



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

INTERNATIONAL JOURNAL  
OF CURRENT RESEARCH

*International Journal of Current Research*  
Vol. 13, Issue, 12, pp.19979-19983, December, 2021

DOI: <https://doi.org/10.24941/ijcr.42677.12.2021>

## RESEARCH ARTICLE

# CLIMATE CHANGE & PROTECTION OF ENVIRONMENT: THREE TIERS CANOPY DEVELOPMENT PROPAGATING ENVIRONMENTAL CHALLENGE & ITS JUSTNESS

**\*Dr. Suparna Sanyal Mukherjee M.Sc, M.Ed, Ph.D**

Head Ph.D cell & Academic Coordinator, HOD Dept. of Social Science, Seacom Skills University, Bolpur, Shantiniketan

### ARTICLE INFO

#### Article History:

Received 17<sup>th</sup> September, 2021

Received in revised form

28<sup>th</sup> October, 2021

Accepted 10<sup>th</sup> November, 2021

Published online 29<sup>th</sup> December, 2021

#### Keywords:

Canopy, Challenge, Climate, Development, Environment, Forest, Protection.

#### \*Corresponding author:

**Dr. Suparna Sanyal Mukherjee**  
M.Sc, M.Ed, Ph.D

### ABSTRACT

Physical circumference of our Planet Earth has its specific surroundings where Plant and Animal Kingdom are surviving. These are maintaining symbiotic relationship since time immemorial. Catering to the formation of an environment. Environment plays a vital role to protect life forms. Forest is the most essential environmental benefactor. A vast country like India with all kinds of geographical definitions within it, woodlands cover a substantial land area with its canopy development spreading on us. The climate change and natural phenomenon always create a dichotomy to protect life forms within the environment. Plant and Animal Kingdom are habituating in such natural orientation, where law of nature play its own role, naturally. There are various international attempts to achieve a global solution to climate change that there is little hope of preventing dangerous climate change unless nations take their equal and just obligations into account in setting national responses to climate change. In ratifying the United Nations Framework Convention on Climate Change (UNFCCC), nations agreed to adopt policies and measures based upon "equity" to prevent dangerous anthropogenic interference with the climate system. The Indian Forest Act 1927 and Forest Conservation Act 1980 have a specific jurisprudence of law for conservation of Forest and protection. Indian Forest Policies 1894, 1952, 1988 & 2018 have maintained environmental protection since its inception, still the quadra have not reached its target. Therefore, environmental protections along with its natural phenomenon's are facing a tremendous tragic situation, while nature and natural creations of the environment is facing its challenge-able conditions. The Forests of all categories are maintaining two tiers canopy lairs to protect environment. Tree the first and shrubs the second canopy which protect environment continuously, while assistance for maintaining livelihood sustenance of the forest dwellers is the other phenomenon, for protection of life and environment, in sighted in the Jual Bhanga village of Jhargram District, West Bengal. The tribes Lodha and the Santal are the residing community with different socio-economic and socio-cultural nomenclature. The present investigation on Indian Boscage and its legal entity peers into the concerning subdue factor, needed delineation of the Environmental Protection rightfully. Forest Floor Management through three tier canopy development is a challengeable counteract, has been peered through community concerned of the village Jual Bhanga. The new method adds herbs at the lower rung of the canopy. The herbs, shrubs and trees are the three tiers Forest Canopy which protect environment, ensure forest floor management and enhance livelihood sustenance with ushering of a new era, though the covid -19 pandemic situation has enhanced and reduces carbon emission to some extent still for protection of rapid climate change and to propagate environmental challenge and its justness.

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Citation: Dr. Suparna Sanyal Mukherjee M.Sc, M.Ed, Ph.D "Climate Change & Protection of Environment: Three Tiers Canopy Development Propagating Environmental Challenge & Its Justness", 2021. *International Journal of Current Research*, 13, (12), 19979-19983.

## INTRODUCTION

Environment and ecology are the both sides of a same coin. In ecology, a community is a group or association of the human beings for different species who are occupying the same geographical area known as a bioeconomic, biotic

community, biological community, ecological community, or life assemblage. The term community has a variety of uses. In its simplest form it refers to groups of organisms in a specific place or time. Within the community, each species occupies a niche.

A species' niche determines how it interacts with the environment around it and its role within the community. By having different niches species are able to coexist. This is known as niche partitioning. Niche partitioning reduces competition between species. Such that species are able to coexist as they suppress their own growth more than they limit the growth of other species. The number of niches present in a community determines the number of species present. If two species have the exact same niche that is the same food demands then one species will outcompete the other. The more niches filled, the higher the biodiversity of the community. There are various international attempts to achieve a global solution to climate change that there is little hope of preventing dangerous climate change unless nations take their equal and just obligations into account in setting national responses to climate change. In ratifying the United Nations Framework Convention on Climate Change (UNFCCC), nations agreed to adopt policies and measures based upon "equity" to prevent dangerous anthropogenic interference with the climate system. Climate change is the greatest threat to global health in the 21st century. Health professionals have a duty of care to current and future generations. You are on the front line in protecting people from climate impacts - from more heat-waves and other extreme weather events; from outbreaks of infectious diseases such as malaria, dengue and cholera; from the effects of malnutrition; as well as treating people that are affected by cancer, respiratory, cardiovascular and other non-communicable diseases caused by environmental pollution." Declared by IPCC AR5 2014 & WHO Nov 2015.

Forests with the Tribes who conjointly made a same platform. They have shared a common history of suffering, neglect and exploitation so both are considered synonyms with backwardness. Forests and Tribes are exploited in several reasons. The flora and fauna of the forest and its several species are extinguishing, The Forestry including Tribal Development by R.S. Shukla, tried to explore the reasons behind it, accordingly explained that some ethnic groups are also becoming extinct. "Economic development of Tribes—Approach, Method and Strategy", by Sri Kishore C Padhy, introduced the notions of tribe and castes, which explained the primitive methods of sustaining, habitation in remote locations also less easily accessible areas, denoted in Indian colonial period. Subsistence system of different Societies and Strategies of Development, by N. Pattanaik, also describes tribal situation in Pre-British and British period. "History of Forestry in India", by Ajay S. Rawat, narrated the history of Indian Forestry and the causes of the on-going disaster of deforestation, what lay behind the radical transformation of social system of resource use which was under gone in the British Regime. Prof. P. K. Bhowmik explained mainly for the Lodha, and their Socio-cultural, Socio-economical, religious life in his book, "The Lodhas of West Bengal," 1963. The total ambit of forest and forestry in India was compassed by S.S. Negi's "India's Forests, Forestry and Wildlife," in 1994 and "Forest for Socio-economic and Rural Development in India", 1996. Dr. Suparna Sanyal Mukherjee described that the Lodhas are abdicate their traditional occupation which she mentioned in her article "The Lodha – Compelled to Abdicate Traditional Occupation Due to Indian Forest Act, The International Journal Of Humanities & Social Studies, Vol 3 Issue 11, Nov-2015, Page-238-24." She again narrated in her article "Indian Forest Act & Democracy: Effects on Traditional Tribal System, Main Stream Weekly, Vol LIV, No 18, New Delhi, April 23, 2016. pp- 17-19."

Dr. Sanyal Mukherjee narrated the Tribal situation in totality and they are in transitional phase, her Book "Impact of Indian Forest Act on the Forest Dwelling Tribes", in Aug 2017. The present investigation on Indian Boscage and its legal entity peers into the concerning subdue factor, needed delineation of the Environmental Protection rightfully. Forest Floor Management through three tier canopy development is a challengeable counteract, has been peered through community concerned of the village Jual Bhanga.

**The Indian Forest Act, Policies and Environment:** The Indian Forest Act 1865 stands to represent the first attempt to enact a comprehensive forest law in India. The sole object and aim of the Act were to assert supreme monopoly of the authorities over the forest land of the country. It empowered the government undisputable powers to regulate the forest and pastures. The deputed office bearers were empowered to deal with forest offenses. The Indian Forest Act was enacted in 1878 was in force till 1927 when it was superseded by the Indian Forest Act 1927 and still in vogue. The first Indian Forest Policy was framed in 1894, apparently with the sole object of fulfilling the needs of the people. Accordingly, cultivation was placed above forestry and needs of forest produce for local population was recognized. Nevertheless, realization of maximum revenue remained the major guiding factor. The Policy did not specify any minimum forest cover; there was no restraint in conversion of forest land into agricultural land. The arrangement was such that the act of 1878 and policy of 1894 were found simultaneously operating, although there were areas where they did not totally agree. This resulted in creating a kind of confusion.

The Government of India, enunciated in its Resolution no:- 13-1/52F dt. 12<sup>th</sup> May 1952, by the Ministry of Food & Agriculture. Later by the Department of Revenue and Agriculture which penned broad outlines of the general policy to be followed in the management of State Forests of the country. The National Forest Policy of India, 1952 was formulated on the basis of six paramount needs of the country. Post 1952 Indian Forest Policy, Indian Forestry began to experience rapid changes by way of which its socioeconomic and rural developmental aspects became more pronounced. Taking into account the progress being made, the necessity of a new Forest Policy became essential.

Efforts began for formulating a new National Forest Policy which was finally pronounced in 1988, taking into account the strategy to be followed for taking Indian Forestry into the 21<sup>st</sup> Century. The earlier resolution passed by the Government of India on May 12<sup>th</sup> 1952 were the guidelines for the management of forests in India. But over the years Indian Forests suffered serious depletion, which arose from the ever-increasing demand for fuel-wood, fodder, and timber. Inadequacy of protection measures, saw diversion of forest land to non-forest uses, other than agriculture also. Naturally it did not ensure compensatory afforestation and essential environmental safeguards. Strategy of forest conservation became imperative. Conservation meant preservation, maintenance, sustainable-utilization, restoration and enhancement of natural environment. The principal aim in the Forest Policy was to ensure environmental stability and maintenance of ecological balance, including atmospheric equilibrium for sustenance of all life forms. The derivations of direct economic benefit had to be subordinated to this principal aim.

**Table 1. Population Distribution of the Studied Tribes**

SN	Name of the Tribes	Total Popu	Children 11-14yrs age				Adult 15-50 yrs age			Aged above 60 yrs				
			Male T%	Female T%			Male T%	Female T%		Male T%	Female T%			
01	Lodha	156	29	18.59	15	09.62	37	23.78	29	18.59	19	12.18	27	17.35
02	Santal	58	07	12.06	08	13.79	12	20.68	10	17.24	09	15.51	12	20.68
03	Total	214	36	16.82	23	10.74	49	22.89	39	18.22	28	13.08	39	18.22

**Table 2. Degree of Dependence on the Forest for Collections of Non-Timber of Minor Forest Produces**

SN	Name of the Selected Tribes	Total No of Population	Regular Dependence		Occasional Dependence		Non-Dependence	
			Total	%	Total	%	Total	%
01	Lodha	156	40	26%	35	23%	81	51%
02	Santal	58	08	14%	15	26%	35	60%
03	Total	214	48	22%	50	23%	116	54%

**Table 3. Forest Covered Area and Dependence**

Sl no	Forest covered areas	Ares in sq.ft	Lodha's dependence	Santal's dependence	Total dependence Lodha+Santal
	Actual	1100sq.ft	49%	40%	2.8%
	Floor area	1235sq.ft	30%	40%	2.2%
	Canopy	900sq.ft	21%	20%	1.3%
	Total	3200sq.ft	3.2%	3.2%	6.3%

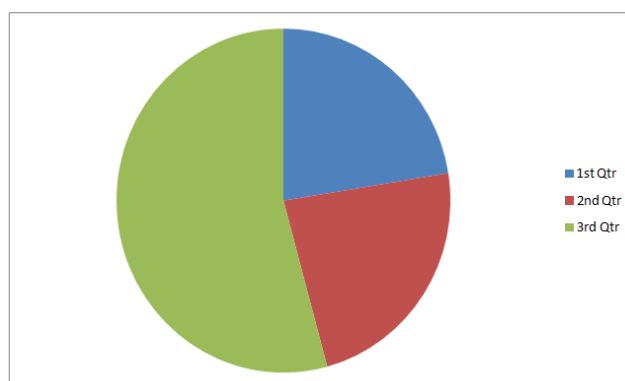
**Table 4. Three Tier Canopy Enhancement & Forest Dependence**

Sl no	Forest covered area under canopy	Ares in sq.ft	Lodha's dependence	Santal's dependence	Total dependence Lodha +Santal
	Herbs	350sq.ft	52%	48%	100=8.54%
	Shrubs	370sq.ft	44%	37%	81=6.92%
	Trees	450sq.ft	28%	24%	52=4.44%
	total	1170sq.ft	124= 10.60%	109%=9.31%	233=19.91%

**The Village Jual Bhanga:** The village Jual Bhanga situated deep inside the forest, in Jhargram Forest Division, Lodhashuli Range and Beat, Jhargram District of West Bengal is inhabited by the Lodha and Santal Tribes. The total population of the village is 214 belonging to 38 households of which 28 are the Lodha and 10 households belong to the Santal. Among them are 156 Lodha and 58 Santals. The Santal's of Jual Bhanga are essentially agricultural workers and/or cultivators. The Lodha's are gatherer of forest produces, thereby have a stint of visiting the Forest still. Their diversification of life sustenance relies on agricultural labour also. Collection of minor forest produces and gathering thereof, for maintaining livelihood sustenance is the principal source of economic pursuit maintained by the Lodha, which denotes the degree of dependence on forest and nutritional consumption at the present day, which is protein insufficient thereby lack in calorie absorption, causing malnutrition. The Santal who are foodgrowers and settled agriculturist. Agriculture being their principal source of economic pursuit yield crops like paddy, potato and seasonal vegetables as per demand.

The Lodha and the Santal are living in the same village with different occupational status, food habits, lead to malnutrition especially protein calorie malnutrition among them, while sine qua non of human being is value oriented, not, need based motivation. An authentic development should focus on the enrichment of human being not ceasing expansion of the existing. Standard of living must be corollary to the standard of life, not vice versa. The above table depicts the Lodha and the Santal population of the village Jual Bhanga in category of their respective age groups, falling under the heading of children (1-14 years of age), adult (15-60 years of age) and aged (above 60 years of age). According to table the Lodha having 29 (18.59%) Male children and 15 (09.62%)

Female. The adult Male counts 37(23.78%), Female depicts 29 (18.59%). The aged Lodha scores 19 (12.18%) Male and 27 (17.35%) Female out of 156 total Lodha populations from 28 households. The Santal population points 07 (12.06%) Male along with 08 (13.79%) Female children. Adult Male counts 12 (20.68%) and Female 10 (17.24%). Male aged exhibits 09 (15.51%) and Female 12 (20.68%) for specified categories. Therefore, population distribution of the village Jual Bhanga is clearly points out the today's exact situation. The Lodha and the Santal are living together though their traditional way of living and forest dependence are distinctly different from each other.



**Table 5. Degree of Dependence on the Forest for Collections of Non-Timber Minor Forest produces**

- Degree of dependence as per table Regular Dependence points out Forest visit more than 15 days in a month while Occasional Dependence denotes less than 15 days of Forest visits and non-Dependence means not a single day in a month of Forest visit and collection of Non-

Timber of Minor Forest Produces according to Policy Guidelines.

- The Table 4 clearly indicates the exact situation prevailing today, in respect of the Tribes dependence on the Forest. The Lodha who were absolutely depended on the forest are now not keen to the forest. Regular collection of forest produces reduced only 26% and occasional dependence 23% which are at per more or less and 51% non-dependence speaks of Forest is not need based area for maintaining of their daily livelihood sustenance.
- The Santal non-dependence is more than the dependence, only 14% regular dependence and 26% occasional dependence, 60% Santal are not depending on the forest for collection of non-timber of minor forest produces at present situation.
- The Lodha Male is more dependable on forest than the Female i.e. 26% and 23% respectably for livelihood sustenance.
- The Santal Female is more accessible into the forest visit than the Male counterparts. According to the above table 26% and 14% respectively.
- The above table depicts the alarming situation of the forest dwelling tribes for their collection of non-timber minor forest produces. The Lodha are dependable 49% in comparison with the Santal which is only 40% in both ways.
- As per table Female are keener to the forest and their dependence is still higher than their Male counterparts and collections thereof among both the Tribal communities.

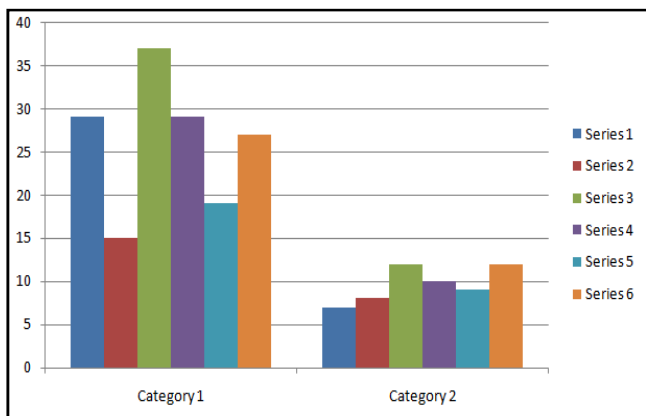


Table 6. Column Diagram shows population distribution of the Lodha & the Santal

The above table shows the Forest covered areas of Jwal Bhangra village. The actual, floor and canopy areas points out total 3200 sq.ft of which 6.3% total forest dependence of the both the tribes, while two tier canopy was maintained. From the above table it has been observed that three tier canopy enhancement protect the environment and encourage forest dependence. The herbs enunciate 350sq.ft and 8.54% forest dependence. Shrubs enhance 370sq.ft forest canopy and 6.92% forest dependence while trees cover 1170sq.ft forest cover areas and 19.91% total forest dependence. Hence climate change and environmental protection is a just step forwarding projection for future enhancement for the forest dwellers propagates environmental challenge and its justness.

- The above Pie diagram points out degree of forest dependence of the concerned tribes for collection of non-timber minor forest produces.
- IstQtr denotes scale point of 22% of regular forest dependent of the tribes.
- 2<sup>nd</sup>Qtr points out scale point 23% of occasional dependence on the forest.
- 3<sup>rd</sup>Qtr exhibits scale point of 54% non-dependence on the forest for collection of non-timber minor forest produces for maintaining livelihood sustenance.

Thereby, it is evident from the above table that degree of dependence on forest is deteriorating gradually of the tribal communities for livelihood sustenance

- The above column diagram depicts Male Female population distribution the concerned tribes.
- Category 1 exhibits the Lodha population of the village Jwal Bhangra from series 1 – 6.
- Category 2 points out the Santal population distribution of the mentioned village.
- Series 1 & 2 counts Male & Female children of both the tribes.
- Series 3& 4 points out Adult and 5& 6 series depict Aged population of the both tribes are concerned.
- Adult Lodha & Santal are showing higher strata in distribution category for both the tribes.
- Aged Female is finding high value to the Lodha & the Santal portfolio.
- Adult Male are maintaining higher ratio than the Female for both the tribes.
- Male and Female children are maintaining equilibrium in case of both the tribes.
- Village population of the Jwal Bhangra village are very alarming so far as livelihood sustenance is concerned.
- The ratio of working people is less than the non-working mass.

Istqtr showing 34% of actual forest covered area 2<sup>nd</sup>qtr depicts 38% of forest floor area covered 3<sup>rd</sup>qtr points out 28% canopy covered area. While two tier canopy orientation covered 3200sq.ft forest covered areas 28% canopy has been covered and protection thereof. The Bar of Pie shows 350sq.ft Herbs, 370 sq. ft Shrubs and 450sq.ft Trees covers 1170 sq.ft canopy and enhance environment protection. Climate change also encourage justness for the environmental protection and forest dependence of the people at large.

## CONCLUSION

Canopy development is the enhancement of tree canopies to optimize the production of quality fruits. The canopy particularly its components like tree plantation and pruning, affects the quantity of sunlight intercepted by trees, as tree shape determines the presentation of leaf area to incoming radiation. An ideal manifestation around the arrangement of plant parts, especially, to develop a better plant architecture that optimizes the utilization of sunlight and promotes productivity. The trees and shrubs are maintaining the canopy productivity with maintenance along with quality. But three tier canopy development encourage productivity, quality of environment and forest dependence of the tribes with economic pursuance.

Economy is also in obtaining the required canopy architecture by the three-tier canopy development. Hence the present study explored in a challengeable ensue of a climate change in a wider aspect of a village known as Jwal Bhanga. Thereby the present investigation on Indian Copsey and its legal entity peers into the concerning subdue fact, needed delineation of the Environmental Protection rightfully. Forest Floor Management through three tier canopy development is a challengeable counteract, has been peered through community concerned of the village Jwal Bhanga. The new method adds herbs at the lower rung of the canopy. The herbs, shrubs and trees are the three tiers Forest Canopy which protect environment, ensure forest floor management and enhance livelihood sustenance, forest dependence, economic manifestation with ushering of a new era, though the covid -19 pandemic situation has enhanced and reduces carbon emission to some extent still for protection of rapid climate change and to propagate environmental challenge and its justness the three tier canopy development is right way for betterment of live and livelihoods along with environment protection for justified the economic enhancement and encouragement of forest dependence thereof.

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