cultivators, their means of survival will be affected. Since the forest produce is decreased, their income will decline, and the fertility of the soil will not be enough for the next cycle of cultivation, thus affecting their subsistence. This will lead to poverty and malnutrition in their communities. Also, for local communities and forest dwellers living on the outskirts of the forests, there will be a decrease in the availability of items necessary for their daily needs, such as fruits and vegetables, firewoods, fodder, etc. In this way, they will also be hit by poverty.

As far as commercial industries based on forests are concerned, there will not be enough raw materials for their production, which will affect their profit, company stocks will fall to low points, and the shares in the international market system will be reduced, thus leading to a massive market failure. It will also affect the political stability of our country as people will face a great depression in the economy. The effect will be no less in the global aspect. The crash of effective, sustainable food production and lack of availability of valuable medicinal and other products will affect the global market as many of these products are exported from our country.

Thus, the low productivity in Indian forests seriously affects the economy of our country since about 70% of the Indian rural population depends on forest for their income.^{xi} In addition, there will be a loss of cultural heritage, social and traditional values of preserving forests in coming generations of the forest communities.

Measures to Prevent Low Productivity

We have already lost the time to start concerning over this problem and to take preventive measures. In the scenario of decreasing economy from the forest sector, the Government is compelled to take strict action to prevent low productivity and increase the productivity of the forest. One such program adopted by the Government is Payment for Environmental Services (PES). In this system, ^{xiii}the users of the services of the ecosystem pay for the services they avail to its providers. This system is an economic incentive for protecting forests thus increasing forest produce. The main aim of this system is to give payment to landowners for protecting their land and services rendered by nature, in the form of clean water, habitat for wildlife, air, etc. In this way, participation of people can be used for achieving the goal.

Another method to increase forest produce is the practice of eco forestry. In this method, the trees that have high economic demands are planted in large numbers and protected while conserving other parts of the forests by means of minimal damage. Thus, the economy from forest can increase by not affecting the ecosystem.

In addition to these, there are several other measures that will be effective for increasing forest produce according to various studies that have been conducted. This includes having a consensus about collective needs of people and manage the use of forest accordingly; an effective system of rules and regulations on usage of forest produce can be introduced by taking strict actions against those who violate these rules irrespective of their status and position in the society. And management of forests should be done in such a way that it does not affect the rights of tribal communities and forest dwellers.

Forest sectors play a key role in the economy of our country. So, a decline in this sector will affect our economy and can lead to its depression. According to studies conducted on the management of forests, it was observed that only collective participation of both ordinary citizens as well as the government could only prevent the causes leading to the low productivity of forests. Thus, it is our duty to participate in forest conservation activities and decrease the economic impacts of the forest sector on the whole economy of our country.

CRITICAL ANALYSIS OF THE CURRENT INDIAN FOREST LAWS AND POLICIES

Forests and the rich natural resources that they offer, along with the territories that are protected for them to flourish, and the several other benefits that the existence of forests provides society, has inherently been subject to policy regulation and compliance. However, the law and its policies are heavily anthropocentric, putting society and human needs at the forefront and making the protection of forests and wildlife a second priority – ultimately hindering the growth and reform required in order to make policies that would suit the currently large and dense Indian society, with its massive strides that it has made in technology, as well as the protection of the developments that need to be made with regards to forests. This section aims to analyse the forest policies and laws with regards to the issues of implementation and structural impediments that have rendered these mechanisms to be relatively less effective.

Summary of Indian Forest Law Post-Independence

The Indian Forest laws and policies are notorious for its anthropocentric approaches, which reflects the stance of the Indian government to prioritise economic growth and development, as well as poverty eradication, over environmental protection and sustainability. This has not only adversely affected the protection of forests in India, but has also ultimately led to biodiversity loss, species extinction, an overall increase in pollution and a major contribution to climate change.^{xiii}

The first law enacted after Indian independence relating to Indian forests was the Second National Forest Policy, 1952. The policy stated that the government and administration would ensure that 33% of Indian terrain would be kept under forest cover, which would be around 1/3rd of Indian land.^{xiv}

Two decades later, in 1972, the Wildlife Protection Act was enacted, which signalled government support for wildlife conservation and protection. However, the Wildlife Protection Act was more focussed on the well-being of wild animals and their habitat, largely including forest cover and terrain.^{xv} This was a secondary Act that was put into place in order to supplement the cause of protection of biodiversity and the wealth of natural resources that it brought with it.

Soon after this, the Indian Forest (Conservation) Act, 1980, was put into place, which mandated the individual Indian states to seek approval from the Government of India before the “diversion of any forestland for non-forestry purposes”. It also has provisions for “compensatory afforestation”, preferably in areas where there are no forests. This was enacted to help incentivise the general population to take part in the conservation of forests and have an active part in the contribution to climate change.^{xvi}

The Indian Forest (Conservation) Act of 1980 led to the Third National Forest Policy of 1988 which further emphasised the involvement of the communities in forest regeneration. The Third National Forest Policy prioritised sustainable development and thereby promoted the concept of the mindful management of resources, in order to have a livable environment, even in the coming generations.

In 2006, the Indian legislature recognized the rights of forest dwellers and their inherent rights over forest land for the first time. The Forest Rights Act was enacted to ensure that the fundamental rights of their life and liberty are protected and secured in a legal manner, and provided as a novel yet groundbreaking landmark law that recognises the rights of tribal communities and forest dwellers over forest land.^{xvii}

Lastly, the Draft Amendment of the Indian Forests Act of 2019 was published. This currently enables the bureaucracy to overrule and countermand any people-centric forest practices and regimes, as the Forest Rights Act had adopted in 2006, and allows for the revocation and legal challenging of any counterproductive procedures that were still in place. Through this Draft Amendment, the Indian government’s approach to forest policy and protection has symbolised its evolution to a more environment-focused approach, and the beginning of the deviation from an anthropocentric outlook.^{xviii} However, this has been perceived as “dangerous and fanciful”, as it showcases the unwillingness of authorities to take on a different role and may adversely affect biodiversity, gram sabhas, tribal groups and pastoralists, etc.^{xix}

CRITICISMS OF CURRENT FOREST LAWS

The current forest laws, policies and regulations that will be discussed in this section are: the Indian Forest Act of 1927; the Indian Forest (Conservation) Act of 1980; and the National Forest Policy of 1988.

The Indian Forest Act of 1927 was enacted to integrate previous laws and policies with respect to forests. It empowered the government to recognize and govern different classes of forests, such as: reserved forests; protected forests; and village forests. However, the Act was enacted with a hidden intention of gaining revenue and profit generation from forest produce and the cutting of trees.

The Act was enacted before independence, and thus is perceived as a law that has not changed ever since, even with the evolving circumstances and issues that continue to pose a threat to India and the world at large. The Act was largely based on previous British laws in India, which dictated the unsustainable exhausting of natural resources, and led to further degradation of the environment. Although the Indian Forest Act has been altered and amended, the Act, as well as its lack of synergy with other sectors of industry and society, has failed to reach its full potential. The Indian Forest Act of 1927 is a primary set of laws that was supposed to uphold the protection of forests and sustainability and was supposed to be a central pillar of environmental governance in India. However, it led to several other issues, such as the deprivation of the rights of nomads, forest dwellers and tribal communities; harassment of forest dwellers; and other principles such as biodiversity, soil erosion avoidance, wildlife preservation, and forest conservation were eclipsed by profit maximisation.

In addition to this, the Indian Forest (Conservation) Act of 1980, is another important law that, although criticised to be anthropocentric, is a step towards the right direction. The Act mandates that individual State governments seek permission and approval from the Central government regarding deforestation and the usage of forest resources for “non-forestry purposes” and assist with the creation of an advisory committee to recommend the re-classification of forests.

By disempowering individual State governments to make decisions by themselves regarding forestry, the central government has a deeper sense of authority, as well as responsibility, in order to strike a balance between developmental needs and environmental conservation. The diversion of forest land is usually allowed for developmental purposes, such as the building of railway lines and irrigation projects. The legislation mandates compensatory afforestation and the submission to the state authority of plans for catchment area treatment, biodiversity and wildlife conservation, and rehabilitation, among other things.

Lastly, the National Forest Policy of 1988 was created to provide compensatory afforestation, critical environmental safeguards, and long-term forest usage, maintenance, restoration, and enhancement. It emphasised the importance of forests meeting people's subsistence needs, and it aimed to reduce forest degradation via improved management. It also states that agricultural forestry should increasingly meet industrial timber demands.

The Indian government and administration, the Indian legislature and, the Ministry of Environment, Forests and Climate Change, need to enact laws and policies with regards to making the conscious shift from anthropocentrism to ecocentrism, as well as keeping futuristic views in place in order to monitor and ensure that the environment is protected and climate change is being curbed.

ROLE OF FOREST BENEFICIARIES IN REVAMPING THE LOW PRODUCTIVITY OF THE FORESTS

Forests are a livelihood source for many individuals residing in and around the forest areas. Although a significant share of the forest supplies is utilised by the inhabitants living within the forest boundaries, the group of beneficiaries also involve another group of individuals who do not reside there, however, which causes an effect on its regeneration. Communities living in the forest are in many ways dependent on forest resources to sustain their livelihood. These communities generally carry out agricultural activities on a small patch of forest. But, neither of their practices causes any long-term harm to the forests; instead, the forest continues to regenerate and heal itself, but such regeneration is only possible because such a level of encroachment does not destroy the forest as a whole. All these communities hold customary rights to the forests, and such privileged treatment has always proven to befriend the forests.^{xx}

The woods have deliberately been observed as a safety net for endangered communities. In return, these traditional ecological management techniques have provided an uninterrupted supply of forest supplies for indigenous groups, which has also been a factor in earning cash income to tribal groups.^{xxi} All individuals, such as the 'insiders', eventually those who stay in immediate areas and the 'outsiders', benefit from forests in their domain. Both sects of loggers extract their requirements from the forest.

Forest dwellers, tribal groups, villagers, industrialists, the state and any other individual who receive and enjoy benefits from the forest in whatever way constitute the congregation of forest beneficiaries. All their daily chores, such as collecting fuel, fodder and raw materials, originated and terminated within the forest compound. The beneficiaries also rely on the forest supplies to commit their business supplies and lifestyle pedigrees. It is evident from the consumers of forest supplies that there is a significant consumption of forest produce. A sustainable character could lead to low productivity if it continues without imbibing.^{xxii}

The beneficiaries, in return, also regulate the fierce encroachment caused to forests by outsiders and always render their part by executing barricades and commencing treatments to avoid such encroachments in the near future. Thus, it is diligently proved that, although the forest beneficiaries are a cause for forest depletion on a large scale, the same are the members who maintain the durability and sustainability of forests. Local people are more likely to appreciate the participation, but only if the cost associated with their contribution earns them what they expect from the behaviour of forest keepers. Forest conservation goals cannot be fulfilled without the support of local communities residing near reserve forests.^{xxiii}

Forest supplies are limited and mortal, thus, overconsumption without recreation could turn forests into barren lands. Forests can tolerate a certain level of exploitation, and if the deforestation or consumption exceeds the toleration level of the forest, then it would probably result in some serious unintended consequences. And in order to avoid such an irreversible phase of the forest, certain compensatory practices of reforestation are initiated by the forest beneficiaries. If forests inevitably inherit the character of low productivity because of non-treatment by beneficiaries, then eventually, this would also hit the inhabitants' perennial livelihood source. Thus, such survival instincts of forest supplies spur the beneficiaries to maintain the standard consistency in procuring forest supplies also, on the other hand, act as an incentive to maintain the productivity of forests.^{xxiv}

These forest inhabitants, principally the tribal communities, are settled within the vicinity of the forest. The necessity and the significance received from forest supplies impliedly trigger them to inherit only those practices which have been practising since their civilisations. Moreover, doing so would sustain the forest and ultimately act as a catalyst for their survival. Tribal communities being the conservative followers, possess enmity over modernisation and

thus always prefer to cover themselves from the light of modernity. Consequently, they are always conscious about the maintenance of protective gear, i.e., dense forest. The weathering away of soil is a severe threat to the productivity of forest because soil erosion, being a consequence of low roots, generally departs the fertile soil to the slopes which moulds the forest to grow densely in only a few spots. Trees growing near the dense areas always suffer the inadequacy of sunlight or water affecting the productivity of forests. The indigenous people of the forest have been traditionally practising multi-cropping formulae in their agriculture activity, and such multi-cropping techniques are healing the productivity loss caused by soil erosion. One of the reasons for low productivity in the forest is the frequent water-shedding near trees. Water shedding avoids the necessary oxygen from penetrating through the soil pores and ultimately affects the growth of plants in the forest. Thus, in order to prevent such a situation, forest beneficiaries regularly engage in the ploughing of land as doing so would regulate and maintain the slopes in the forest.

The ethnic communities primarily depend on fruits and vegetables naturally grown in forests for their appetite. But this consumption is highly followed in a structural manner as this consumption happens in diverse forms. This is a long way and also supports the dispersion process, which is very prudent for forest productivity. Shifting agriculture or the jhum cultivation practice by primitive people is genuinely commendable due to its contribution to the retention of the fertility of the soil. If the agricultural activity is practised on a single time, as being done in other parts then in time memorial could lead to loss of fertility, thus shifting cultivation by primitive people residing near forest assist the natural process of forest regeneration. Moreover, it would also contribute to reducing pollution caused by burning post-yields.

Any debris produced after the construction of houses is generally turned out to be destroying nature. But principally the indigenous communities with an objective of conservation do not engage in constructing permanent structures. Instead, they choose huts built of leaves and branches as their homes. One of the devastating advantages of such shelters is that they do not produce any decomposable threat to the forest in which it is strongly dismantled.^{xxv} Generally, the forest activities by indigenous communities are carried with zero waste as all the waste they rarely produce are decomposable in nature. And the same matter on further processing could benefit forests' flourishing^{xxvi}.

Forest beneficiaries are well-acquainted with the necessity of a dense canopy in the forest. The forest canopy acts as a barrier for direct sunlight entering the forest, and the same canopy also resists the harmful rays from hitting the dry leaves lying on the ground. And such a hit has turned out to be a primary cause of forest fires. Therefore, forest communities maintain such canopy by not weeding out the non-commercial plants as they are suitable for providing canopy. Few beneficiaries also achieve such objectives by enforcing systematic deforestation techniques.

Every year, the government allocates large-scale forests for non-forest purposes to the commercial industries, leading to massive forest resource degradation. Also, such activities impact the livelihood of forest communities. Therefore, the conservation of forest communities becomes a significant issue that must be handled with the highest priority in order to preserve the forest and increase production. One of the many wheels of sustainability is not corporations. The other wheels are made up of consumers and governments. Governments must implement economically viable, ecologically sustainable policies, and consumers must be ready to purchase fewer items and utilise them more wisely.^{xxvii}

CONCLUSION

The decline in forest productivity and a lull in forestry activities gradually destroyed the livelihoods of millions of poorer families living in forest areas, and in many cases, starving, impoverished people are forced to aid the forces that are destroying forests for commercial profit. As a result of the notion that forest people are to blame for deforestation and low productivity of forests, governments have responded by enacting harsher and more stringent forest laws, limiting people's access to forests. The state, environmentalists, and the mainstream media consistently argue that the destruction of the country's forests and biodiversity is mostly due to an increase in human population, cattle population, and so-called biotic pressure.' What is often overlooked is that forest people have a profound cultural and spiritual tie with their surroundings that prevents them from exploiting and degrading forests on their own volition. The urban elite and the state force non-sustainable and commercial forest use on forest people by denying them basic, subsistence-level access to their traditional resource base on the one

hand, while continuing to exploit them intensively on the other. Hence conserving forests is vital.

ENDNOTES

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