

RETHINKING 21ST CENTURY

Society and Culture: Challenges and Sustainability

Volume: IV

December, 2024



KULTALI DR. B. R. AMBEDKAR COLLEGE

**Rethinking 21st Century
Society and Culture
Challenges and Sustainability**

Rethinking 21st Century Society and Culture Challenges and Sustainability

Kultali Dr. B.R.Ambedkar College



Saptarshi Prakashan

Year of publication December 2024

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Assistant Professor, Dept. of English

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PRESIDENT'S MESSAGE

It gives me immense pleasure to announce that Kultali Dr. B.R. Ambedkar College is publishing the 4th Edited Volume "Rethinking 21st Century (Society and Culture: Challenges and Sustainability) 2024". I congratulate the college on this noble endeavour. All the faculties of different colleges have contributed enriching articles for it. I hope this will reach far and wide, so that the larger populace can be benefited from it.

I wish it success.

A handwritten signature in dark ink, appearing to read 'L. B. S.', followed by a long, sweeping horizontal line that extends to the right.

*Signature of President
Kultali Dr. B.R. Ambedkar College*

From the Desk of Teacher-in-charge

Our Academic Journal started its journey few years back. Encouraged by the appreciations from our friends and readers in various academic circles our explorations in different branches of knowledge are going on. This volume is a special issue highlighting on Society and Culture: Challenges and Sustainability.

Human civilization has been encroaching on environment for long. There is large scale deforestation with the process of industrialization and urbanization that has been irredeemable. Ancient Indian thought and civilization developed the culture of worshipping nature.

We welcome our readers' criticisms and suggestions to keep our zeal of publishing regularly.



*Dr. Prashanta Das
Teacher-in-charge
Kultali Dr. B.R. Ambedkar College*

Message from the IQAC Coordinator

I feel immense pride and pleasure in the fact that the book Rethinking 21st Century has steadily evolved into its 4th volume, with the topic Society and Culture: Challenges and Sustainability. This publication is a critical academic initiative aimed at addressing contemporary issues related to society, culture, and sustainability. As we navigate the complexities of the 21st century, the contributions within this volume engage with pressing topics, from social justice and cultural transformation to environmental sustainability and global challenges, offering scholarly insights and practical reflections for a rapidly evolving world.

At the outset, I would like to express my profound gratitude to our esteemed Teacher-in-Charge (TIC) Dr. Prashanta Das, whose visionary guidance and unwavering support have been fundamental in realizing this project. The continuous encouragement from the College Administration has been invaluable, ensuring that this academic venture is not only successful but also aligned with the institutional goals of

academic excellence and knowledge dissemination.

I extend my heartfelt thanks to the Convener of the Publication Committee Dr. Sipra Biswas, whose meticulous planning, dedicated leadership, and attention to detail have been key in coordinating the various phases of this publication. The entire Publication Committee deserves special recognition for their commitment and collaborative efforts, which ensured the timely completion and high standard of this volume.

This project would not have been possible without the critical contributions of the reviewers, whose in-depth evaluations and thoughtful feedback have helped enhance the academic rigor of the papers included in this volume. I also offer my sincere appreciation to all the authors, who have shared their expertise, research, and perspectives, enriching this volume with their thought-provoking and diverse contributions.

The 4th volume of “Rethinking 21st Century: Society and Culture: Challenges and Sustainability” is a testament to the collective intellectual engagement of scholars, researchers, and academicians who are committed to exploring the multifaceted challenges of our times. I am

confident that this publication will serve as a valuable resource for researchers, academicians, and students, contributing meaningfully to ongoing debates and inspiring further research in this field.

Sarthak Chakraborty

*(Dr. Sarthak Chakraborty)
IQAC Coordinator
Kultali Dr. B. R. Ambedkar College*

Preface

Our institution is always very enthusiastic in research work. Keeping it in mind previously Publication Committee and presently Research and Development Cell has been engaging in research work since 2019. Name of our publication is 'Rethinking 21st Century'. Previous 3 volumes of our publication were confined within our institution. But our 4th edition 'Society and Culture : Challenges and Sustainability' has started to step out of our institution and aim of this edited volume is fostering the horizon of knowledge amongst all the faculty members and researchers globally.

Theme of this volume is very pertinent to the present context. Our Society as well as Culture are changing very fast that would be the cause of several challenges. We, a part of this society and culture have to face these challenges and go through sustainability.

All the authors in our institution and other reputed institutions throughout India have Enlightened and enriched this volume. In this regard I am deeply grateful to all the esteemed faculty members and dedicated researchers. I am very thankful to our President, Shri Ganesh Chandra Mondal and our Teacher-in-charge, Dr. Prashanta Das for their great support. I

am grateful to our IQAC coordinator, Dr. Sarthak Chakraborty for endeavoring this publication. I am also very appreciative to all the editors of our editorial board for their endless support and dedicated work to make the 'Rethinking 21st Century' volume -IV published successfully. I am deeply grateful to Dr. Rupam Kumar Dutta for his unwavering support at every stage, which was crucial to the successful completion and publication of this edited volume. I want to give special thanks to Tapoban Bhattacharyya and Srijita Roy for their constant support. I also express my heartfelt thanks to Poyel Basu, Assistant Professor, Dept. of English, for her wonderful cover design.

It is my earnest expectation that this Edited Volume - IV will serve as a valuable resource, bringing meaningful insights and benefits to all academicians and researchers.

I sincerely apologize for any mistakes that may have occurred; they are completely unintentional and we humbly ask for your understanding and forgiveness.

Sipra Biswas

Dr. Sipra Biswas
Convener
Research and Development Cell

Acknowledgement

All the papers of the edited volume Rethinking 21st Century (Society and Culture : Challenges and Sustainability) Volume IV are the esteemed authors' original research works and honest endeavours.

The editorial board gratefully acknowledge the great attempts of authors who submitted their valuable research papers with their hard work. We would like to express our deep gratitude to the respected president of the college, the honourable Shri Ganesh Chandra Mandal, all members of the Governing Body and IQAC of the college for their active cooperation. We express our special thanks to Dr Prashanta Das, Teacher-in-charge, Kultali Dr B. R. Ambedkar College. He constantly supported us in different ways for the publication of this volume despite many adversities. We hope this volume will help many.

*The Internal Editors
Rethinking 21st Century (Society and
Culture : Challenges and
Sustainability)) Volume IV, 2024*

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**Study of Urbanization Through Geostatistical Techniques
in Coastal Districts of West Bengal
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ABSTRACT

Urbanism, defined as the movement of people from rural to urban areas, is driven by rapid expansion and economic growth. This study examines Urbanization in the three coastal districts of West Bengal—East Midnapore, North 24 Parganas, and South 24 Parganas—highlighting the patterns and impacts of urban growth. Census data (1991-2011) reveal substantial urban growth, particularly in North 24 Parganas. The findings illustrate that rapid Urbanization, influenced by improved infrastructure and economic opportunities, has led to both positive developments and negative consequences, such as increased coastal risks and compromised

ecosystem services. This study underscores the need for sustainable urban planning to balance growth and environmental protection in the coastal region of West Bengal.

Keywords: *Urbanization, coastal region, demographics, infrastructure, sustainability*

INTRODUCTION

Urbanism is a way of life. According to the United Nations, urbanization is defined as the movement of people from rural to urban areas. Rapid expansion (horizontally and vertically) and growth in economic activities are the principal issues of an urban area. Urban areas are mainly divided into two different ways, as, at first, they progressively expand at the same pace as rural areas. Secondly, the urban areas gradually attain economic development and social modernization (*Betal, R, H. n.d.*). Urbanism is associated with the rise of non-agricultural sectors, mixed-use neighbourhoods, social organizations, etc. Urban expansion is directly related to the man-land ratio and sustainable use of resources. *Bera et al. 's (2021)* study shows increasing trends from agriculture to aquaculture practices, rapid Urbanization, and increased built-up areas in coastal tidal influence blocks. Local stimuli influence these changes. Urban expansion in Indian coastal states since independence has highlighted population pressure, economic globalization, and natural hazards, making these states more vulnerable to disasters. It faces challenges from dense urban settlements, infrastructure, environmental threats, and the role of artificial intelligence (*Sharma & Khan, 2022*). The urbanization process is led by globalization and population pressure. The

growth and development of urban Centres also enhance social modernization. Every urban center has a limit to its growth, which is directly related to population density. (When the population exceeds the sustainable limit of an urban center, then urban facilities in Detroit.) So, it is essential to study urbanization from different approaches and points of view. The level of Urbanization is an essential indicator of a region's socioeconomic and demographic conditions (*Ahmad & Ali, 2006*). Urbanism is associated with the rise of non-agricultural sectors, mixed-use neighbourhoods, social organizations, etc.

The three coastal districts of West Bengal are East Midnapore, North 24 Parganas, and South 24 Parganas. The total coastline of West Bengal is 210 km. The total area of East Midnapore is 4,736 Km². The total area of North and South 24 Parganas are 4,094 Km² and 9,960 Km² respectively. The total population is highest in the North 24 Parganas. The total urban population (*Census: 2011*) of East Midnapore is 5,92,714 persons, and that of North and South 24 Parganas is 57,32,162 and 20,87,773 respectively. Thus, the share of urban population is highest for the North 24 Parganas.

Rapid Urbanization is taking place, particularly with better infrastructure (transport networks, sanitation, electricity, education facilities, etc.). These are attracting more industries, services, and massive investment potential. All these are acting as a boom for coastal development. These have some adverse effects as well. Urbanization increases natural-to-urban concatenation patterns in coastal ecosystems, compromising ecosystem services and vulnerability (*Aguilera et al., 2020*). Urbanization growth and over-protection of coastal areas contribute to increased coastal

risk, while high environmental value coastal stretches can improve local economies. Moreover, studies show that considerable urbanization growth and over-protection of the coast do not necessarily increase local economies (*Pasquali et al., 2021*). Urban land use changes due to developing countries' population growth and development activities impact spatial flow, resource consumption, and land quality. Eco-tourism, a nature-based travel experience, plays a significant role in the coastal tract of Purba Medinipur district, West Bengal, due to rapid Urbanization and land use change (*Mondal & Dandapath, 2013*). Moreover, the Rapid Urbanization is going hand in hand with rapid population pressure. Over-urbanization is a hard reality in coastal Bengal.

RESEARCH OBJECTIVES

The study's objectives are to analyse the change in population and urban development over time. Analyze temporal population changes in coastal districts evaluate urban infrastructure disparities and examine the rank size distribution of towns and functional scenarios of urban centres.

DATA & METHODOLOGY

A few statistical techniques have been used to determine various aspects of Urbanization in coastal West Bengal. Population changes were assessed using descriptive statistics and growth rate calculations from census data. Correlation analysis examined the impact of the capital city on urban development. The urban population ratio is calculated using census data and projections. Berry's method was used to analyze rank size distribution and functional classification, highlighting population imbalance and urban growth trends essential for better planning. Custer analysis

is chosen to classify the urban centres based on economic data, which offered a comprehensive understanding of spatial pattern and disparities of urbanisation.

RESULTS & DISCUSSION

I. Urban Growth and Development

The urban population of the three coastal districts of West Bengal is tabulated. The secondary data used to form the table is extracted from the 1991, 2001, and 2011 Census of India. The growth rate (Figure 2) is also tabulated. This shows the comparison with the state, giving a clear picture of the development of the coastal districts. There was an increase in urban population from 1991 to 2011 for all three districts and the state as well. The urban population of North 24 Parganas has increased from 37,30,300 in 1991 to 48,50,947 in 2001 (*Census of India 2001. Series-20. n.d.*) and 57,32,162 in 2011 (*Census of India 2011. Series-20. Part XII-A. n.d.*) (Table 1). The South 24 Parganas district experiences the highest level of urban development. This district, situated on the border between India and Bangladesh, grapples with the significant issue of illegal land migration. This challenge is exacerbated by rapid urbanization and a substantial increase in population (Table 1, Figure 1). In the last two decades, it has been recorded that a substantial amount of outflow migration occurs from East Medinipur to South 24 Parganas, especially in the Sundarbans area for livelihood. The active delta region of Sundarbans (Indian part) is associated with high population density. As a consequence of the rapid growth of population in connection to urbanization, Man-animal

conflicts, the impact of natural hazards (salinization, storm surge), coastal floods, inadequate sources of fresh water, etc, have increased in contemporary times. The urban population in South 24 Parganas decreased from 7,60,377 in 1991 to 20,87,773 in 2011, with a 25.6% growth rate between 2001 and 2011. East Midnapore's urban population has also decreased, with an increase of 8,20,995 from 1991 to 5,92,713 in 2011. West Bengal's growth rate fell from 17.8% in 1991-2001 to 13.84% in 2001-2011, indicating inadequate amenities and outmigration. Between 2001 and 2011, West Bengal's overall growth rate decreased (Figure 2).

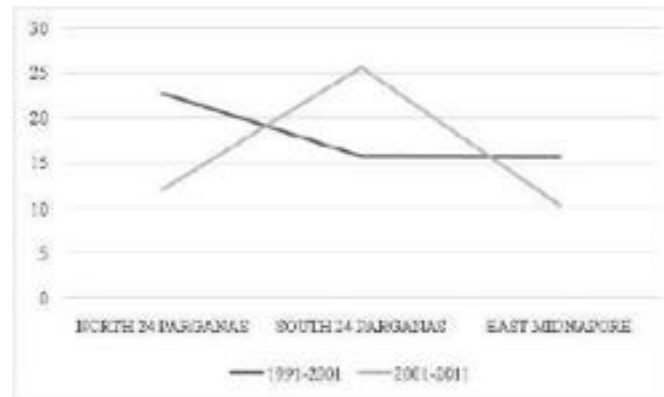
Table 1. Growth of Urban Population



	991	2001	2011	1991-2001	2001-2011
NORTH 24 PARGANAS	3730300	4850947	5732162	22.7	12
SOUTH 24 PARGANAS	760377	1086220	2087773	15.7	25.6
EAST MIDNAPORE	820995	983985	592714	15.58	10.2
WEST BENGAL	18707601	80176197	91276115	17.8	13.84

Figure 1, District-wise urban population in 1991, 2001 and 2011

Figure 2, Growth rate of East Midnapore, North 24 Parganas, and South 24 Parganas over the two decades



II. Distance from the central city

To study the distributional pattern of the urban centers of the coastal districts of West Bengal, the distance from the capital of West Bengal is calculated. The distance between Kolkata and the urban centers of the three coastal districts of West Bengal is tabulated. The distance from Kolkata is measured at 0-160 km (Table 2). The urban centers above 120 km are situated in East Midnapore. It is inferred that the urban population is lowest in East Midnapore, considering the other two districts. So, as the distance from the capital increases, the urban population decreases. Most urban centers (6) are in the 20–40 km range, while the fewest (1) are within 0–20 km (Figure 3). Dumdum is well developed because Netaji Subhas Chandra Bose International Airport is there. The spread of urban centers decreases and then fluctuates with distance, indicating a higher

concentration closer to Kolkata, especially within the 20–40 km range. Rajarhat, Rajpur, and Sonarpur are developing fast due to the availability of amenities for the infiltrated people of the suburban and rural areas. The ranges between 40 to 60 kilometers have three urban centers—Diamond Harbour, Falta, and Amdanga—a bit farther from the core of the city but allowing regular interaction. In the range of 60 to 80 kilometers, four urban centers are identified: Kolaghat, Habra, Baduria, and Sandeshkhali, which are presumably relatively more self-sufficient and less dependent on Kolkata in everyday life. From here to about 80–100 km, five towns can be distinguished with an urban center that features local economy diversification, ranging from agriculture and commerce to industry. Relatively fewer in the 100–1200 km and 120–140 km ranges. It suggests that the pattern of denser urbanisation within the first 100 km from Kolkata was followed by a slight decline beyond this range, reflecting the city’s influence on nearby urban development. Updated

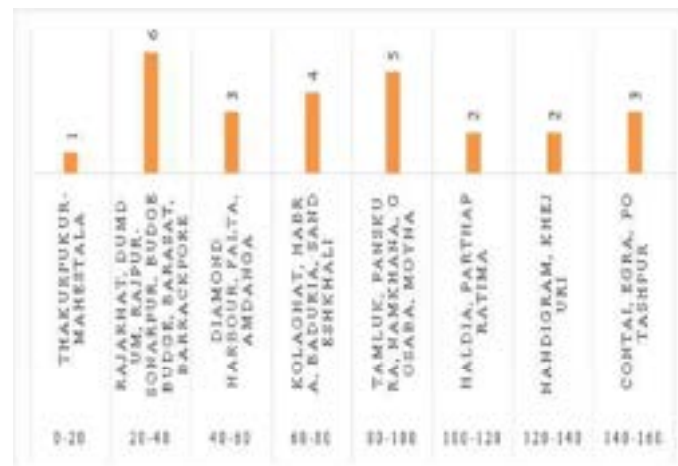


Figure 3, Distance-wise town distributions from urban centers

III. Inequality of Urban Population

Lorenz curve is a graphical representation of the inequality of income or wealth. The Lorenz curve (Figure 4) is used to show the inequality in the distribution of population in the urban centers of the coastal districts of West Bengal. The deviation of the curve from the line of equal distribution indicates a greater concentration of urban population concerning the area. The data for calculating the Lorenz curve is tabulated in Table 3. The total population of the coastal districts of West Bengal is 5095875, 8161961, and 10009781 persons for East Midnapore (*Census of India 2001. Series-20. n.d. & Census of India 2011. Series-20. Part XII-B. n.d.*) South 24 Parganas (*Census of India 2001. Series-20. n.d. & Census of India 2011. Series-20. Part XII-A. n.d.*), and North 24 Parganas (*Census of India 2001. Series-20. n.d. & Census of India 2011. Series-20. Part XII-A. n.d.*), respectively. It is seen that the share of the total population is highest for the North 24 Parganas. The urban population is highest for North 24 Parganas (5732162 persons) and lowest for East Midnapore (592714 persons). The urban population concentration is highest in the North 24 Parganas due to its proximity to Kolkata. This disparity highlights a concentration of urbanisation in specific districts, reflecting uneven development and urban infrastructure distribution across the region. The expansion of the capital has paved new ways for neighbouring districts by rendering rapturous amenities. Updated

Table 3. Representation of Total population to Urban population by Lorenz Curve

Districts	Total population	Percentage of total population to summation total population	Urban population	Percentage of urban population to summation urban population
EAST MIDNAPORE	5095875	21.90114699	592714	7.045509684
SOUTH 24 PARGANAS	8161961	35.07862881	2087773	24.8170701
NORTH 24 PARGANAS	10009781	43.0202242	5732162	68.13742021
Total	23267617	100	8412649	100

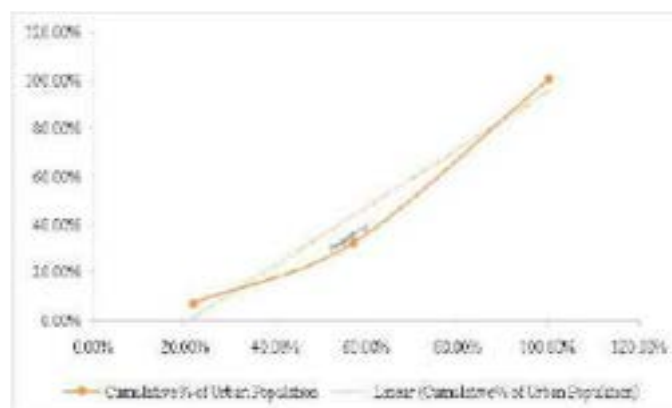


FIGURE 4, LORENZ CURVE SHOWING INEQUALITY OF URBAN POPULATION TO THE TOTAL POPULATION

IV. The rank-size distribution

A rank-size distribution is the distribution of size by rank. This is also called a rank-frequency distribution. It shows a cumulative distribution. The selected towns are Rajarhat, Dumdum, Thakurpukur-Mahestala, Haldia, Rajpur-Sonarpur, and Tamluk from the three coastal districts of West Bengal (Table 4). The data are arranged in descending order of urban population. Likewise, they are ranked. The estimated population is calculated. Figure 05 confirms that the rank size rule provides a reasonable estimation of the population distribution among the towns, as there are straight variances for each town. Rajarhat and Dumdum show the largest difference between the actual and estimated population, while other towns have populations that are closely aligned with the estimates. [Updated](#)

Table 4. Rank Size Rule: Rank-size distribution is the distribution of size by rank

Serial No.	Name Of Selected Towns	Actual Population	Rank (R)	1/R	Estimated Population
1	RAJARHAT	271811	1	1	239765.3061
2	DUMDUM	101296	2	0.5	119882.6531
3	THAKURPUKUR- MAHESTALA	86023	3	0.333333	79921.76871
4	HALDIA	61216	4	0.25	59941.32653
5	RAJPUR-SONARPUR	44150	5	0.2	47953.06122
6	TAMLUK	22929	6	0.166667	39960.88435
	Total	587425		2.45	

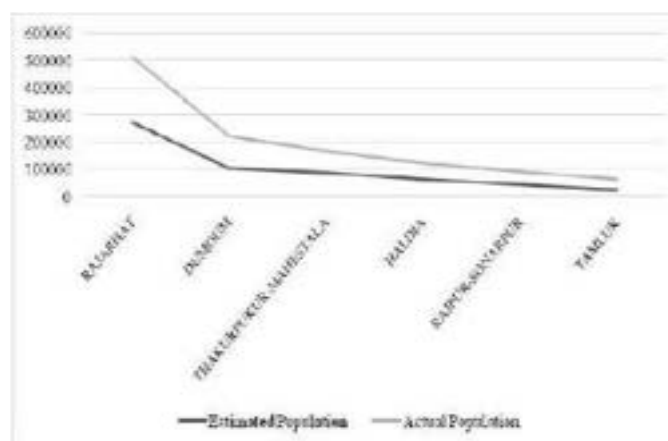


Figure 5, Line graph showing Rank and Size

V. Functional classification of the urban centers

The total number of workers engaged in the primary sector (as agricultural labourers and cultivators), the secondary sector (as industrial workers), and other workers are calculated from the

urban centres of the three coastal districts of West Bengal. The mean and standard deviation of all the functions is computed to find out the proportion of each function (Table 5). The specialised functions are categorised in 1st, 2nd, and 3rd order according to the function they render. Figure 06 shows increasing levels of worker concentrations in each category, providing a detailed understanding of the distribution and variability within each function. [Updated](#)

Table 5. Functional Classification

Functions	Mean (X)	Standard Deviation	Class 1	Class 2	Class 3
			X+SD	X+2SD	X+3SD
INDUSTRIAL WORKERS	5.82	0.75	6.57	7.32	8.07
AGRICULTURAL LABOURERS	22.35	4.38	26.73	31.11	35.49
CULTIVATORS	17.3	4.54	21.84	26.38	30.92
OTHERS	54.51	9.33	63.84	73.17	82.5

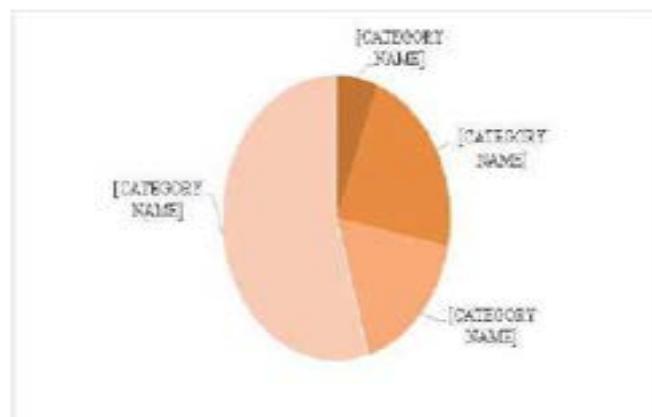


Figure 6, Functional classifications of three coastal districts

CONCLUSION & RECOMMENDATION

The coastal district of West Bengal, located in eastern India, has undergone a swift process of urbanization in the past few years. This urbanization can be primarily attributed to the implementation of enhanced infrastructure, encompassing improved transportation links and the availability of better amenities. Additionally, the proximity to Kolkata, the state's capital city, has facilitated access to economic opportunities, further fuelling the urban growth in this region. However, this rapid urban expansion has resulted in significant disparities in the distribution of the urban population. While some areas have experienced rapid and disproportionate development, others have faced declining growth rates, creating a stark contrast in the overall urban landscape of the district.

Furthermore, the increasing concentration of urbanization in North 24 Parganas, a district in the region, underscores Kolkata's central role in driving regional development and attracting population influxes. Such rapid urbanization presents various challenges, including environmental concerns and inequalities in access to resources and opportunities. Given these challenges, it is imperative to undertake balanced urban planning and strategic investments to tackle these disparities and environmental issues. This approach is crucial for achieving sustainable urban development in the region, ensuring that economic growth is inclusive and environmental concerns are addressed effectively.

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**Raniganj Coalfield: A Geographer's
Perspective on Understanding and
Addressing Environmental Concerns**
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Abstract

This comprehensive study urgently addresses the environmental impact of the Raniganj Coalfield in India, focusing on the immediate need to mitigate the adverse effects of extensive coal mining activities in the region. It sheds light on the significant concerns related to coal mining, including but not limited to land degradation, groundwater depletion, and widespread environmental pollution. The study underscores the importance of addressing these pressing issues to foster sustainable mining practices and minimize the far-reaching social, economic, and environmental repercussions. Furthermore, it delves into the

intricate challenges of illegal coal mining operations, particularly their detrimental effects on land subsidence. The report emphasizes the need for cohesive and collaborative efforts involving government agencies, industry stakeholders, and local communities to tackle these multifaceted concerns effectively. It stresses that mitigating the adverse impact of coal mining in the Raniganj Coalfield necessitates a concerted and collective approach to instigate positive change and enact long-term solutions.

Keywords: *Coal, mining, production, subsidence, illegal, sustainability*

Introduction

Coal mining has a significant impact on the ecosystem. Coal has been the primary energy source in India for many years, meeting approximately 27% of the world's commercial energy needs (Goswami, 2015). The Raniganj area has substantial coal reserves, with coal mining activities dating back to 1774 in the Asansol area and gaining momentum in 1840 (Gupta et al., 2018). However, mining puts immense pressure on local flora and fauna, significantly when forest land is cleared for mining. The impact on groundwater levels, silting of water bodies, and land degradation are also significant concerns (Goswami, 2015). Mining brings economic development and leads to ecological and socio-economic challenges (Goswami, 2015). The Raniganj coalfield has played a pivotal role in India's coal mining industry for almost two centuries, serving as a significant source of coal before and after the country gained independence. Raniganj, an important coalfield in India, is prone to mining subsidence, toxic environmental discharge, and extensive subsurface damage (Rehman et al., 2020). Open-cast mining poses a significant risk to the surrounding areas of this coalfield (Rehman et al., 2020).

Land subsidence due to coal mining is a significant geological phenomenon that occurs when the ground surface sinks or collapses due to coal extraction. Subsidence happens when coal is removed from underground mines, creating empty spaces. Over time, the roof of these spaces can collapse, causing the ground above to sink or settle. Mitigating the environmental and socio-economic impacts of coal mining-induced land subsidence is critical. Subsidence is a significant problem associated with underground coal mining, damaging subsurface and surface structures (Singh & Yadav, 1995). The Gondwana basins in peninsular India are generally located in the east-central part. They are arranged along distinct linear belts, including the Damodar-Koel, Son-Mahanadi, Narmada, Pranhita-Godavari valleys, and the Rajmahal basin. The Raniganj Coalfield is the easternmost part of the Damodar-Koel Valley basin belt. (Mondal, 2016).

The Raniganj coalfield (Fig. 1) has experienced ground movement and subsidence due to anthropogenic and natural activities (Rehman et al., 2020). However, the existing knowledge on subsidence susceptibility to coal mining in this area is limited (Rehman et al., 2020). Research by Sahana M and Sajjad H 2017 evaluated the effectiveness of frequency ratio and the Generalized coal model to examine subsidence in the Ratibati and Shivadanga coal mines in Raniganj (Singh & Yadav, 1995). Coal mining in the Raniganj coalfield has led to various adverse impacts on the environment, including subsidence damages, mine fires, and air and water pollution, particularly severe in the Lower Kenda and very large in the Raniganj coalfield (Bandopadhyay, 2014). Raniganj Coalfield is known as the birthplace of the Indian coal industry and still holds a significant place in Indian coalfields,

housing various types of coal, including superior quality, highly volatile, non-cooking coal, which is scarce in the country (Mondal et al., 2016). Raniganj Coalfield covers an area of 443.50 square kilometers (171.24 square miles). It has a total coal reserve of 49.17 billion tonnes (Table 6), which are spread across West Bengal and Jharkhand (Gupta et al., 2018). Raniganj, an important coalfield in India, is susceptible to mining subsidence, ejection of toxicants into the environment, and significant subsurface destruction (Rehman et al., 2020). The abundance of solid fossil fuel in this area led to the growth of the mining industry and contributed to the country's rapid industrialization (Mondal et al., 2014). This central coal-producing area is plagued by subsidence problems due to underground mining, with collapses occurring in many coal mines in recent years (Singh & Yadav, 1995). The occurrence of a thick coal seam at shallow depth is the main reason for subsidence in the area (Singh & Yadav, 1995).

Objectives and Methodology:

The primary objectives of this research endeavour are to thoroughly examine and comprehend the wide-ranging environmental challenges stemming from coal mining activities in the Raniganj Coalfield from the unique perspective of a geographer. Furthermore, the study aims to proffer practical solutions and recommendations for implementing sustainable management practices. In addition, the study seeks to comprehensively analyze the spatial distribution and matter of coal mining operations within the Raniganj Coalfield, as well as the chronology of operating authorities' timelines.

The literary survey has been done thoroughly. Research articles, periodicals, reports, newspaper reports, and blogs have been analysed and interpreted. Historical maps and photographs

have also been examined and interpreted. An intensive field survey was conducted in Beguniya Opencast Mining in April 2024. Details interviews were conducted during the field survey. A GPS receiver was used for locations and spatial attributes in the field. Primary and secondary data have been collected to analyze the spatial distribution of coal mining activities, environmental problems, socio-economic aspects, and policy/regulatory frameworks. Primary data collection involves field surveys, interviews with key stakeholders (local communities, mining officials), and collecting samples (coal). Google Earth has been used to analyze the spatial distribution of mining areas.

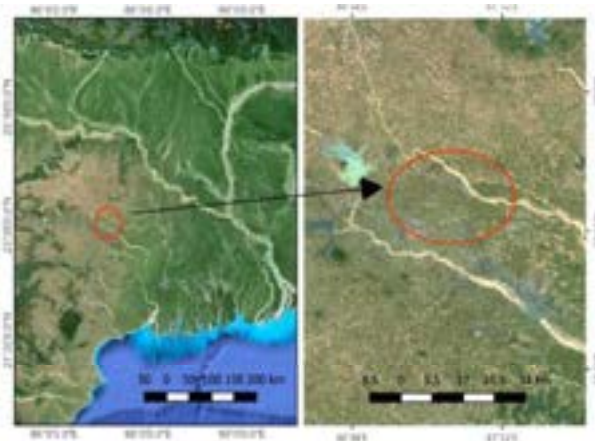


Figure 1 Location of active coal mines in the Raniganj area(Source: Google Earth Pro 7.6.3.9796, February 22, 2024, Eye alt.44.58km, Raniganj area, DoI:27/03/2024 @2024 Airbus, Earth Versions – Google Earth)

Eastern Coalfields Limited (ECL)

Eastern Coalfields Limited (ECL) (Table 1), established in 1975, has significantly contributed to the National Coal Industry. The nationalization of coal mines coincided with ECL's birth. Jharkhand and, mainly, West Bengal are ECL's operational areas. ECL has its headquarters in Sanctoria, West Bengal. 2016–

17, Coal India Limited (CIL) produced 554.14 million tonnes of coal, making it the world's largest producer. ECL is one of the seven wholly-owned producing subsidiaries of CIL. The ECL mining leasehold area is 753.75 km² (Table 2,3), and the surface right area is 237.18 km² in Jharkhand and West Bengal. Raniganj Coalfield is between the Ajay and Damodar rivers, and the Mugma coal fields are between the Barakar and Damodar rivers. The coal seams in the Raniganj Coalfield-Mugma field of ECL have primarily formed in the Raniganj and Barakar measures. The Santhal Pargana and Rajmahal Area mines are mainly associated with the Barakar measures and the Talchair series. In 2012, the ECL command area held a total reserve of 49.17 billion tonnes of resources, accessible up to a depth of 600 meters.

Table 1 Timelines and chronology of coal production at Raniganj Coal Field, as well as ECL

Year	Chronologies
1774	Coal mining in India started at the Raniganj Coalfield by British East India Company's John Sumner and Suetonius Grant Heatly at Ethora, Salanpur CD Block
1820	Regular mining started by an agency house, Alexander & Co.
1835	Prince Dwarkanath Tagore bought over the collieries
1843	Established Bengal Coal Company extended by Tagore and others (Head Quarter: Sanctoria)
1971	The management of coking coal mines was assumed to have initiated
1972	Nationalizations of Coal mines in India
1973	Management and Nationalization of non-coking coal mines
1975	- Establishment of Eastern Coalfield Limited - Coal India Limited formed

- 414 coal mines were under ECL located at Raniganj Coal Field
 - Mines were regrouped into around 123 mines
 - Production from those mines is about 21 million tonnes (Share of Underground mine 99%, rest by manual quarries and others)
- 2012
- ECL had proved reserves of 16.94 billion tonnes (12.42 billion tonnes in West Bengal and 4.52 billion tonnes in Jharkhand).
- 2014-2015
- Production of underground mines has been declining 99% in 1975 to 18.23% in the during 2014-2015
 - ECL initiated technological advancement and the adoption of modern tools and techniques in underground mining
 - Production from underground mines (Total:7.296 million tonnes)
 - Conventional bord and pillar – 0.539
 - Mechanized bord and pillar – 5.335
 - Mechanized longwall (including road header) – 0.025
 - Continuous miner – 1.397
- 2016-2017
- ECL produced 40.517 million tonnes of coal
 - Open-cast mines:32.319 million
 - Underground mines: 8.127 million.
- 2017
- Eastern Coalfields had 14 operating areas with 87 working mines
 - Underground mines: 60
 - Open-cast mines: 19
 - Mixed mines: 08
 - The power sector's offtake of coal from ECL was 40.121 million tonnes

The author has prepared the table.

Table 2 Coal fields of ECL and its administrative area

Coal fields of ECL	Administrative area
Raniganj Coalfield	East Bardhaman, West Bengal
Mugma field	Dhanbad, Jharkhand
Rajmahal Coal mines Projects	Godda, Jharkhand
Chitra-Saharjuri Coalfield	Deoghar, Jharkhand

The author has prepared the table.

Table. 03 Broad area-wise distribution of coalmines of Eastern Coalfield Limited (Fig.2)

Area	Name of Colliery
Bankola	Bankola Colliery, Khandra Colliery, Kumardih A Colliery, Kumardih B Colliery, Moira Colliery, Nakrakonda Colliery, Shankarpur Colliery, Shyam sundarpur Colliery, Tilaboni Colliery
Jhanjra	Main Industrial Complex (MIC) I & II Incline I & B Incline 3 & 4 Incline
Kajora	Central Kajora Colliery Jambad OCP Jambad UG Khas Kajora Colliery Lachipur Colliery Madhusudanpur Colliery Madhabpur Colliery Naba Kajora Colliery Porascole Colliery
Salanpur	Bonjemehari Colliery OCP Barmondia Colliery (Underground Colliery) Dabor UC (Underground Colliery) Gourandi Colliery (Underground Colliery) Gourandi Begunia Colliery Mohonpur OCP (Open Cast Project)
Pandaveswar	Dalurband Colliery Khottadih OCP Khottadih UG Mandhaipur Colliery Manderbony Colliery Pandaveswar Colliery South Samla Colliery
Rajmahal	Lalmatia Coalfield in Godda, Jharkhand
Sonpur Bazari	Sonpur Bazari Project
S.P. Mines	Chitra in Deoghar, Jharkhand

The author has prepared the table.



Fig. 02 Operational Areas of ECL (Source: ENVIS Centre on Environmental Problems of Mining)

Source: EIACP (PC-RP) on Environmental Problems of Mining

(Parascole West Colliery on 06.07.1999 (ismenvis.nic.in))

Salanpur Area of Eastern Coalfields Limited- Beguniya Opencast Mining

The Salanpur Area (Fig.2), located in the picturesque Asansol subdivision of the Paschim Bardhaman district in West Bengal, India, is a crucial operational hub for Eastern Coalfields Limited. Its geographic coordinates are 23.7768°N 86.8832°E. This area is home to several collieries, including Dabor, Sagramgarh, Begunia, Khoirabad, Modarbahal, Barmondia, Chakballavpur, Sangramgarh OCP, Gourandi OCP, Bonjemehari OCP, Mohanpur OCP, and Balmiya OCP (Table 4). The region also houses mines operated by private entities such as CESC, further contributing to its significance in the coal mining industry.

Table 4 Mining plan and details (2012 onwards)

Mine	Dabor	Dabor	Bonjemehari	Bonjemehari	San	San	Gau	GBOC
Type	UGM	OCM	UGM	OCM	UGM	OCM	UGM	OCM
APC	0.6 mt.	2.0 mt.		-	0.05 mt.	-	0.05 mt.	1.8 mt.
PYPC	0.7 mt.	2.7 mt.	0.07 mt.	-	0.08 mt.	-	0.08 mt.	2 mt.
EL	25 yr.	10 yr.	25 yr.	4 yr.	25 yr.	4 yr.	5 yr.	7 yr.

APC (annual production capacity), PYPC (peak yearly production capacity), mt. (million tonnes), EL (expected life), yr. (Year), UGM (Under Ground Mine), OCM (Open Cast Mine), San (Sangramgarh), Gau (Gaurandih), GBOC (GaurandihBegunia Open Cast mine)

Illegal coal mining, land crisis, and migrants

India is the third largest coal producer in the world, but it is plagued by illegal coal mining activity. The coal mines in Raniganj are protected by the Central Industrial Security Forces (CISF). While the mining industry is highly organized, gaps and loopholes still allow for illegal activities. It has been estimated that over a million tonnes of coal are produced by illegal collieries in the Raniganj area. Over 30 unauthorized, illegal coal mines have been identified in Salanpur, Sripur, Satgram, and Sodepur within the Raniganj Coalfield. Illegal activities are not confined to this area but are widespread throughout the region, with parallel illegal industries also operating. Additionally, the region's 1,380 abandoned pits and inclines of Eastern Coalfields Limited (ECL) have become hazardous due to illegal mining activities. Many abandoned uneconomic mines of ECL (Eastern Coalfields Ltd) and BCCL (Bharat Coking Coalfields Ltd), underground and

opencast, are flourishing as illegal mining sites. Many abandoned uneconomic mines of ECL (Eastern Coalfields Ltd) and BCCL (Bharat Coking Coalfields Ltd), underground and opencast, are flourishing as illegal mining sites. In Gourandi, 5,000 people work in shifts in an open cast mine, but alongside legal workers, many individuals are engaged in illegal coal mining activities. Security personnel have reported that the deaths of individuals attempting to steal coal from the mines are a common occurrence and often make headlines when accidents happen. The mining activities in the area have hurt the land, leading to a significant decline in productivity, affecting agricultural activities, and leaving many people unemployed. The mining workforce comes from diverse backgrounds, including the Adivasi community, residents, and migrants. To meet the demand for labour, mine owners have brought in workers from Bihar, Odisha, and Uttar Pradesh, and these migrants now occupy the majority of positions in the mining and industrial sectors. The term illegal mining refers to the unauthorized extraction of coal from beneath the earth's surface without the necessary approval from the appropriate coal mining regulatory bodies (Saxena, 2000). In areas with coal deposits, extraction is the most efficient way to make money quickly. This involves creating numerous large openings in the earth's surface, similar to rat holes, to access the shallow coal seams. (Madwbwe, 2011).

Beguniya Opencast Mining

Beguniya Colliery (Fig.4) is in the stunning western part of the Raniganj Coalfield in the Paschim Bardhaman District of West Bengal. The colliery, sprawling over a leasehold area of 364.45

hectares (Table 5), forms part of Area-XII (Chancy-Victoria Area) of BCCL, a subsidiary of Coal India Limited. Although the site began coal production in 1981, mine production has been on hiatus since 2013. During its operational days, the colliery employed the bord and pillar de-pilling with stowing (manual) technique as its primary method of extracting coal. Furthermore, Beguniya Opencast Mining is within the Salan coal area and is operated by Eastern Coalfields Limited. The mine reaches a depth of 284 feet and has been instrumental in producing G8-grade coal.

Table 05 Land Acquisition status

Ownership of land	Area in Ha
Government Land	61.86
BCCL Land	59.94
Private Land	242.65

The author's table shows land ownership in a specific region. The data indicates that private individuals or entities hold about four times more land than the government and BCCL (Bharat Coking Coal Limited) combined. Further analysis could provide insights into regional development, urban planning, and resource allocation.

Table. 06 Production of the last five years before the suspension of production (2008-2013)

Financial Year	Production (in Te.)
2008-09	33375
2009-10	34658
2010-11	28869
2011-12	33970
2012-13	19572

The author compiled a table illustrating fluctuations and inconsistencies in annual production levels during a specific timeframe. The declining trend in production towards the conclusion of this period is believed to have significantly contributed to the subsequent cessation of production.



Fig.02Beguniya Opencast Mining Outlier Coal Reservoir (*Date of Picture:30/05/2024 1.18 PM IST Details of Picture:f/1.9, 1/725, 5.43mm, ISO59*)



Fig.03Beguniya Opencast Mine: Forward movement of Coal mining with backward filling (*Date of Picture:30/05/2024 Details of Picture: f/2.2, 1/566, 1.84mm, ISO49*)



Fig.03 Seepage Lake in the core area of Beguniya Opencast Mine at a depth of more than 65 feet. *Seepage lakes within mining areas are bodies of water formed from seepage from mining activities. During mining, the intersection of groundwater sources by mine workers or the alteration of natural water flow gives rise to these lakes, warranting attention due to potential environmental and safety implications. These bodies of water can harbor contaminants from mining operations, adversely affecting adjacent ecosystems' water quality and sustainable practices.* (Date of Picture: 30/05/2024 01.51pm IST Details of Picture: F/1.9, 1/1513, 5.43mm, ISO46)

Subsidence in Raniganj Coal Field

Subsidence, a common issue in underground coal mining, causes damage to subsurface and surface structures. (Singh & Yadav, 1994). The Raniganj area in West Bengal, India, has faced significant land subsidence due to extensive coal mining activities. Being part of the larger Raniganj Coalfield, one of India's oldest

coal mining regions, the area has witnessed environmental degradation over the past 200 years. Presently, there are 65 operational mines in the region, with concerns raised by environmental specialists regarding the insufficient plans for ecological restoration and violations of coal transportation rules by many mines. There have also been instances of non-compliance with the submission of Mine Closure Plans (MCP), a crucial requirement for environmental clearance per the Environmental Impact Assessment (EIA) guidelines. Subsidence in shallow underground mining areas is attributed to thick coal seams at shallow depths, leading to collapses in several coal mines in recent years. In response to these challenges, proactive measures are being undertaken in Raniganj to address the land subsidence issues caused by coal mining activities. Collaborative efforts between the government and industry stakeholders are being focused on implementing sustainable mining practices, enhancing safety measures, and ensuring the stability of mining operations. Ongoing monitoring, technological advancements, and strategic policy initiatives are also being deployed to mitigate the impacts of land subsidence and safeguard the affected communities.

Causes of Land Subsidence in Raniganj

Subsidence's resulting from underground excavations have been observed in the Raniganj coalfield since the inception of coal mining. This phenomenon has garnered significant interest from the scientific and engineering communities. (Singh & Yadav, 1994).

1. Coal Mining: Large-scale underground mining operations create empty spaces beneath the surface. Over time, these spaces can collapse, causing the land above to sink. The sinking of the land primarily occurs due to extensive underground mining activities.

2. Water Extraction: The extraction of groundwater for mining activities or other purposes can lead to a decline in the water table, which can cause land subsidence. In the study area, we have observed that water levels in dug wells fluctuate based on the season. During the summer, the depth of groundwater ranges from 4.0 meters to 6.0 meters, while in the monsoon season, it drops to a range of 2.5 to 4.0 meters. This indicates a fluctuation of around 2.5 meters in the fluid's potential between these two extreme climate conditions. (Bandopadhyay, 2014)

3. Geological Factors: Natural geological conditions play a significant role in exacerbating subsidence. Faults and fractures in rock formations can further aggravate this issue. An example of this susceptibility is seen in the area occupied by the rocks of the Raniganj Formation, where mining activities can contribute to subsidence.

Types of Land Subsidence:

Pillar collapse: If the structural pillars responsible for supporting the roof of a mine were to fail, it could lead to the immediate and localized collapse of the roof, resulting in subsidence. Subsidence is the sudden sinking or settling of an area of land, which can seriously affect the safety and stability of the mine and surrounding areas. This type of event needs to be carefully monitored and prevented to ensure the safety of the mine and its workers.

Progressive subsidence: Over time, even reinforced mines might slowly sink to the ground due to the compaction of the materials above them. The primary issue in the Raniganj coalfields is the presence of old and water-logged workings resulting from historical coal mining activities. These water-logged areas create unsafe residential zones, especially in certain localities situated above them. The combination of natural hazards and coal mining subsidence poses a significant threat to land use and the safety of

the affected areas. (Gupta et al., 2018). Hazards and subsidence from coal mining can negatively affect land use. The population in the historical mining regions has significantly and consistently increased over the years, leading to notable demographic shifts and growth in these areas. The safety of these areas was compromised, making them unsuitable for human habitation. Despite the local administration declaring the unsafe conditions in these areas, the number of people living there continued to increase without any signs of stopping. (Gupta et al., 2018)

Places of Subsidence Spots in Raniganj

1. **Jharia:** The Jharia area within the greater Raniganj Coalfield (Fig.3) is well-known for its underground fires and has unfortunately experienced significant land subsidence. This region has gained notoriety for surface sinking due to mining activities causing widespread environmental and infrastructural challenges.

2. **Sitarampur:** The area (Fig.5) has been experiencing significant subsidence problems, which have damaged infrastructure and displaced residents. The subsidence is primarily attributed to the collapsing of disused underground mines, which severely threaten the community's safety and well-being. Pathmohona is the only location experiencing complete instability in this area, and we need to address the issues there to ensure overall stability. (Gupta et al., 2018)

3. **Sripur:** Sripur, a region heavily impacted by land subsidence, has experienced numerous cases of ground instability. This has resulted in several buildings' collapse and created significant safety risks for the residents. In 2006-2007, a newly constructed National Highway from Kalipahari Rail gate towards Neamatpur suffered significant subsidence, with the road sinking to a depth of 2.6-4 meters over a length of approximately 1500 meters due to significant soil movement. (Gupta et al., 2018)

4. **Jamuria:** The gradual sinking of the land surface in this area is due to subsidence resulting from ongoing mining operations. These activities have led to underground empty spaces or voids, which in turn have contributed to the subsidence phenomenon.

5. **Raniganj Town:** There have been reports of subsidence in specific areas within the town of Raniganj, causing significant disruptions to the local community. These incidents have necessitated direct government involvement to effectively manage and rectify the situation.

Characteristics of Subsidence Spots

Occurring often: These areas frequently suffer from sinking ground due to current and past mining activities. Tackling this issue is crucial to guaranteeing the area's safety and structural integrity.

Empowering Communities through Impact: Subsidence results in the movement of the Earth's surface, causing safety risks, displacement of people, and financial setbacks for the affected communities.

Damage to infrastructure: These areas often experience damage to buildings, roads, and railways, which calls for repairs and sometimes even relocation to better suit the community's needs.

Impacts of Land Subsidence

1. Infrastructure Damage: The extraction of minerals from underground can lead to subsidence, causing the ground to sink and potentially damaging the surrounding area. Buildings, roads, and infrastructure above the mining area are at risk of structural issues such as cracks, tilting, or collapse. As a result, this subsidence can significantly affect the stability of buildings, roads, and railways, ultimately disrupting daily life and transportation for the community.



Figure. 3 Coal mine and subsidence affected area of Jharia Coalfield (Source: Google Earth Pro 7.6.3.9796, February 22, 2024, Eye alt.44.58km, Raniganj area, DoI:27/03/2024 @2024 Airbus, Earth Versions – Google Earth)

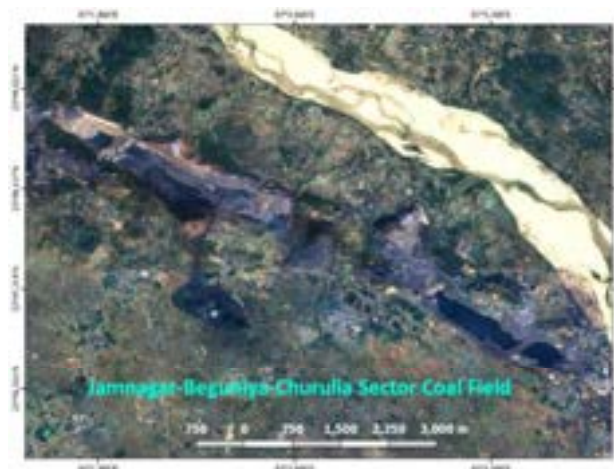


Figure. 4 Coal mine and subsidence affected area of Jamnagar-Beguniya-Chunulia sector Coalfield (Source: Google Earth Pro 7.6.3.9796, February 22, 2024, Eye alt.44.58km, Raniganj area, DoI:27/03/2024 @2024 Airbus, Earth Versions – Google Earth)

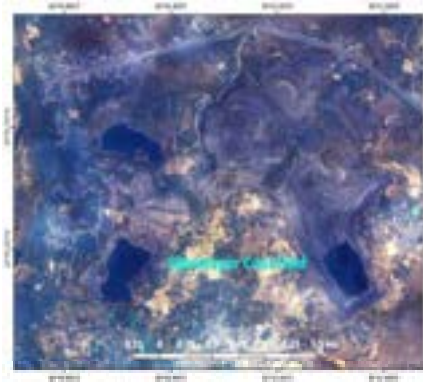


Figure. 5 Coal mine and subsidence affected area of Sitarampur Coalfield (Source: Google Earth Pro 7.6.3.9796, February 22, 2024, Eye alt.44.58km, Raniganj area, DoI:27/03/2024 @2024 Airbus, Earth Versions – Google Earth)

2. Water Bodies: Mining activities disrupt natural drainage systems, redirecting rivers and streams. The altered flow patterns can significantly impact the surrounding ecosystems and land use. This disruption can lead to changes in water quality, erosion, and habitat destruction, affecting wildlife and plant life in the area. Redirecting rivers and streams can also challenge agriculture, urban development, and infrastructure near these water bodies.

3. Agriculture: Land subsidence, a gradual settling or sudden sinking of the Earth's surface, can significantly impact the ability to use the land for agriculture. This phenomenon often occurs due to groundwater extraction, natural compaction of soils, or the collapse of underground mines or caverns. As the land sinks, it can disrupt the natural drainage patterns and soil structure, reducing agricultural productivity. Moreover, subsidence can render farmland completely unusable, threatening local food production and farmers' livelihoods who depend on the land for sustenance.

4. Ecosystem Disruption: The natural habitat in which a wide range of species reside can be altered or even destroyed, substantially impacting the diversity of life in that particular region.

5. Safety Hazards: The sudden sinking or settling of the ground, known as land subsidence, presents significant safety hazards for residents, miners, and workers. This occurrence, whether caused by natural processes or human activities, has the potential to cause structural damage, injuries, and even loss of life. Therefore, it is essential to establish comprehensive monitoring systems and preventive strategies in areas prone to land subsidence.

Important Environmental Problem

The air quality is inferior in all the active mining areas of ECL due to dust, carbon, and several harmful particles. High temperatures and seasonal variations in rainfall enhance the effect of all the environmental pollutants. Sulfur dioxide (SO₂), Nitrogen oxide (NO_x), Carbon Monoxide (CO), and Lead (Pb) levels in all the mine areas remain high throughout the year. Dust is also generated by moving large, heavy vehicles in the mining area. Gaseous pollutants like CO, CH₄, and CO₂ are emitted from the coal yard. Spontaneous heating may also lead to fires in the coal dumps, releasing other toxic gases like CO (Bandopadhyay, 2014).

The groundwater crisis is a significant environmental problem in the Raniganj coal mine area due to the lowering of groundwater levels and groundwater contamination from mining sources. Noise, often defined as unwanted sound, interferes with speech communication, causes annoyance, distracts from work, and disturbs sleep, deteriorating the quality of the human environment. Noise levels were measured at several locations in the area (Bandopadhyay, 2014). Noise pollution is now recognized as a

significant health hazard and an annoyance. The most noise-generating equipment underground is haulage, ventilators-main, auxiliary, forcing fans, conveyor transfer points, and cutting and drilling machines (Rao, 1971). The breaking of coal and leaching of pyrite of sulfur content from the coal and surrounding formations lead to Acid Mine Drainage, which has severe health impacts.

Response and Mitigation Efforts of Land Subsidence:

In the Raniganj area, efforts are ongoing to address the issue of land subsidence. These efforts focus on specific spots and involve implementing strategic measures such as groundwater management, soil stabilization, and structural reinforcement. The goal is to mitigate the impacts of land subsidence, including property damage, infrastructure instability, and potential safety hazards. The comprehensive approach involves collaboration between local authorities, environmental experts, and community stakeholders to effectively address this complex geological challenge.

Monitoring Systems: The local authorities have implemented advanced monitoring systems in these areas to detect potential subsidence issues early.

Relocation Programs: In regions characterized by a high likelihood of natural disasters or other potential risks, several initiatives have been implemented to facilitate the relocation of families who are particularly vulnerable to safer and more secure areas. This proactive approach aims to mitigate the potential adverse impacts of such hazards and ensure the well-being and safety of these at-risk families.

Rehabilitation of Mines: When abandoning mines, it is crucial to backfill or seal them effectively to prevent future

subsidence, which can cause the ground to sink or collapse. This is important for ensuring the surrounding areas' safety and preventing environmental hazards.

Community Awareness: Local communities are being actively engaged and educated about the potential risks associated with land subsidence and the essential precautions that should be taken to minimize its impact.

Backfilling: Backfilling is filling empty spaces with materials to provide structural support, manage waste, or restore the land surface. This practice helps minimize the environmental impact of mining activities and improve safety and stability.

Monitoring: Exploring the use of susceptible instruments to identify early indicators of ground subsidence and promptly implement preventative actions to mitigate potential damage and hazards.

Controlled Mining Techniques: Utilizing methods such as room-and-pillar mining can help minimize the risk of underground collapse by leaving behind coal pillars to support the mine roof.

Subsidence

After coal extraction, many underground collieries have historically resulted in empty spaces underground. Consequently, nearly all regions are experiencing subsidence issues. According to CMPDIL, the Salanpur Area has witnessed three instances of subsidence, impacting 6.38 hectares of land. The scientific community believes that before initiating the revitalization of sunken land, it is essential to establish the specific purpose for which the land will be utilized through discussions and input from the local community (Gupta et al., 2018).

Table 8 Subsidence in Raniganj Coalfields

Sl. No.	Area	No of Unstable Locations	No of Apparent danger	Estimated Population Likely to be affected	No of Houses (Apparently Stable)	No of Houses (Unstable)
1	Salanpur	1	1	1000	53	150
2	Sripur	22	1	71023	195	10597
3	Kajora	3	1	3300	140	545
4	Kunustoria	8	1	15755	120	2434
5	Kenda	3	1	7400	192	1194
6	Satgram	8	1	12600	20	1791
7	Sitarampur	5	3	9810	384	1508
8	Sodepur	3	2	11700	1000	1053
9	Pandaveswar	1	0	275	0	60
10	Bankola	0	1	50	11	0
Total	54	12	159013	2115	24264	

Source: CMPDIL Report, Subsidence in different collieries of Eastern Coalfields up to 2008 Source: Feedback Report. CMPDIL (8).Sodepur is an area where frequent accidents due to coal mining occur. In the past, the area has experienced over ten fires and more than five instances of subsidence. The area lacks vegetation, leading to high soil erosion and silted small streams. As a result, there is a high overall ecological imbalance in this area (Gupta et al., 2018).

Major findings

The Raniganj region in India is known for its rich geological history dating back to the Gondwana formation, providing compelling evidence of its significant past. This area has been a crucial hub for coal mining and is pivotal in overall coal production. Most of the mines in Raniganj are under the management of

Eastern Coalfields Limited (ECL), a leading entity in the coal mining sector, and they consistently yield a substantial output of coal. However, despite its contributions to the coal industry, Raniganj has faced challenges related to significant land subsidence, which has had far-reaching effects on the local environment and society. In response to these challenges, ECL has taken proactive steps to address the issue by implementing advanced technologies to mitigate the impact of land subsidence from coal mining activities.

The study, therefore, reveals various environmental problems attributable to Raniganj Coalfield, especially the Beguniya Open Cast Mine. This area has been dramatically affected by air and water pollution, deforestation, physical land degradation, and loss of biodiversity. The mining of coal in the region has had many negative impacts, including a decrease in soil productivity, a reduction in land used for farming, and the destruction and or resettlement of communities. Temperature of a mining area: Beguniya For instance, the temperature of a mining area remains successively high or similar to an area connected with an urban heat island. Thus, in this particular study, it has intended to find out how, due to the mining of coal in the Raniganj coalfield, particularly in the Beguniya area, those people have been impacted: displaced, farmers and agricultural workers were expelled without occupations, health problems for those who live nearby due to pollution and so on social problems were created by extracting resources and disobeying law and order, breaking the rules and another incidence, etc.

In order to make the paper base on its analysis, the paper had focused on researching on the policies and regulations that were previously put in place concerning the mining of coal in Raniganj Coalfield right from the time when the business began

to have mining activity. It reviews policy and regulatory structures and areas and structures for enforcement that lead to environmental issues. In the research, the engagement of locals in the decision-making process of matters relating to coal mining activities is a major concern. It emphasizes that people's participation in development practices but also to address any negative impacts on the environment.

Conclusions:

The Raniganj Coalfield, located in India, holds immense importance as a center for coal mining. This industry significantly influences the country's economic development and environmental sustainability. A recent study has brought to light several crucial findings concerning coal mining activities in this region. It has shed light on various concerns, particularly the issue of land subsidence. The consequences of coal mining in the area are severe, with significant ecological damage evident. This includes land degradation, groundwater depletion, air pollution from mine fires, and contamination of water sources. The adverse effects of coal mining have taken a toll on the local ecology, affecting flora, fauna, and agricultural productivity. Moreover, illegal coal mining activities have exacerbated these issues, leading to an increased risk of land subsidence and causing disruptions in the legal framework for resource extraction. It is also worth noting that there are significant knowledge gaps in assessments about subsidence susceptibility specific to the Raniganj Coalfield. As a result, the current planning measures are deemed inadequate to address the challenges posed by coal mining in this region.

Given the complex challenges associated with mineral extraction, it is imperative for a wide range of stakeholders, such as government agencies, industry players, and local communities, to work together to implement sustainable strategies. These

strategies should promote responsible mineral extraction practices and minimize adverse environmental and socio-economic impacts. To achieve this, it is crucial to establish rigorous monitoring systems that track mineral extraction's environmental and social effects. Proactive legislation enforcement, public awareness campaigns, and community engagement initiatives should also be prioritized to ensure that all stakeholders are involved. Addressing these concerns requires an integrated approach that balances economic growth and environmental conservation objectives. This can be achieved by emphasizing effective legislation, leveraging technological advancements, implementing capacity-building programs, and fostering public-private partnerships. By prioritizing sustainable management strategies, we can secure the long-term viability and equitable allocation of resources in Raniganj and other regions globally facing similar challenges related to fossil fuel extraction.

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Is ‘Universal Water Security’ A Myth Even in 21st Century? - A Case-Study of Kolkata

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Abstract:

This chapter deals with a major issue of 21st Century – the problem of water security. The main target of United Nations is to achieve the goal of universal and equal access to drinking water by 2030. This chapter will explore, by taking case study of Kolkata, possibility of achieving such goal, particularly in developing countries. In this chapter a historical investigation of the water security issue in the context of Kolkata is made. This chapter shows the problem of water security for developing countries and marginal groups.

Key-words:

Water security, water borne disease, arsenic, mercury

Water is an essential component for living. In 1977, the United Nations Water Conference recognized the ‘right to water’ for

the first time.¹This conference recognises accessibility to drinking water as a basic need. In 2000, the right to clean water was affirmed by the United Nations General Assembly.² On July 28, 2010 the United Nations General Assembly recognised right to water and sanitation as a fundamental right.³The United Nations set the goal of universal and equal access to drinking water, to be achieved by 2030. Now it would be interesting to understand how far the issue of water security as recognised by global agencies is practically achievable, particularly in developing countries. In this chapter a historical investigation of the problem will be made by taking case study of a significant metropolitan city –Kolkata.

Kolkata's water supply system mainly depends on the Hooghly River. Plentiful tanks and surface-wells are also important sources of water supply. The colonial government took some efforts to secure an effective water supply system in the city. The motive was strategic rather than philanthropic. Initially the Raj tried to protect health of its own administrators and military personnel. As early as in 1709 Laldighi (at present BBD Bag) was deepened and extended. Between 1805 and 1836 the Town Improvement Committee and the Lottery Committee constructed tanks at Cornwallis Square, Wellington Square, College Square, Mirzapur, Soorti Bagan and other places. The mechanical arrangement of filtered water supply started in 1820 when a small pumping station was build at Chandpal Ghat and service was extended upto the White Town covering portions of the areas of Old Court House Street, Dharamtolla, Chowringhee, Park Street, Lalbazar and Bowbazar.⁴

Kabita Ray noted that, Kolkata's filtered water supply in colonial period was consisted of three stages. These were – (i) the whole filtering arrangement at Palta; (ii) the storage arrangement at Tallah reservoir and (iii) the underground pipe system and the tap system from which the residents of the city

got their water supply.⁵ A new pumping station at Palta was built in 1888 and in 1891; a new station was constructed in Bhawanipur for the supply of water to the Southern part of the city.⁶ The supply of water for drinking and other purposes reached the people of Kolkata through this system from the late nineteenth century until after Independence.

The authority acknowledged basic need for pure drinking water. Act II of 1848 recognized the need for pure and wholesome water. Act of 1899 made continuous supply of water obligatory. Initially Calcutta Municipal Corporation [hereafter C.M.C] took the target of supplying thirty gallons of filtered water per person per day. However, because of increase of population of the city C.M.C required to revise its plan. In 1919 an expert engineer, St. George Moore advised C.M.C to terminate the supply of unfiltered water and achieve the projected target of eighty gallons of filtered water per person per day.⁷ C.M.C accepted this proposal with some changes. It decided that supply of unfiltered water would be continued but at the same time, supply of filtered water would be maintained at seventy gallons per daily individual consumption.⁸ Accordingly the city was divided into several zones. Zone I included Corwallis Street and College Street. Areas like Maniktala, Chittaranjan Avenue, Chittpur Area were under Zone II. The areas under Zone III included Raja Dinendra Street, Upper Circular Road etc. Finally Zone IV includes Dharamtolla Street, Lower Circular Road and parts of South Kolkata. This arrangement continued for many years. In 1940s the city went through a critical phase. Japanese air raids and Bengal famine gave a blow to city's resources. In this scenario in 1945 Biswas Committee was formed to make enquiry into Kolkata's Water Supply system. The Committee fixed the minimum needs of the city at 300 million gallons (1364 million liters) a day with continuous high pressure water supply. But on the eve of the independence, the drinking water problem

remained in the city. Supply of pure drinking water and its accessibility remained a problematic issue. The result was that water borne diseases like cholera, diarrhoea, dysentery etc ruled the city at the time of Independence.

The ground situation of water supply in the city was not very much optimistic even after independence. C.M.C failed to meet the necessities of the inhabitants and many homes had to meet their needs from the Municipal supplies of water from the roadside taps or tube-wells. In 1960-61, it is intriguing that only 9.2% families had exclusive tap water connections in their premises, 50% shared this facility with others and 23% had no prerequisite for tap water at all.⁹ The supply of filtered water was not only insufficient its quality also deteriorated substantially. When Palta site was selected in 1865, the salinity of the river water from Hooghly was not at all harmful, but in 1930s, this salinity increased rapidly. It increased to 380 per million gallons whereas the accepted human tolerance level for drinking is only 250.¹⁰

Due to the insufficient flow of the river, mainly during the summer months, the saline content reached an incredible 2480 parts per million gallons in 1959.¹¹

Scarcity of safe water for drinking forced a great section of people in the city to drink water from tanks, wells and tube-wells. This polluted water, which contained cholera germs as well as germs of several water borne diseases, was used for cleaning and boiling foodstuff or washing utensils. This led to the spread of water borne diseases like cholera, diarrhea etc. Manimanjari Mitra argued that -

“... cholera, dysentery and other stomach ailments were prevalent in wards 1, 2, 5, 6, 18, 19, 22, 23, 24, 25, 26, 27, 31 etc., contiguous to various canals, the Hooghly River or Tolly’s Nullah. Wards 2 and 5 were riparian wards, while 22 was adjacent to Tolly’s Nullah and wards 18 and 19 were notorious for insanitary ponds and tanks. Maniktala, in the earlier years,

was practically devoid of a drainage system. It was a low-lying waterlogged island; with innumerable tanks. People living in these areas collected water from contaminated tanks or canals for their domestic purposes during the summer months and were increasingly being afflicted by stomach ailments which gradually spread to other non-riparian wards also.”¹²

In 1958 outbreak of cholera epidemic in Kolkata shocked civic planners and exposed worse condition of drinking water in the city. In 1958 there were 4895 cases of cholera with 1756 deaths.¹³ Calcutta gradually emerged as a threat to the entire nation. From the metropolis cholera germs spread all over India. Dr. B C Roy, the Chief Minister of West Bengal understood the importance of the situation. At his efforts the Indian Government approached World Health Organization [hereafter WHO] for assistance in February 1959. The WHO expert team visited Calcutta in October 1959 and submitted a report in late November. The report made strong recommendations on improving water supply and sanitary condition of the city. After this report the Government of India made a request to the United Nations Development Programme [hereafter UNDP] for assistance. A Plan of Operation was signed by the UNDP, WHO and the Government of India in September 1962.¹⁴ Eventually a Master Plan for Water Supply, Sewerage and Drainage was prepared for Greater Calcutta region. In 1966 Basic Development Plan was proposed with an object of improving overall urban condition of Kolkata and this plan emphasized on water supply and sanitation. In 1972 Calcutta Metropolitan Development Authority was established to ensure development of Greater Calcutta Region.

But these measures could not solve the issue of drinking water problem in Kolkata. Even in 21st century the city suffers from water crisis. First of all the supply of drinking water is not adequate. Secondly the quality of water is not good in all areas.

Thirdly accessibility to filtered water is not universal. In 2007, the Asian Development Bank conducted a survey on the water utilities in India and in this survey it was found that only 74 % of the households in Kolkata have piped water supply and that the average time of daily uninterrupted water supply is 8.3 hours.¹⁵ According to a study, Kolkata Municipal Authority [hereafter KMA] faces a supply deficit of filtered water of about 1.18 million cubic metres per day.¹⁶ This forced citizens to incline towards unfiltered water which causes several water borne diseases. Mostly slum dwellers and marginal groups are deprived from access to filtered water. The water quality is also a cause of concern. An analysis of ground water quality in Kolkata shown that the concentration of mercury in locations near Tangra (3.649 mg/l), Cossipore (1.755 mg/l), Dhapa (0.932 mg/l) and inside Kolkata Leather Complex (0.719 mg/l) have exceeded the permissible limit (0.001 mg/l).¹⁷ Mercury is a highly toxic liquid metal and its consumption over many years could result into kidney damage. Increase in arsenic content of the water is also a cause of concern now a day. Deficiency of filtered water and poor sanitation often cause spread of several water borne diseases.

This discussion exposed the myth of universal water security in developing countries. WHO and UNICEF specified 20 litre of water per capita per day as the minimum requirement for a person.¹⁸ The discussion shows how scarcity of filtered water and inequality in access to pure drinking water harkle citizens of Kolkata even in current scenario. Apart from dearth of filtered drinking water, poor quality of water in some areas is also a cause of concern. In many areas of the metropolis arsenic and mercury contamination are alarming. These factors, along with poor sanitation cause spread of several water borne diseases. The Government and civic authority must take stern and bold steps to solve the problem. The supply of filtered water must be

increased at any cost. Access to pure drinking water must be universal. In areas where there is a dearth of filtered water emphasis should be given on chlorination of water. Decrease in the quantity of ground water is a global issue now. Steps must be taken for rain water harvesting and purification of ground water. Civic authority must tackle problems like arsenic and mercury contamination. Proper steps must be taken to prevent water contamination with various waste materials and harmful substances. Water conservation is an urgent need of the hour. Civic authority must take strong measures to stop water wastage. Authority must come up with plans so that wastage of filtered water in various household activities could be prevented. Laws must be framed to ensure universal and equal access to drinking water. A collaborative approach by the Government, Civic authorities, NGOs and various Global agencies must be taken to solve the drinking water crisis and fulfil UN's goal of universal and equal access to safe and affordable drinking water by 2030.

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THE CHANGING PATTERN OF LAND USE AND LAND COVER OF SUNDARBAN, – “A CASE STUDY OF KULTALI BLOCK”.

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ABSTRACT

The Kultali Block, located within the Sundarbans, is part of an active delta. Land use in the region is also highly variable. The salinity of the soil in this region is high, and whenever the dam breaks, the river water enters the locality and causes a lot of damage to the crops. Earlier land use in the Kultali block was mainly done through agricultural activities, which was not very profitable. Nowadays, people are much more aware of modernity, and there are many changes in the land use of Kultali. Now the salt lands are used for profitable fish and shrimp farming, modern agriculture, and a variety of vegetables. By fully using the fallow lands for fish farming, the Kultali people became more economically self-sufficient.

Key words: Land use, Land cover, fish cultivation, conversion, Kultali

INTRODUCTION

Sundarban is not only India 's but also world 's largest Mangrove forest. The island of Sundarban is formed by the sediment deposition of Ganga and Brahmaputra river. Sundarban in India covers about 4110 sq km area. It is the most important biodiversity region (Gopal et. al,2018). It is a UNESCO world Heritage site inscribed in 1987 and it has been designated as a Ramsar site since 2019 (Sarkar,2022). The rivers of Kultali block get affected by high and low tides. The length of this rivers are very large and the breadth is very wide. Kultali block of Sundarban is mainly located at the active delta region so the change is not permanent (Rogers et. al,2014). As the region falls mainly in the lower course of the river, deposition of sediment help in the formation of lands and vegetation. But people are clearing the vegetation for their settlement and lands for agriculture have been set up. In some place the river water shows its critical face where the settlement and land for agriculture are affected by the erosion of river (Hazra et.al,2010).

The fallow lands are converted into agricultural lands and land for settlement by the people using different high technologies. Due to the growth of technology and application have helped to the growth of crops three times more than before. Example the application of different pesticides, insecticides and fertilizers. Other instruments which are used are powertillers, machines for irrigation for better cultivation and methods for organic farming are also developed. Beside this, people at present are using multi cropping in the lands for getting different crops at the same time (Syahli,2015) As Kultali is a salinity prone region (average salinity ranges between 7.5 to 8.5 pH), the occupation of the people has changes from cultivation to fish production which is seen to

be more profit bearing. So, people here tend to practice fish cultivation (Ghoshal et. al,2019)

OBJECTIVES:

- i) To study the land use and land cover of Kultali block and its changing pattern.
- ii) To see the changes in agriculture.
- iii) To study the changes in the economic development of people in respect to the changes in the land use pattern.
- i v) To showcase the growth of fish cultivation in respect to agriculture in the saline water of Kultali block of Sundarban.

METHODOLOGY:

First of all, satellite image will be required to show the change of land use and land cover in Kultali block. So, two images of 2001 and 2021 are downloaded from USGS (United states geological survey) (<https://earthexplorer.usgs.gov>). Various data of Kultali block is collected from “Census handbook”. They are identified to show changes in specific place. Images of 2003 and current images of those are collected from “Google Earth Pro”. Photos of the specific place is collected by visiting the place. Information is also collected from surveying (through questionnaires) the region.

The first thing to do is to extract the downloaded map and image it with the QGIS software 3.18. After selecting the study area through clipping and collecting training inputs, land use and land cover is divided into eight parts. These are river, vegetation, sea, agricultural land, settlement, fallow land, water body, and river bed.

After the image classification is done all parameters of the LULC has to be measured in QGIS and to see the difference between them. After this is done it is also focused on how much

the change is seen and in what direction it has taken place. For example- agricultural land is converted to wetland of fish farming.

All maps and other works are arranged according to specific parameter.

Study Area: Location of Kultali block is of diverse nature. Here the three sides are occupied by water and one part is occupied with land. The total area of Kultali block is 306.18 sq km.



Figure -1: Location map kultali block

Its elevation is 7 m. and falls within the latitude of $22^{\circ}05'12''$ N and longitude $88^{\circ}35'37''$ E.

The southern part of Kultali consist of Bay of Bengal, the eastern part consist of upper basin of river Matla and lower basin of Bidyadhari river along with a part of CD block of basanti. The south-eastern part is the part of Sundarban national park. In the

north, Jaynagar-I, and Canning-I CD block are located. Jaynagar-II and Patharpratima lie in the western part of Kultali.

RESULT AND DISCUSSION:

As the Kultali block is situated in the active delta region and in the rural area, its social, economical and natural changes are continuously seen. The changes is more actively seen because of modernity.

Description of Land use and Land cover in the year 2001:

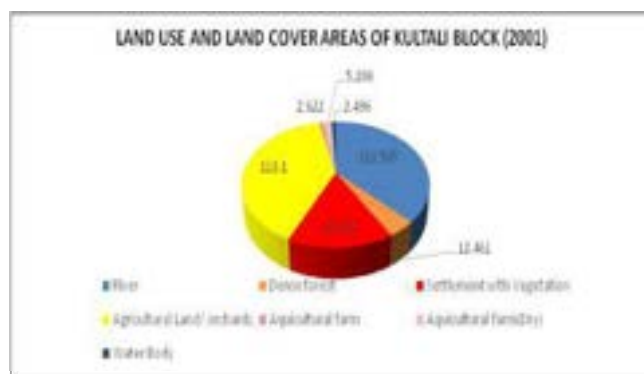


Figure -2: Land use and Land cover Area of Kultali block (2001)

The number of rivers in Kultali block is very much. In 2001, these rivers covered an area of 36.5% that is 111.6 sq km. The main rivers are Matla and Bidyadhari which flow beside the Kultali block. Many small rivers are also present. They are Piyali, Thakuran, Kankalmari, Nimaniya etc.

Kultali block is the part of Sundarban. The southern part is covered with vegetation of about 12.46 sq km. that is 4%. The northern and middle part of the region have settlement with vegetation which is about 14.91% that is 45.67 sq km. This region is mainly considered as the biodiversity region because the vegetation consists of variety of trees and animals are found. Plants that are grown here are sundari, goran, bani, gaya, golpata etc. and animals that are found are tiger, crocodile, monkey, rhinoceros etc.

The population in the region is very low due to the presence of the region in the lower deltaic region and the opportunities are also less here. So, the fallow lands are seen here.

Due to the lack of development in technology and modernity, the crop population is very low even though the agricultural land is 38.57% that is 118.1 sq km. These lands were used for the cultivation of paddy every year. The amount of crop produced per hectare was 1.23 tones.

As the people do not get enough opportunities the population of the region is very low. The houses are built with the woods of the trees from the forest and also of soils.

The water bodies of Kultali were left aside as the wetlands. The total wetlands are 0.815% that is 2.496 sq km. Sometimes of he water from this wetlands were purified and used as drinking water.

Description of Land use, Land cover in the year 2021:

The rivers of Kultali covers area of 36.38% that is 111.38 sq km. The river water is saline and tides affect the rivers water.

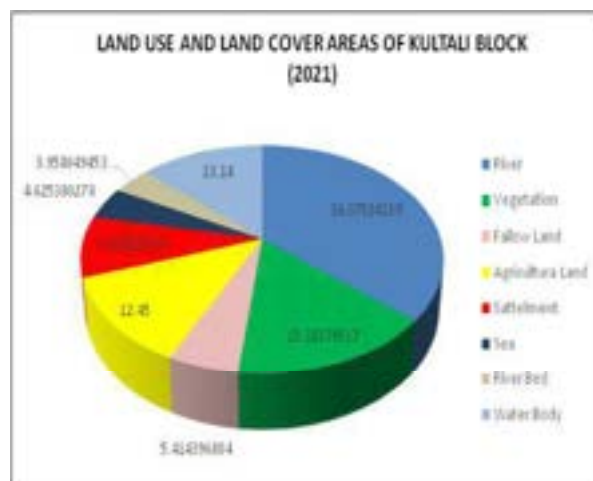


Figure -3: Land use and Land cover Area of Kultali block(2021)

The southern part of the Kultali block has vegetation cover. The total vegetation cover is 15.38% that is 47.10 sq km. Human interference is destroying the vegetation in this region. Sundarban is declared as nation forest and reserve forest in the year 1984 on 4th may. The protection polity to conserve Sundarban has started which has resulted in the declination of the human interference.

The islands are formed on the banks of the rivers or on the middle of the river due to the accumulation of silt. It is slowly becoming and changing into forest and human settlement. The total rivers bed is about 3.95% that is 12.148 sq km.

At present the agricultural lands of Kultali block have reduced. The total agricultural land is 12.45% that is 38.119 sq km. But the production of crops have increased with the development in field of agriculture. The crop is produced twice in a year multi cropping is also done here. At present the paddy cultivation per hectare per one year is 5.378 tones. Beside this different kinds of vegetables and pulses are also grown.

The people of Kultali block are much more self-reliant economically due to modern methods of agriculture and government assistance. As the people are getting opportunities 50% houses are pakka house. One storey, two storey, and three storey houses are seen. People are ever living in small huts built within the forest at present times. At present, 8.66% that is 26.52 sq km. settlement are found.

The wetlands of Kultali block are 13.14% cultivating fish people have created ponds and the wetlands. It has facilitated in fish cultivation in one hand and on the other hand the irrigation waters are used for agriculture and vegetable during winter season.

Land use and Land cover changes of Kultali block:

Our world is always changing. Something is always changing. Some major changes of Kultali block are agriculture, vegetation, fishing, cultivation, human life style etc. The changes occurred between 2001 and 2021 are discussed here.

Agriculture:

The main occupation of the people of Kultali block was agriculture and the agriculture was practiced on a specific time period. So, people were engaged in

different other works. In 2001, there was huge amount of agricultural lands but the crop production was not so

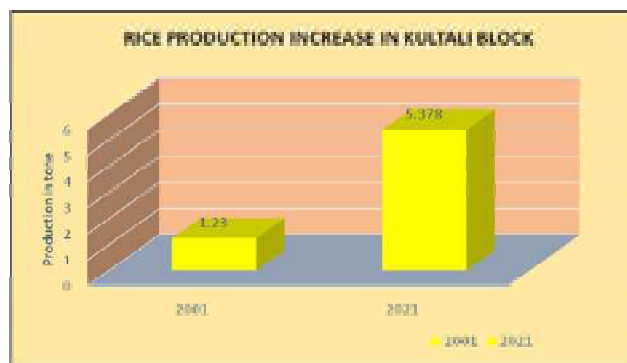


Figure- 4: Rice production increase of Kultali block, 2001 to 2021

much. The land was cultivated once in a year. The crop production was 1.23 tons/ hectares/ per year. But in 2021, the amount of crop production increased three times than before. The land is now cultivated twice in a year.

The total production is 5.37 tones/ hectare/ per year. The reason is the development of new technologies, use of chemical fertilizer, insecticides, and pesticides. The sides of the land is made high up to a certain level to cultivate different types of vegetables. These are cultivated twice a year. Bitter ground, jhinge, chilies, pulses, are the main crops that are grown. Peas and other 20-25 types of vegetables are cultivated. As the land is made elevated, the water is present all the time.

Vegetation:

The forest cover of Kultali was very high as it is the part of Sundarban. But for human settlement and agriculture people have

depleted the forest. The forest cover was 58.13 sq km. during 2001 but at present it has decreased to 47.11 sq km.

The Governmental policy has reduced the destruction of forest. Due to continuous sedimentation river beds are formed. Forest is cleared to built settlement. Wetlands are formed for agriculture are fishing activities. The forest is declining this way.

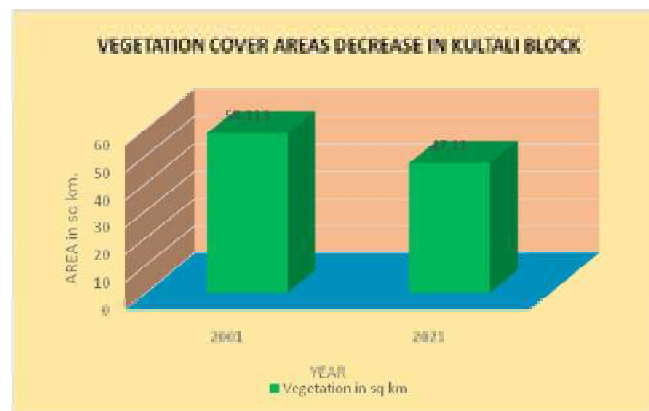


Figure -5: Vegetation cover Areas decrease of kultali block, 2001 to 2021

Fishing cultivation:

The most profitable cultivation is the fishing cultivating in Kultali block of Sundarban at resent times. As Kultali is located is the salinity region, the soil also contains salinity. So, the agricultural crops are comparatively less grow. So, the profit is also low. The flood waters also enter in the agricultural lands which destroy the crops of that particular year. As a result, after 2-3 years of food, it is not possible to grow crops in that particular land. Due to the mixing of fresh and salt waters, fishing is best developed here. The growth of the fish is also fast. This fisher are market oriented. Many fisher and presents are processed in the industries and after packeting it is ready to sold in national level fishes

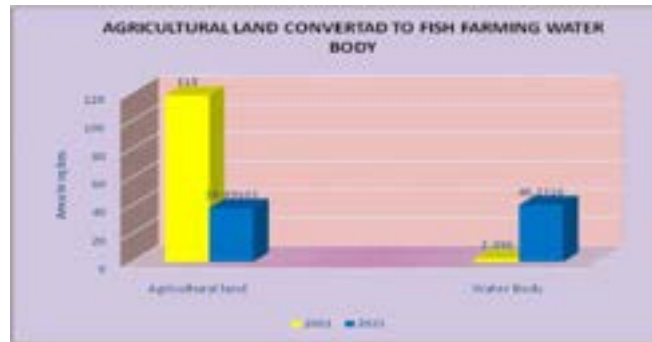


Figure – 6: Agricultural land converted to fish farming water body

like vetki, topse, parse, crab, bagda, prawn etc. are cultivated in salt waters are katla, rui, rupchanda, and other fishes are cultivated in the mixture of saline and fresh waters. These are marketed throughout the year and also in some specific time.

All the fallow lands are converted into agricultural land and fishing and people are making them suitable for cultivation. The profit is more in fish cultivation than agriculture at present. In 2001, the wetlands were 0.161% that is 2.496 sq km. Mostly the lands were remain there as fallow land. In 2021, the wetlands have increased to 13.14% that is 40.2 sq km. These wetlands are used for fish cultivation.

Human life style:

Changes in the life style of people is seen with the changes in the usage of land. The literacy rate was very low in 2001. 90% of the people were below poverty line. They were engaged in primary activities. Due to lack of food people were starving. The cultivated crops would end within few days. People spent their lives in famine and misery as there was no electricity, hospital and roads. Slowly with the development in agriculture and with government intervention roads, electricity, measures of controlling

flood have developed. People have now become mentally strong. Different types of vegetables and

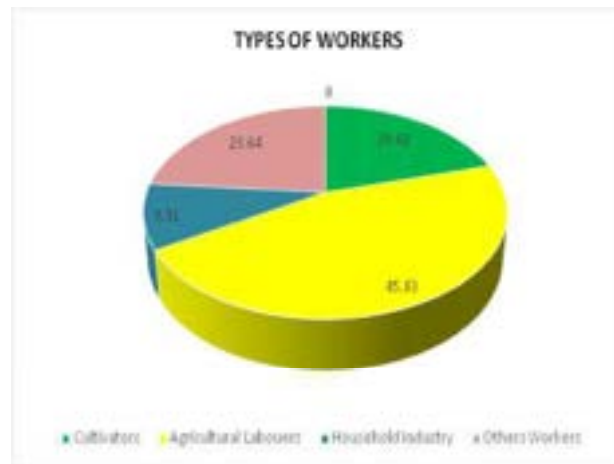


Figure – 7: Types of workers of Kultali block

(two times in a year) are marketed with the development in road connectivity. On one hand people have become economically Self Sufficient and on the other hand job opportunities have increased. People of Kultali do not starve now. Even people don't die without proper treatment. People don't have to migrate abroad for work.

CONCLUSION:

Land use and land cover of Kultali block have a major impact on Kultali. The miseries of the people have changed a lot for this change in land use and land cover. People have become economically Self Sufficient. It has been possible to use up to 85 -90 % of Sundarban has become an important place for growing vegetation, fish farming and agriculture. These profitmaking activities have made economically beneficial to the people of this region. The literacy rate is said to be increasing rapidly with the development in economy of the people. As a result of increase in

literacy rate, social and cultural development are also increasing rapidly.

Kultali is a region of coastal areas and saline soil contentment. This region faces cyclone and sometimes storms and heavy rainfall causing flood and other natural disasters. These natural phenomena less impact on the life of the people because varieties government policies, management of the disaster have developed and people have tried to cope up with the situations.

To be more Self-Sufficient people have to

a) Need for introducing more stronger governmental policies.

b) The region is very much prone to flood because it is located in the lower part and riverine area. For this local people and government should work together to make banks of river more strong and high and the drainage system should be kept more active during this time.

c) As the region is located in the coastal area, severe frequent cyclones are developed here. So by the governmental policy or any other means everyone house needs to arranged as pukka house.

d) To prevent disaster Sundarban plays an important role. So, conservation of Sundarban is must and needs to pay additional attention. Not only the government but the local people should have to take responsibilities to conserve the vegetation of Sundarban.

e) The wetlands contain saline water. Fishes are grown in plenty in this wetlands. So, people are becoming financially strong from cultivating fishes rather than agriculture.

The economic, social, cultural and life of the people of Kultali needs to be focused on keeping in mind the above-mentioned reasons which are necessary to look and focus.

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Cultivating and Tilling Tradition: The Limbu Community and their Sustainable Mountain Farming in the Darjeeling Himalaya

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Abstract

Mountain farming in the hilly terrains of Darjeeling Himalaya has a great potentiality to sustain a better rural livelihood and a possible way to generate an employment opportunity to the local people. Limbu being one the major tribe of this region sustain their livelihood through agriculture and livestock-based farming in the rural areas of Darjeeling Himalaya. The farming includes growing of cash crops, cereals and vegetables in organic manner. The agricultural areas of Teesta Valley, Dungra Kashmahal and Bungkulung are taken for the study purpose with prime emphasis to Limbu villages. The paper tries to find out the prospect of farming

and its effect on the livelihood pattern of the Limbu farmers in Darjeeling Himalaya. A detailed questionnaire was prepared to understand the different aspects of farming considering the better future prospects of livelihood. Though the area has greater scope but the present scenario has worsened the farmers' needs to go ahead with this type of farming due to lack of major farm implements. Basically, the age-old practices and dearth of modern technical knowledge has led to the major problem in farming. Besides, the low yield and absence of near market with no storage facilities along with the lack of proper transport system also makes the region really obscure in terms of marketing. Thus, an attempt has been made to find out the reasons for declining trend in the production and how this condition can be improved in an effective manner for the betterment of farming in the study area and to understand the farming culture and agricultural pattern of Limbus in relation to their Society, Culture and Environment.

Keywords: Darjeeling, Himalaya, Rural, Terrain, Culture, Farming, Sustainable, Livelihood

[I]

Introduction

Subsistence farming and production of the cash crops forms a core village economy (Fitzpatrick, C.I. 2011) for which mountain farming is the most suitable method for growing crops and fruits in the rugged terrain of the study areas. Darjeeling Himalaya offers necessary environmental factors for growing both food crops and cash crops along with a number of sub-tropical and temperate fruits (Limbu, 2012). Limbus are agriculturalist community of the Eastern Himalayan region racially belonging to Mongoloid Physiognomy and linguistically to the Tibeto-Burman family (Subba, 1990) practice mountain farming for their

sustainable livelihood. During the course of evolution and adaptation processes the nature of farming was changed from sedentary farming to settled farming. The arrival of Limbus in Darjeeling brought a settled farming system where food crops were grown along with the rearing of animals. Sustainable Mountain farming of Limbu community is the most suitable and traditional method for growing agricultural crops and rearing of livestock in the rugged and fragile terrain of Darjeeling Himalayas.

Farming in Darjeeling Himalaya: A Historical Overview

In the historical records the development of agriculture in Darjeeling Himalaya dates back to 1866 A.D where large portion of forest were cleared and replacement of Jhum cultivation by settled agriculture through efficient methods of terracing, ploughing and irrigating lands. New crops were introduced the most noteworthy being Tea, Cinchona, Potatoes and Mandarin oranges. In fact, the development and growth of agriculture started from colonial era (Samad, 1985). Cultivation of subsistence cereal crops is the main occupation of the people of Himalayan regions, which is based upon the centuries old traditional practices and carried out on the narrow patches of the terraced fields (Sati, 2010).

Aims, Objectives and Methodology

The main objective of this paper is to study the potential of Traditional agricultural knowledge and farming system of the Limbu community. It also attempted to highlight the problems and prospects of farming in the study area. The study is based on data collected from primary and secondary sources. However, emphasis is given on primary data. Accordingly, a schedule was prepared to interview the Limbu farmers. Secondary information has been collected from various published documents, unpublished thesis and relevant articles from the Journals.

Study Areas

i. Teesta Valley Tea Garden, Darjeeling: The Teesta valley Tea Garden is established in 1841 A.D and covers a large area along with suitable human habitation. The geographical extension is $27^{\circ} 01' 01.57''$ N to $88^{\circ} 22' 47.87''$ E situated at an elevation of 2772 feet from MSL.

ii. Dungra Kashmahal, Kalimpong: Dungra is one of the big Khasmahal areas of Kalimpong with the latitudinal and longitudinal extension is $27^{\circ} 04' 05.57''$ N to $88^{\circ} 24' 15.77''$ E situated at an elevation of 3121 feet from MSL.

iii. Bungkulung, Kurseong: Bungkulung is a small Himalayan village located within $26^{\circ} 52' 34.27''$ North and $88^{\circ} 13' 33.85''$ East at an altitude of 2060 Ft height above the MSL. The village is 15 Kms away from Mirik and 48 Kms away from Siliguri. The village is predominantly inhabited by Limbus from more than 100 years.



Fig 1. Location Map of the Study Areas

[III]

Farming Conditions in the Study Areas

Limbus of the study areas has little idea about the improved agricultural practices. They use traditional method of agriculture. They commonly use the tilling of land by means of plough employing bullocks. Immediately after the harvesting of crops, animals are placed on their land in order to graze and fertilize the area. The Farming conditions are different in the plantation and Khasmahal Limbu village with diverse agricultural pursuits. Farming in the study areas is practiced under rain fed regime purely in organic manner. The maximum temperature recorded in the study areas is 28°C to 29°C which is ideal for the growth of number of food crops, vegetables and horticultural crops. The soil of the study areas slightly varies from one another in Teesta Valley Tea Garden soil is sandy loam with the average pH value of 5.7 in which availability of phosphorus is 96 kg / hectare and potash 350 kg /hectare¹. During dry season irrigation is required and all farm related activities are performed manually. The effective use of manure is being done within small, medium and large-scale farms. Observations during the field survey revealed that all the farm families have livestock which helps them in producing manure for crops. Pruning and weeding are performed two to three times a year. The farming activities in the study areas are of four main types which are as follows:

(Footnotes)

¹ Data collected from Agricultural Office of TakdahRangli-Rangliot Block

- i. Homestead Farming
- ii. Orchard Farming
- iii. Floriculture

iv. Cash crop

i) Homestead Farming: This type of farming is basically done on the backyard of their house mainly for subsistence please by growing vegetables, fruits and local variety of pulses. The womenfolk are mostly engaged in this type of farming. Among the study areas majority Limbus of Teesta valley Tea Garden practices homestead farming.

ii) Orchard Farming: Orchard farming is very common in the Limbu villages of Teesta valley Tea Garden and Bungkulung. The main fruit is Mandarin orange which is important cash earning crop to Limbus. But recently the production of oranges is worst affected due to outbreak of disease in the study areas. Even the production has gone down in recent years hampering the farmers and his income.

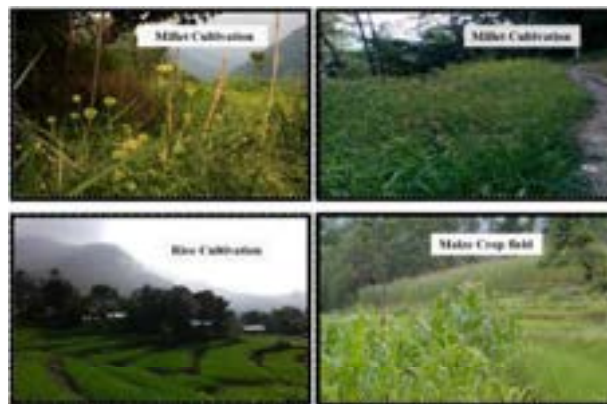


Figure 1 : Showing the Major Food crops grown in the Study Areas
Caption -- Clicked by an Author during field survey

iii) Floriculture: Floriculture is one most profitable economic activity in the study areas. The Limbu hamlets of Teesta valley Tea Garden and Dungra are doing floriculture on the

commercial scale. Many varieties of ornamental plants, orchids, gladiolus and pines are grown in the flower nursery for export purposes to neighbouring countries and states. During my field work in Teesta valley I, met Rocky Limbu 25 year's old married man who was doing floriculture from last nine years. He seeks better prospects in it than working in Tea Garden because floriculture has great benefit at nominal cost as supply of fodder manure and soil is freely available in the village along with suitable climatic conditions for the growth of flowers and plants.

iv) Cash Crop farming: The major cash earning crops in the study areas are Mandarin orange, Ginger, Cardamon, Amlisiyo and Lemon grass. Cultivating the Lemon grass is new venture in Bungkulung. Limbu farmers are producing variety of useful commodities like oil and lemongrass flavour tea.



Plate 2: Showing the Major Cash earning farming, of the study areas
Courtesy – Utilised by an Author during field survey

Gender role in Farming

Limbu men and women do almost all works related with farming which includes land preparation to seed storage. However, their role depends more on the family situation than on



gender. In a family with more male members, male works in the fields, whereas in families with fewer men, women work equally with men (Denzogpa, 2009). But still there is little strictness in some farming activities. In relation to planting and transplanting of food crops women performs the duty. While in heavy task like ploughing, hoeing and terracing are done by male members. The male farmers are more in number than female and their decision matters in the farm related activities.

Agricultural Cycle

The agricultural cycle is made up of two main seasons on the basis of mode of operational work. During spring, summer and autumn months important cash crops are harvested which involved higher participation of work force and the period is quite busy for the farmers.

Table 1 Showing the Seasonal calendar of the Limbu Farmers of the Study Areas

S.No	Types	Farming Activity	J	F	M	A	M	J	J	A	S	O	N	D
1	Cash Crops	Orange Planting												
2		Orange Harvesting												
3		Ginger Planting												
4		Ginger Harvesting												
5		Cardamom Planting												
6		Cardamom Harvesting												
7		Amlisiyo Plucking												
8		Rice Planting												
9		Rice harvesting												
10		Millet Planting												
11	Food Crops	Millet Harvesting												
12		Maize Planting												
13		Maize Harvesting												
14		KaaloDaal harvest												
15	Pulses	MasayamDaal harvest												
16		Turmeric harvesting												
17	Spices	Dalle Chilli harvest												
18		Soyabean harvest												
19	Vegetables	Potatoes harvesting												
20		Carrot, radish, beetroot												
21		Beans, pumpkin peas												
22		Ladyfinger, cabbage												

The orange or chardhar vesting season from October to November continues till January depending on the production. It is one of the most labour-intensive periods of the whole year for earning good income by the Limbu farmers.

Traditional Landholding System

Traditionally there are two types of land lease system in the study areas of Limbu villages. In *Adhiya* system the tenant has only the cultivation right he owns a living in lease plot of land of which 25 % of the produce is given to the owner. The landowner has its right over the land and could replace him by another if the work and relation doesn't go well. For Instance, during my field work in Dungra, Kalimpong I met Mr S. B Limbu (*Khewa*)¹ who is tenant and was earning from the field belonging to Lepcha family. When I, asked how often they visit to your place, he

replied once or twice in a year. Mr. S.B Limbu also possesses a land in the village but with the intention to double his income. He has taken that arable land in *Adhiya*. The total input and output expenditure related to farming is bear by himself. In *Bargadhari or Pakure* System the land owner gives a small plot of land in the field to tenant to look after the field work. I met Mr *Chilikcham*² who was tenant and was looking after a field. It has been more than 15 years' he is living in the kutchha house in the nearby field.



Plate 3: Showing the Agricultural Labourers (Pakure) of Dugra Village, Kalimpong
Courtesy - Clicked by an Author during field survey

Division of Labour

Village labour is part of both the monetary and non-monetary economy. There are three types of labour in the study areas namely *Khetala* who is paid in either kind or cash. Second one is reciprocated labour or the mutual exchange of labour like some Limbus of Dugra helps each other in farm related works which to certain extent saves the labour costs. The last one is

(Footnotes)

¹ Name of the Clan

² Name of the Clan

thekka which is paid contract work for terracing, ploughing etc (Fitzpatrick, 2011). Therefore, the Farming in the study areas includes numerous work forces depending on the farm size. These agricultural labourers (*Khetala*) are paid at rate of Rs 200 – 300 per day depending on the nature of their work. In the orange orchards most of the farm activities are done by the family members. During the time of harvesting number of labours are required for plucking of oranges. The wage is paid them in weekly basis of Rs 12 for plucking 100 oranges.

[III]

Indigenous Knowledge of Farming and its Management

The Limbu farming system is based upon the maintenance of several major Land categories distinguished by their use, location and the pattern of ownership. The major types of farming done by Limbus in the study area are namely *Bari / Khet* (cropfield), *Suntala Bari* (orchard farming) and *Allaichi Bari* (cardamom cultivation). *Bari / Khet* are owned by individual families and tend to be established close to the village, often at the undulating terrain which is deeply ploughed and manured, cut into terraces in order to check the soil erosion. Families divide their holding into plots among which cultivation is done by growing different vegetables, cereals, pulses and cash crops. Since the possibility of using modern innovation is negligible due to small holdings and undulating terrain, they use the resources that are locally available and implement their traditional knowledge regarding the farming system. The most visible traditional agricultural tools of Limbus are plough drawn by oxen, *Hasia* (sickle), cow dung, *khurpi*, *halo-kata*, *dhoko* (basketries) and so on. They use axe and spade in preparing agricultural fields. The stock of seeds is stored in the container made up of bamboo. The cow dung is most commonly used as manure. The traditional manure is made by mixing the cow dung with other organic substances through decomposition.



Plate 4: Showing the Cardamon Plantation and Farmer responding to queries

Harvesting Heritage: Traditional Limbu Rituals in Agricultural Practices

The Limbus agricultural activities are influenced by certain rituals and pujas. All of the rituals are done in order to please the God, to avoid the misfortunes and bless their cropland with good harvest. The main cultural and religious practices conducted by Limbu in relation to nature and agriculture are as follows.

a) **Uvauli puja** also known as *YakwaTamnang* is one of the important pujas for the Limbu. It is done before the plantation of crops. The main purpose of the puja is to ask God to bless their crops and land and protect it from evils. It is carried out in the month of *Baisakh* (April-June). The different offerings made are rice, chicken, eggs and porkmeat.

b) **Udhauli puja** it is similar to *Uvauli puja*. The only difference is that it is celebrated after the harvest of the crops. It is known as *ChasokTamnang or Nyayoungi*. It is also said that the New Year of Limbu begins from this time. The offerings are made to thank God for good harvest.

c) **SauneSankrati** is celebrated in the month of *Sawaan* (July-August). They celebrate it as a day to take rest. They do not work in the field and they believe that if they enter in the field the crops might get destroyed.

d) **Devi puja** forest worshipping is also very important for the Limbus. They have a forest deity known as '*Tampungma*' and it is also called *Devi puja*. They worship the whole of the forest. They make offering to please the God. The offering is

done asking the deity to help and protect their crops from the wild animals and also provide them with the strength and save from the misfortunes.

[IV]

Major changing scenario in farming: Case Study of Fulbari Limbu hamlet of Teesta Valley Tea Garden

The farming conditions in the study areas has affected due to deforestation, settlement and climate change. This ecological change has forced the farmers to cultivate in new cropping pattern. The farmers of *Fulbari* hamlet of Teesta valley tea garden had witnessed the major agricultural change. In 1975 they used to grow paddy in the valley for subsistence needs¹. But with the introduction of cash crop like oranges, paddy fields were converted into orchards farming because of its high market price value. The production of oranges faced a major setback from 2011 when trees infected with pests and diseases. Limbu farmers of this hamlet are economically deprived and are unaware of modern technological knowledge. The majority of their orchards were affected with only few trees bearing fruits which could only fill up subsistence needs for their family. The affected orchards are now replaced with Bouquet grass (*Amlisiyo*)² which is not only used as the fodder for livestock but also earns a good amount of money by selling it. Many others fruit trees are planted among them Pomegranate is significant. Floriculture basically of pine varieties are grown in small scale.

[V]

Challenges in the Fields: Agricultural Issues in the Study Areas

i) **Infertile and highly porous soil:** The soil over the hill slopes is very coarse, unconsolidated and porous. They are prone to erosion by surface runoff. This makes them dry.

(Footnotes)

¹Data recorded during Interview with the Limbu farmer of Teesta valley

²Amlisiyo is the plant from which broomsticks are made and it also binds the soil preventing it from landslide

very fast and unfit for cultivation. Constant manuring, both organic and inorganic, are required which increases the production cost.

ii) **Pest infestation:** Extreme dryness makes the crops prone to be infested with disease. Crops like rice gets infested by '*Maraute*', French beans by a disease called '*Sindure*' and maize gets infected by '*Beruwa*'. This greatly affects the overall production of the crop

iii) **Problem of soil slips and landslides:** One of the major problems faced by the farmer is the frequent soil slips and landslides that takes place in his plot of land. Such events lessen the already meager land the farmer has. Landslide and soil slip sites are generally abandoned. Trees are planted instead, to stabilize the slopes thereby decreasing the land under cultivation.

iv) **Lack of adequate financial assistance:** The low annual income and absence of other alternative sources of income have compelled the farmer to adopt the cheapest means of cultivation. There is no financial assistance in the form of loan from the Government's end. Even if available, the interest rates are very high. There is no provision for any sort of compensation for any calamity that happens in the farmer's land. Those available, gets stuck in the unwinding web of official proceedings, and are delayed beyond

Based on the outcome of the study, the following recommendations are made:

i) The increase in farmers' age reduces their ability to cope with many farm operations. This calls for the encouragement of younger generation of farmers to ensure continuity and sustenance of the Mountain farming.

ii) Farmers need guidance from agricultural department on choice of compatible crops for intercropping to ensure maximum returns from the crop mixture without any harmful effect on the main crop.

iii) Capacity building programme should be organized for farmers to train them on technicalities needed for growing improved varieties and better production of Cash crops.

iv) Training programme modules or workshop on agricultural aspects should be drawn up based on specific identified needs of each category of farmers. More trainings should be concentrated on farmers' who are still in their active years.

[VI]

Concluding Remarks

The inherent traditional agricultural knowledge and cultural practices of Limbu has helped them to sustain their livelihood in a more ecological way and maintains a sustainable balance in the ecosystem ensuring better quality of life. Traditional farming is done under rain fed regime on terraced fields, where all the farm related activity is performed manually. The crops are grown by intercropping method purely in organic manure without any application of fertilizers and pesticides. Orange orchard farming plays a vital role in achieving income sustainability by increasing cash flow in the village. The employment opportunities can be created by increased production and commercialization of orchard farming and Cardamon Agroforestry in the study area. The major problems in the study area relating to the farming are crop failure due to natural calamities, pests and diseases. These problems have worsened the farmers' desire to continue farming because the increase in their age reduces the ability to cope with farm operations. Therefore, farmers' need guidance from agricultural department on choice of compatible crops for intercropping to ensure maximum returns from the crop mixture without any harmful effect on the main crop.

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Utilising and Misusing Oxygen Bars: Looking for a 21st-Century Trend

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Abstract: Oxygen bars deliver a higher oxygen content than typical breathing air, resulting in increased energy, fewer symptoms such as headaches and mood swings, improved attention and clarity, and better-quality sleep. By boosting oxygen intake, users can maintain optimal oxygen saturation levels for better health and well-being. In addition, oxygen bars are becoming a popular amenity in major cities around the world, providing a tranquil and uplifting environment to improve physical and mental health. While oxygen bar owners benefit from the increased dose of pure oxygen, doctors advise against using it without a medical reason owing to potential hazards such as lipoid pneumonia and allergic responses. The paucity of data on the risks and benefits of oxygen bars adds to the discussion, with

worries voiced regarding fire hazards and health issues that could be exacerbated by oxygen therapy. Individuals with certain medical issues should avoid oxygen bars, and use caution when inhaling perfumed oxygen. Additional considerations include the risk of overdosing, particularly in people with acute diseases, and the significance of speaking with healthcare specialists before using oxygen bars recreationally. Due to severe air pollution, oxygen bars are becoming increasingly popular in Third World countries such as China and India. Despite promises of benefits, experts warn against using oxygen for an extended period and against profiting off environmental problems.

Keywords: Oxygen Bars, Medical Debates, Health Risks, Environmental Issues.

It may surprise us to learn that more than 90% of our energy originates from oxygen, even if we may believe that most of our energy comes from the food and beverages we consume. It may be beneficial to increase oxygen consumption if energy levels are low. An oxygen bar can give various advantages to humans by providing an environment with a higher oxygen concentration than ordinary breathing air. Discover the benefits that a medical oxygen supply can offer you. Recreational oxygen treatment can improve vitality and greatly lessen symptoms such as headaches, mood swings, poor energy, and difficulty concentrating. There is minimal to no danger involved for the user. Oxygen is pushed into a cannula—a flexible tube with two tiny prongs—by an oxygen concentrator equipment. The prongs rest slightly within your nostrils to release oxygen, and it fits loosely around your head.

Since oxygen is present in breathing air at a rate of about 21%, what are the benefits of an oxygen bar? Oxygen bars remove atmospheric gases that are superfluous to room air through a filtration system that allows concentrated oxygen to be delivered at a rate of up to 95%. An optional aroma that provides aromatherapeutic effects to support emotions and uplifted moods

can be blended with this purified oxygen. Patients can receive oxygen treatment at an oxygen bar, where the gas is given through a mask that covers the face and a concentrator. The duration of a treatment might range from 15 to 60 minutes. Oxygen bar locations are often found near public service centres or in malls. Originally, because of the high levels of pollution, oxygen bars were popular in Mexico, Japan, and various parts of South America. However, oxygen bars—where you can breathe easier for a cheap price—are becoming a sought-after amenity in most major cities as pollution accumulates in densely populated places across the world. The most obvious advantage of oxygen bars is that they allow you to get away from contaminated air. Furthermore, there are other advantages of pure oxygen for mood, energy levels, general health, and the quality of sleep.

When it comes to your energy levels, oxygen is more important than food and water. Your body absorbs oxygen from an oxygen bar at a concentration higher than that of inhaling air. You can treat some illnesses organically with this approach to alternative medicine.

To be healthy, target oxygen saturation levels should be between 96% and 100%. Lower levels can cause exhilaration, headaches, dyspnea (shortness of breath), vision problems, fast breathing and heartbeat, chest pain, and more. You can maintain ideal oxygen saturation levels naturally by going to an oxygen bar, so there is no need to put up with unpleasant symptoms. Therefore, whether we are working, living, or travelling, we can feel more refreshed with greater airflow after visiting an oxygen bar. It increases the body's ability to convert lipids, carbohydrates, proteins, and sugars into heat and energy, which enhances athletic performance. Moreover, it helps lower stress, improve mood, and promote focus and clarity. Purified oxygen and essential oils can help cultivate a positive mindset. An increase in oxygen can improve the quality of sound sleep and reduce the

symptoms of headaches and migraines. Visiting an oxygen bar improves circulation and metabolic processes, which further aids in the reduction of fat and excess weight.

So, what use does an oxygen bar serve? For the reasons we outlined above, those who want to concentrate on enhancing or preserving their physical health resort to oxygen bars. Even for people in good health, an oxygen bar is ideal! Oxygen bars are a peaceful, uplifting, and harmonious way to blend pure oxygen and essential oils for clarity and focus. These essential oils can create a calming atmosphere in your lounge or party area because of their profound impact on mood. In keeping with the cheer theme, are you trying to find something special for your upcoming get-together? Oxygen bars are a fantastic complement to a variety of events, including parties, weddings, conferences, and family get-togethers.

Indeed, oxygen bars are cropping up everywhere in the United States (as well as in Canada and Japan, where the major air pollution is said to have sparked the fantasy) and selling “hits” of 40% oxygen that are administered via a mask worn over the face. Advocates of this “therapy” of oxygen claim that it gives you more energy, improves your endurance when exercising, speeds up your recovery from physical effort, reduces stress and pollution, sharpens your focus, calms you down, and relieves hangovers and migraines.

When Kristi Huddleston tried the treatment for the first time in Atlanta, she fell in love with it and now owns O2 Cool Oxygen Bar in Aventura, Florida. She claims that it gave her a new life and she wanted to share the feeling with others. Customers can purchase sessions at Huddleston’s oxygen bar that range in duration from five to twenty minutes. Monthly memberships are also offered. According to Huddleston, the experience is improved by adding the customer’s preferred perfume to the oxygen that is inhaled. Huddleston asserts that everyone enjoys smelling

something fresh and pleasant. Huddleston quickly clarifies that she is not making any medical claims and that clients are only permitted to use oxygen for a maximum of 30 minutes each day. However, she mentions that the oxygen helps her decompress and that clients have reported that it helps them with their allergies and headaches.

However, there is also disagreement. The medical community disagrees with it and is against it. The chief of pulmonary and critical care at Mercy Medical Centre, George Boyer, MD, claims that science has not produced any proof of the advantages of this extra dosage of pure oxygen. In a policy statement, the Canadian Society of Respiratory Therapists said that, as medical professionals, they could neither morally nor ethically condone giving oxygen therapy to people who do not need it. According to Boyer, 21% of the oxygen in the atmosphere is absorbed by healthy people. By then, the blood is nearly 100% (99%) saturated, therefore no more extra oxygen is required for anyone to accumulate the soundness of health and fitness.

Despite this controversy, neither the hazards nor the advantages of oxygen bars have been investigated. While breathing standard air, a healthy person's blood is normally between 96 and 99% saturated with oxygen, so some specialists wonder what use additional oxygen may have. Supplemental oxygen benefits some medical illnesses, but evidence indicates that even for those who benefit from it, too much oxygen can be dangerous or even fatal.

Oxygenation is a long-standing routine treatment for patients with acute illnesses who are admitted to the hospital. Nonetheless, a 2018 study that was published in The Lancet Trusted Source discovered evidence that giving oxygen therapy in excess to patients who are traumatised or have severe illnesses may raise their chance of dying. The aromas are introduced by bubbling oxygen through a liquid that either contains an aroma oil, such as

essential oil, or an oil-free, food-grade additive. Lipoid pneumonia, a potentially fatal lung disease, can result from breathing in greasy materials. Some people may be adversely affected by the odours used in scented oxygen, particularly those who have respiratory conditions. The Lung Association states that fragrances, including those derived from natural plant extracts, include compounds that might result in mild to severe allergic reactions. Headaches, nausea, dizziness, shortness of breath, and exacerbation of asthma are some of the symptoms that might occur in response to smells. Another risk when working with oxygen is fire. Despite not being flammable, oxygen promotes combustion. Individuals with conditions such as cystic fibrosis, asthma, emphysema, or COPD are required to stay away from oxygen bars. If you have a heart problem, vascular disorder, or any other chronic medical issue, speak with your doctor before using an oxygen bar.

But still, Oxygen Bar is going to be popular in Third World Countries like China, and India. There's a place in Delhi where you may breathe pure oxygen for fifteen minutes during a period when the entire city is experiencing air pollution. Although pure oxygen is said to be odourless, News reports constantly highlight how bad the pollution is in Delhi-NCR. On certain days, the pollution level approached dangerous levels. In summary, the people of Delhi are currently in severe need of clean air. To address such a circumstance, Select City Walk Mall in South Delhi is home to Delhi's first-ever oxygen bar, Oxy Pure established by Aryavir Kumar and Margarita Kuritsyana. The founder of the establishment mentioned that he visited a pub like that in Los Angeles in 2015, which gave him the idea to open one in Delhi. He said that he wanted to start something similar in India since he thought this concept was good when asked why he opened this bar. He plans to open a bar of this type soon in Terminal 3 of Indira Gandhi International Airport. He may also

launch a bar franchise soon. A tube called a cannula is placed under the nose of a customer at Oxy Pure and is used to inhale oxygenated air and a variety of scents, such as orange, peppermint, cinnamon, lavender, eucalyptus, spearmint, or lemongrass. An oxygen-concentrating machine creates the air they breathe in by first purifying the air around it and then supplying it to all the enthusiastic urban-based curious customers.

The oxygen-generating equipment at Oxy Pure comes from Oxygen Bars, a US company that produces air that contains 95% gas, according to Aryavir Kumar.

The bar, which is the first of its type in Delhi, charges between Rs 299 and Rs 499 for 15 minutes of pure oxygen, which the proprietor, Aryavir, says works like magic for people who complain of stress, blood pressure problems, mental exhaustion, and sleep disturbances. Portable oxygen cylinders are also popular and are also purchased through e-commerce sites during periods of increased pollution. Every day, they have been getting between 25 and 30 people. It is plausible to argue that the cause is the excessive pollution that is killing people. The head of staff, Bonny Irengbam, 30, feels that way. Pure oxygen, in his opinion, is more crucial in these situations. However, there are a few key things to be aware of. First, breathing in oxygen for longer than 15 minutes a day is not recommended. Individuals in other countries go through up to hour-long sessions. However, in India, people are wary and have doubts, thus the maiden Oxygen bar in Delhi limited its daily use to fifteen minutes only.

The Delhi-based Safdarjung Hospital's Dr. Neeraj Kumar Gupta, a specialist in pulmonary critical care and sleep medicine, stated that insufficient blood oxygen causes physiological reactions that improve the oxygen's ability to be transported and released into tissues for ongoing survival. Dr. Gupta claims that these adaptation changes are noticeable at high altitudes with low oxygen levels in the surrounding air. The goal is to maintain a

blood oxygen pressure of at least 60 or higher. When low, the oxygen must be administered for the appropriate length of time to ensure proper tissue oxygenation and must be treated like a medication. Because low, uncontrolled, or unregulated oxygen might interfere with adaptive mechanisms, it can be dangerous. Senior consultant in respiratory and critical care medicine at Indraprastha Apollo Hospital Dr. Rajesh Chawla claims that there is no scientific support for the idea that ingesting oxygen, even at a high concentration, for a brief period is beneficial. By deceiving people for profit, it is abusing the threat posed by pollution. The various types of commodification of oxygen are traps and such traps should not be fallen into by anyone.

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Exploring Role of New Media, Non-Governmental Organizations and Social Advocacy Groups in Creating Public Awareness and Shaping Public Attitudes towards GM Food Crops in India.

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Abstract:

Genetically modified products are emerging as the defining technology for the future of agriculture and food systems in India. Though the commercial cultivation of Bt Cotton was approved in India in April 2002, there was an indefinite moratorium imposed on Bt Brinjal in 2010 and on GM mustard in 2016. These moratoriums were imposed fearing the potential risks of growing genetically modified food crops. Meanwhile in 2013, Bangladesh (India's neighbouring country sharing borders with the Indian state

of West Bengal) allowed for the commercial cultivation of Bt Brinjal. This has increased apprehension among the general public in West Bengal who fear that the porosity of the Indo-Bangladesh border may result in the leaking of the genetically modified food crop into Bengal's environment.

In this context, knowledge transfer with regard to GM crops is both complex yet critical in West Bengal. Initiatives to spread biotech information and awareness have been taken up by various agencies yet most of these initiatives only provide selected information to key stakeholders while the general public is left misinformed. The objectives of this research is to identify the role of new media, NGOs and social advocacy groups in spreading public awareness about GM food crops among residents of West Bengal. The research assesses whether the information dissemination agencies influence the public to view food risks as a threat to human security. The study uses interpretive methodology and quantitative methods like self-prepared questionnaires and depth-interviews. The findings of the study suggest that the new media, NGOs and social advocacy groups in West Bengal simply popularize alternatives like ecological agricultural initiatives like organic farming and they act as pressure groups on government agencies. These information dissemination groups do not act as catalysts or as motivating forces for the general public to be informed participants in the GM debate.

Introduction

The Indian public are always worried about how technological innovations affect their health, personal economy and quality of life. Public awareness is the public's level of understanding about the importance and implications of technical

innovations (Hart 2002; Priest 2001). Raising public awareness does not simply mean telling the public what to do, rather it is explaining issues and disseminating knowledge to people so that they can make their own decisions. The general public views new technological innovations with uncertainty and anxiety as the consequences of such technology are not known. This uncertainty is caused by a lack of information or uncertain information. In today's society information with regard to scientific innovations are limited within the science community and only experts have access to it. Excluding the public from accessing information pertinent to food would be a negative aspect of the science community.

Social and political debates about risks in food have been widespread in India over the last few decades. Food safety and methods of food production have always been a matter of concern in India but talking of food as the new 'risk' is a relatively recent phenomenon. Risk has been defined as the potential that a chosen activity (including the choice of inaction) will lead to a loss (an undesirable outcome). The notion implies that a choice having an influence on the outcome exists (or existed) (Beck 1992). 'Risk is the effect of uncertainty on objectives. Uncertainties include events (which may/may not happen) and uncertainties caused by a lack of information or ambiguity.' (ISO Guide 73)

Perception of risk influences attitudes, decision-making, and thus behaviour, of consumers, producers and others (see for example, Lobb *et al*, 2007; Finucane & Holup, 2005; Frewer, 2003). In the case of the GM debate this is particularly pertinent, as there are many conflicting claims and counter-claims regarding the potential risks and benefits of the technology. GM technology advocates have been frustrated by the choices made by the public and consumers based on risk perceptions that may bear little or no resemblance to actual risks. These perceptions, it is claimed, may be related to a number of factors, including the degree of

perception of benefit (which in turn affects the level of risk that people are willing to tolerate), the level of information and knowledge relating to the risk faced, familiarity with the risk, trust in those with responsibility for providing information about, and regulating, the risk, and the sense of self control over exposure to the risk. These issues and others may have, to a lesser or greater degree, played a part in the public perceptions about GM technology and hence the level of acceptance of the technology.

To empower a public, awareness is required. Public awareness refers to the important role that community enthusiasm and knowledge has in building sustainable societies. When raising public awareness there are two main focus areas: first, there is the general public awareness, which involves widespread understanding and acknowledgement of the issues on a societal level; second, there is self-awareness, which occurs when individuals understand how the concept of GM food affects them personally.

Public attitude is the predisposition or a tendency among the public to respond positively or negatively towards certain ideas, objects, persons or situations. Attitude will influence the public's choice of action and responses to challenges, incentives and rewards. Attitudes are strongly associated with levels of understanding and knowledge about the process, purpose and extent of the technology. Public holding a negative attitude towards GM foods could be either strongly opposed to the technology or they may adopt a cautious attitude. Negative attitude stems from lack of confidence in the level of understanding of the process and purpose of GM in food production. Public attitudes could also be positive and can range from strongly supportive to cautiously positive.

The Non-Governmental Organizations (NGOs), social advocacy groups and new media that comprise the GMO

movement have taken centre stage in the Indian contestation over genetic engineering and the politics of food. Their influence over the public has been pervasive. Voluntary organizations are not a new phenomenon in India. Voluntary organizations can play a crucial role in awareness generation by supplementing government efforts as they are close to the minds and hearts of the public. They have roots in the public and can respond to the needs and aspirations of the community effectively.

A non governmental organization (NGO) is any non-profit, voluntary citizens' group which is organized on a local, national or international level. These organizations are task-oriented and driven by people with a common interest. NGOs perform a variety of service and humanitarian functions, bring citizen concerns to governments, advocate and monitor policies and encourage political participation through provision of information. NGOs provide analysis and expertise and serve as early warning mechanisms and help monitor and implement international agreements. Social Advocacy on the other hand is the representation done by anyone committed to the concerns of any particular group in society. Such concerns may be rights based or needs based. Advocacy, thus is a political process by an individual or group which aims to influence public-policy and resource allocation decisions within political, economic and social systems and institutions. Advocacy can include many activities that a person or organization undertakes including media campaigns, public speaking, commissioning and publishing research. Social media is used by social advocacy groups to facilitate civic engagement and collective action. The various roles of NGOs and Social Advocacy groups are: catalyzing population; supplementing government efforts; organizing public; educating public; providing training; disseminating information; mobilizing resources; promoting local leadership; acting as innovators; ensuring people's participation and promoting appropriate technology.

New media on the other hand are the various forms of social media platforms. These platforms allow for a two way communication and can often emerge as a forum for discussion of various topics of social interest. It is also a platform where the lay person can interact with the expert. Social media platforms can be used by people with similar areas of knowledge and awareness about certain issues can be spread through these platforms. These new forms of media also are agents of information dissemination.

NGOs, Social Advocacy groups and new media in India have contributed towards social mobilization and social activism through their intensive campaigns, people's mobilization programmes and effective networks. NGOs, Social Advocacy groups and new media act as a social force facilitating collective action and mobilization of people for the purpose of achieving the desired objectives. These groups are using various people-oriented as well as people-centered strategies and these organizations build rapport with the people and mobilize them. The NGOs, new media and Social Advocacy groups play a vital role in making people environmentally aware and sensitive to take part in the development process (Biswambhar Panda et al-2003). NGOs, new media and Social Advocacy groups raise public awareness by recognizing the problems locally and globally; making the public aware about an immediate and urgent problem; making each individual aware of his/her role in society; lobbying with authorities on all levels. These groups also mobilize public through wide public campaigns in which they either disseminate information or involve stakeholders and civil society in solving problems on the local and regional level and also by combatting the ignorance and indifference of the public. NGOs, new media and social advocacy groups are some of the most trusted organizations in India.

Current Status of GM Food in India

In India, the first GM crop to be commercialised was Bt cotton. This was commercialised by the US company Monsanto in 1996. In India following a series of field trials and biosafety assessments, the GEAC (Genetic Engineering Appraisal Committee) approved the commercial cultivation of 3 Bt Cotton hybrids developed by Mahyco-Monsanto Biotech (MMB) for central and southern cotton growing states in April 2002. Subsequently several other seed companies obtained the license of Monsanto's Bt technology and developed many Bt hybrids. IIT Kharagpur in collaboration with J.K.

Seeds Pvt Ltd and Chinese Academy of Sciences along with Nath Seeds Pvt Ltd in 2006 broke the monopoly of MMB on Bt technology. According to T.M. Manjunath, (Ph.D in Agricultural Entomology; independent technical consultant serving in several expert committees of the Government of India) works on various traits and crops are in progress. Manjunath's compilation of GM crops in India at various stages of regulatory field evaluation as of 2012 identified the following traits—insect resistance, virus resistance, herbicide tolerance, drought tolerance, yield enhancement and delayed ripening. GM crops awaiting field trial according to Manjunath's compilation include Brinjal, Cabbage, Cauliflower, Corn, Tomato, Sugarcane, Papaya, Potato, Mustard, Rice et Bt Brinjal is being developed in India by the Maharashtra Hybrid Seeds Company (Mahyco, Jalna) along with University of Agricultural Sciences (Dharwad) and Tamil Nadu Agricultural University in Coimbatore. The GEAC had approved the commercial release of Bt Brinjal on 14th October 2009. Scientists, farmers and anti-GMO activists carried on protests and the Government of India officially announced on 9th of February 2010 that it needed time for the release of Bt Brinjal. The Supreme Court of India has stayed the commercial release of GM mustard (as a result of a petition filed by Aruna

Rodrigues[i]) and has asked the Centre to take public opinion on such seeds before releasing it for cultivation.

NGOs, new media and social advocacy groups are emerging as a strong anti-GM movement in India as they continue to project Monsanto and other multinational seed companies as these corporate giants who have no regard for the small and medium scale farmer and they will soon start monopolising this GM technology and will replace traditional agricultural methods with this massive and grand technology.

Significance of the Study

1. The study will explore public understandings of food risks from the perspective of the 'lay' person residing in the districts of West Bengal.
2. The study will aim to understand the instrumental role that NGOs, social advocacy groups and new media can play in knowledge dissemination of GM Foods and Crops.

Objectives of the Study

1. To identify the role of NGOs, social advocacy groups and new media in spreading public awareness about GM Foods and Crops among the residents of Nadia, North 24 Parganas, South 24 Parganas and Hooghly districts of West Bengal.
2. To assess whether NGOs, social advocacy groups and new media influence the public to develop a positive or a negative attitude towards GM Foods and Crops.

Statement of the Problems

1. NGOs, Social Advocacy groups and new media help in raising public awareness about GM Foods and Crops among the residents of Nadia; North 24 Parganas; South 24 Parganas and Hooghly districts of West Bengal.
2. NGOs, Social Advocacy groups and new media influence the public of Nadia; North 24 Parganas; South 24 Parganas and Hooghly districts of West Bengal to develop a positive attitude towards GM Foods and Crops.

Methodology

The methodological approach adopted in the study, used interpretative methodology and quantitative methods like a self-prepared questionnaire and depth interviews. Self-prepared questionnaires assessed the frequency of, the content of, the quality of and the impact of awareness programs, campaigns and initiatives by NGOs and social advocacy groups.

Depth interviews were conducted on a range of people residing in the four districts of West Bengal. The respondents were chosen from a range of socio-demographic backgrounds. The issues covered in these interviews were personal responses to GM Foods and GM Crops, view of genetic modification in comparison with older methods of food production, extent of available information from NGOs and social advocacy groups, the extent to which such information enables the choice as to whether to buy/eat/grow GM Foods and Crops, examples of specific GM products and reactions to these and the extent of confidence in the Indian Government's handling of GM Foods and GM Crops.

Review of Literature

Weak Aversion to GM Foods: Experimental Evidence from India by Sangeeta Bansal; Sujoy Chakravarty and Bharat Ramaswami (March 2010). Though a conventional analysis of consumer preference towards GM food is difficult because of the unavailability of market data yet this study uses experimental methods to study attitudes towards GM foods. The researchers use subjects from New Delhi, India outside the usual developed country context. This paper also examines how information formats (and in particular probabilistic information) matter to the formation of food preference. The study reports on an experiment that assigns information and labelling treatments to subjects who participated in laboratory experiments of food items that might

be genetically modified. This paper thus considers a pathway by which the label affects the valuation of foods. This paper shows that this allows for the possibility that once a food is labelled, some of the existing consumers (of unlabelled foods) switch to labelled GM-free foods. These consumers are termed as ‘weakly GM-averse’ as against the ‘strongly GM-averse’ who are the consumers who decline to consume unlabelled foods suspecting them to be GM. The goal of the experiment is to test for the existence of weakly GM-averse consumers. The study uses 3 separate experimental sessions. 2 of the sessions used Bachelors degree students in Engineering (from the Indian Institute of Technology (IIT) in New Delhi). The other session consisted of University teachers from all parts of India (participants at a training course at the Jawaharlal Nehru University also in New Delhi). Of the total pool of 114 subjects, 64 were students and the 50 were older university teachers. The study sample is biased towards urban consumers with higher than average family income and educational attainment. This paper distinguishes between weakly and strongly GM –averse consumers. While both categories express aversion to GM labelled food, the former do not react to probabilistic information. The experiment conducted in this study confirmed the existence of weakly GM-averse consumers. While these consumers show no or little aversion to GM foods on the basis of probabilistic information, their aversion to GM labelled food is almost as large as that of the strongly GM averse consumers. This suggests that labelling would have an impact on the market of GM labelled foods.

The AFIC commissioned the Nielson Company Research to conduct a quantitative assessment of consumer attitudes toward food biotechnology. The research was conducted via an on-line survey of 1007 adults aged 18-64 and living in 5 major cities in 5 different countries. Out of these, 204 respondents were from New Delhi. The study revealed that consumers in India are very

confident regarding the safety of food yet these consumers showed concern over inaccurate labels. The Indian respondents stated that they are interested to see more information on ingredients, chemicals and biotechnology–derived ingredients on the labels of food products. The study also revealed that the consumer attitudes in a food-producing country like India differ from the consumer attitudes of food-importing countries like South Korea and Japan. This study states that an improved understanding about the direct consumer benefits of biotech foods raises consumer acceptance. Indian consumers stated that they look for freshness, taste as the most attributive qualities in food followed by less expensive foods. They feel that GM foods can help meet all these attributes yet because of the lack of available information, they are reluctant to buy GM food. The study also revealed that consumer awareness about biotechnology is low.

Emerging Markets for GM Foods: An Indian Perspective on Consumer Understanding and Willingness to Pay by Satish Y Deodhar; Sankar Ganesh; Wen S Chern (June 2007) This paper addresses the issues of consumer awareness, opinion, acceptance and willingness to pay for GM foods in the Indian market. A random utility approach was used. Data was generated through a questionnaire survey which was administered to 602 respondents in the city of Ahmedabad and 110 respondents on the internet. It was observed that 90% from the city survey did not know about GM food. It was observed that GM food consumption seemed to increase as one moved away from the very poor income bracket to the middle income brackets. However, moving to the high income bracket does not seem to increase this likelihood. Being a female or a joint family member seemed to increase the likelihood of choosing non-GM rice and edible oil. Overall, the study shows that GM foods may be acceptable in the Indian market. However, consumer education societies, government ministries and biotech food crop companies

may have to create awareness about the GM foods among Indian consumers.

Public Knowledge, Attitudes and Perceptions Towards Genetically Modified Organisms in India (Final Report-June 2010) By Dr Suman Sahai and Prof E.Haribabu (Joint Research by Gene Campaign and University of Hyderabad—Dept of Sociology) is a three year research undertaken to study the awareness, attitudes and perceptions to GM technology and GMOs among farmers, consumers and other stakeholders. The study with both quantitative and qualitative approaches was conducted in 5 states of Andhra Pradesh, Maharashtra, Punjab, Jharkhand and Assam.

The general trends seen in the research results were fairly uniform across states. It showed that attitude to food is overwhelmingly guided by cultural –religious factors, irrespective of educational and economic status. This rather than a rational analysis of the benefits of a particular food determines food choice. The sanctity of food is underlined by the clear articulation in the rural communities that any food that had been transformed in the way that GM foods are, would be unacceptable for special ceremonies and religious festivals. People said they would not offer such food to God during religious festivals or serve it on special occasions like a wedding feast. Gender did not seem to be a big determinant of attitudes to GM foods. The government must take note that validating GM foods by pure science and promoting these foods on ‘science based evidence’ of safety is unlikely to be relevant in the backdrop of such public perceptions. The presumption that knowledge and awareness about the benefits of GM crops will automatically convince people of their attractiveness cannot be taken for granted. The level of awareness about GM foods was very low and confused among urban consumers who listed food nutrition and safety as the most desired attributes of food. Consumers by and large felt that not enough

was known about GM foods and that more research was needed. They were unclear about what GM foods were and about the status of GM foods in India with respect to availability, labelling or risks and benefits. According to the study, government is the agency in which the most number of people have the greatest trust across farmers and consumers in all states; they see it as an agency whose information is reliable and that can be relied on to protect their interests (agency that should test for safety and monitor long term impact of GM foods). Across all states studied, the NGO community seemed to enjoy the least amount of trust amongst government agencies, companies, scientists and media. In the case of urban consumers, there was a divergence of views about information on GMOs. Many felt that NGOs provide useful, reliable information; others felt that NGOs doctored their information, like the companies did, to suit their ideology.

Review of the available literature shows that theories of risk have historically neglected food issues but in the wake of ‘food scares’ since the eighties, public confidence in the food industry and government regulatory bodies has been seriously undermined, giving rise to serious thinking on the issue. At the same time, since risk is an important determinant of food choice, risk has become increasingly attached to consumer attitudes and perceptions in general. Today, issues of control and trust have entered the discourse on food risk.

Survey through Self-Prepared Questionnaire Administered to General Public With Regard to Role of NGOs, New Media & Social Advocacy Groups in Information Dissemination, Influencing Public Attitude & Raising Public Awareness

A self prepared questionnaire (attached as Appendix No.1) was used to elicit responses from the general public residing in four districts of West Bengal namely Nadia, North 24 Parganas,

South 24 Parganas and Hooghly. The questionnaire assessed the general public's perception towards the role of NGOs, new media and Social Advocacy groups in information dissemination with regard to GM foods and crops; the public's perception towards the role of NGOs and Social Advocacy groups in influencing government policy with regard to GM foods and crops. The questionnaire also assessed the general public's awareness about NGOs, new media and advocacy groups working with GM foods and crops. Finally the questionnaire was used to explore the general public's participation in workshops, seminars, conferences and campaigns with regard to GM foods and crops organized by NGOs and advocacy groups. The data collected through the self-prepared questionnaire was then computed and graphically represented.

Interpretive Methodology

This study positioned the meaning-making practices of human actors at the center of scientific explanation hence it adopted an interpretive methodology. It was conducted from an experience-near perspective in that the researcher did not start with concepts determined a priori but rather allowed these to emerge from encounters in the 'field'. The methodology used was a mixed research framework encompassing both qualitative and quantitative methods and measures. This research is exploratory in nature as it attempts to explore the risk perception of potential producers and consumers as based on the information provided about GMF by NGOS, new media and Social Advocacy groups in West Bengal. Their subjective perceptions formed the core data of the study; hence it needed the method that would deal with the topic in an exploratory nature. For the purpose of this study, the research paradigm that was followed is of mixed (qualitative and quantitative) nature, using semi-structured interviews.

Sampling

For this study, the sample from among the population of the general public residing in the four districts of West Bengal was selected through snowball sampling. Care was taken to get hold of respondents from both rural and urban areas of the four districts. The samples were also from a wide variety of occupations. Almost equal number of males and females were interviewed. Samples also varied in terms of their age and educational qualifications,

A total of 400 respondents were chosen from the general public across the four listed districts of West Bengal for the first part of the study.

Name of Districts	Total Number of Respondents	Rural	Urban	Semi Urban
Nadia	100	32	41	27
North 24 Parganas	100	29	56	15
South 24 Parganas	100	31	25	44
Hooghly	100	38	28	34

Table No 1A: Sample Characteristics

Name of Districts	Males	Females
Nadia	60	40
North 24 Parganas	61	39
South 24 Parganas	53	47
Hooghly	34	66

Table No 1B: Sample Characteristics

Results and Analysis

As part of data collection, responses were taken from the general public/ potential consumers/ potential producers of GM Food in Nadia; North 24 Parganas; South 24 Parganas and Hooghly districts of West Bengal. The questions asked and responses collected are presented in the form of following tables and graphs.

The sample population were asked how much they have heard of or read about Genetic Modification and its use in food technology. Their responses are summarized in the figure below.

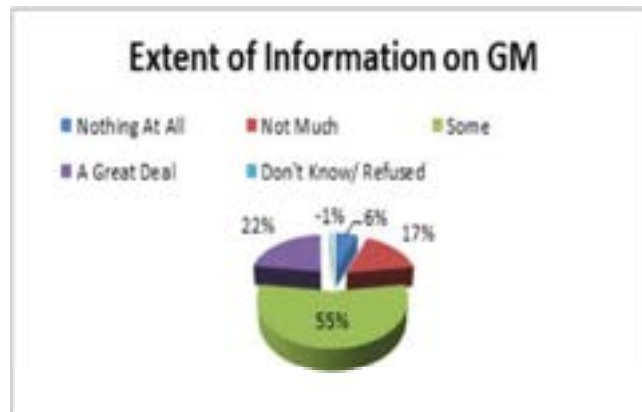


Figure No. 1A: Extent of Information on GM Technology

Figure No 1A shows that the majority of the respondents have some information on Genetic Modification and the application of this technology in food production.

When asked what is the source of obtaining information on genetic modification and the applicability of this technology in food production, the respondents provided a wide range of sources which are summarized below.

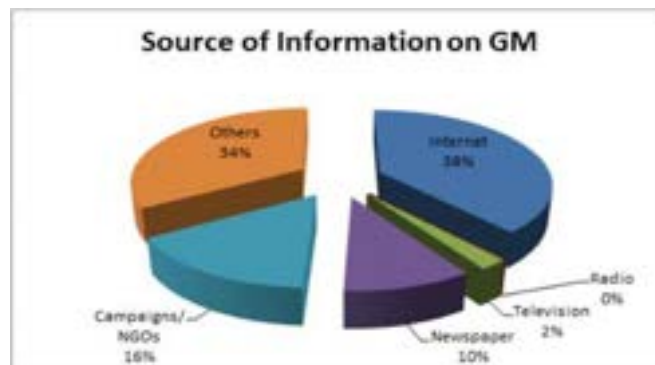


Figure No. 1B: Source of Information on GM Technology

38% of respondents cited the internet as a source of information on genetic modification, while 34% stated that they had obtained information on genetic modification technology from other sources like offsprings, siblings, friends, relatives, journals and the like. 16% of respondents were of the opinion that NGOs and anti-gmo campaigns are sources of information on genetic modification. Hence according to popular public opinion NGOs and advocacy does play a role in information dissemination but that role is not of great significance. Another interesting aspect observed was that the radio is not considered as a source of information dissemination.

The respondents were asked whether new media, NGOs and advocacy groups play a vital role in influencing government policy with regard to genetic modification. Their responses are summarized in the figure below.

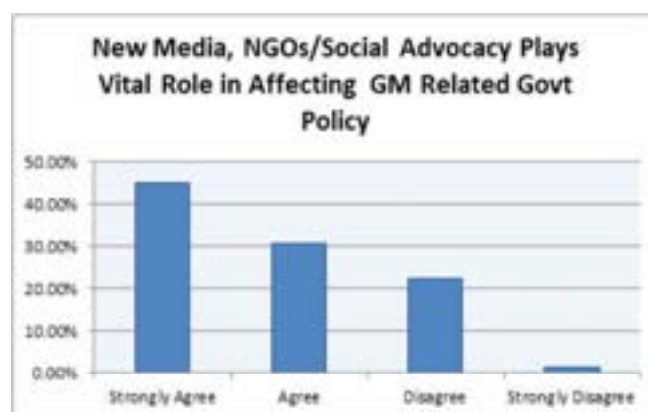
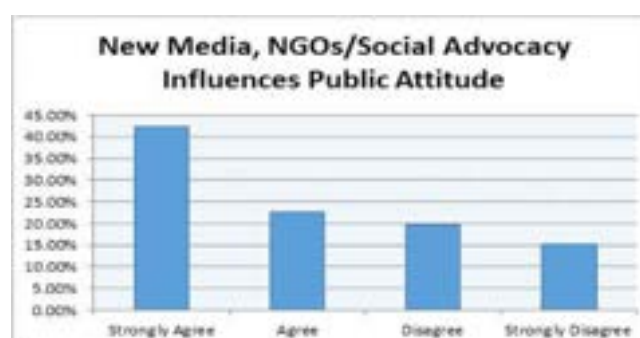


Figure No. 1C: New Media, NGOs/Social Advocacy Plays a Vital Role in Influencing Government Policy on Genetic Modification

Figure No. 1C shows that the majority of the respondents strongly agree that NGOs and advocacy groups can influence government policy. It must also be stated here that the respondents who strongly agreed were mostly the ones employed in the education sector, in private or government service, in media and as professionals.

Majority of the respondents strongly agreed that new media, NGOs and social advocacy groups influence public attitudes. Details of their responses are summarized below.

Figure No. 1D: New Media, NGOs/Social Advocacy Influencing Public Attitude



On detailed questioning it was found out that the majority of the respondents were of the opinion that new media, NGOs and advocacy groups play an important role in influencing public sentiment as the public consider such organizations as more trustworthy than the media or government.

The respondents were asked whether they know of NGOs and social advocacy groups working with GM Food and Crops. Their responses were categorized district-wise. A summary of the responses are presented below.

Figure No. 1E: Awareness Among Respondents in Nadia about NGOs/ Advocacy Groups Working With GM Crops and Food

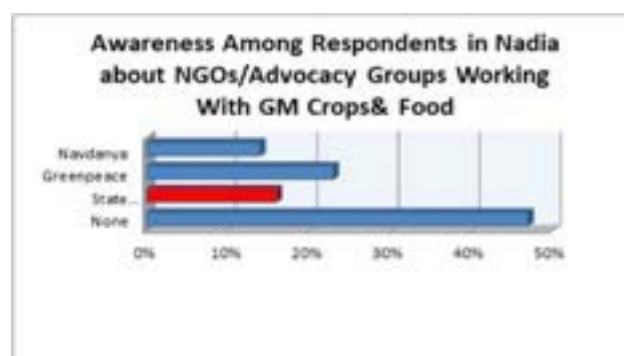


Figure No. 1F: Awareness Among Respondents in North 24 Parganas about NGOs/Advocacy Groups Working With GM Crops and Food

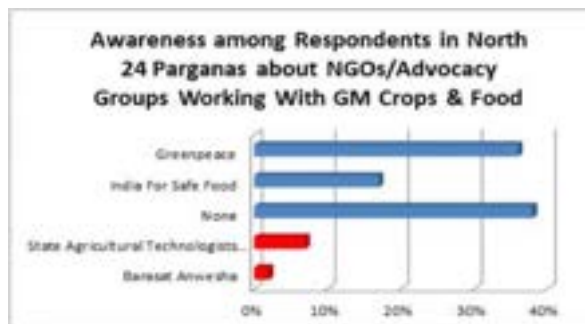


Figure No. 1G: Awareness Among Respondents in South 24 Parganas about NGOs/Advocacy Groups Working With GM Crops and Food

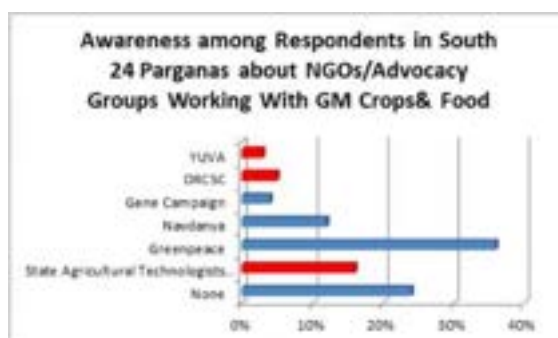
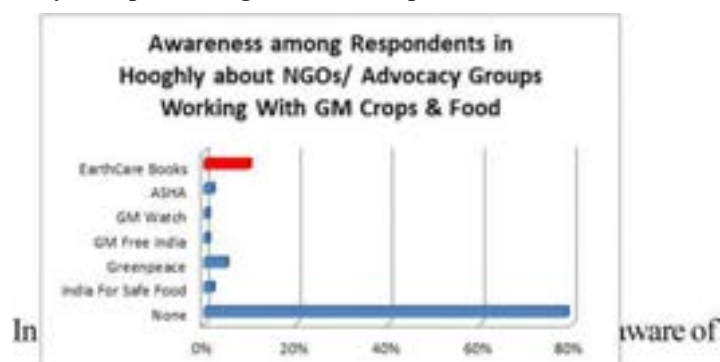


Figure No. 1H: Awareness Among Respondents in Hooghly about NGOs/Advocacy Groups Working With GM Crops and Food



NGOs/advocacy groups working with GM Foods and Crops. Though among this group some stated that they were aware about NGOs working in the field of agriculture and rural development but they were not sure whether these organizations focused on spreading awareness with regard to GM foods and crops. 23% of the respondents were aware about Greenpeace and 145 were aware about Navdanya. The interesting observation was that 16% stated the name of a local organization—State Agricultural Technologists Service Association (SATSA).

The respondents of North 24 Parganas were more aware. 38% stated that they were not aware of any NGOs/advocacy groups working in the field of GM. 7% of respondents cited SATSA while 36% of them cited Greenpeace again. In this district 20% of respondents named another local NGO-BarasatAnweshan. While 17% knew about India For Safe Food.

In South 24 Parganas respondents named 3 local NGOs/advocacy groups working with GM, they were YUVA (3%); SATSA (16%) and Development Resource and Service Centre, Calcutta (DRCSC) (5%). 24% of respondents were not aware of any organization or group working with GM. While the rest of the respondents named organizations of national and international repute like Gene Campaign (4%); Navdanya (12%) and Greenpeace (36%).

Respondents of the Hooghly district were most unaware as 79% of respondents stated that they did not know of any organization working with GM foods or crops. Few of them stated national and global organizations like India For Safe Food (20%); Alliance for Sustainable and Holistic Agriculture (ASHA) (2%); GM Free India (1%); Greenpeace (5%) and GM Watch (1%).

It can thus be concluded that the majority of the population are not aware of NGOs/advocacy groups working with GM foods and crops. They may be aware of organizations working

in the field of agriculture, extension and rural development but they are unaware of organizations working specifically with GM foods and crops. Greenpeace is the only organization cited by respondents from all districts. On detailed questioning it was found out that Greenpeace is most visible in the media especially on the internet and through blog links shared on social networking sites. Navdanya was another popularly cited organisation. Respondents were aware about it primarily because of their awareness about world renowned scientist and environmentalist Vandana Shiva. Names of 5 local organizations were cited in the survey namely SATSA; DRCSC; YUVA; Barasat Anweshan and EarthCare Books. These organizations have been reviewed in the latter half of the research to explore their role in awareness creation among the public.

The respondents were asked whether they have attended any workshop, seminar, conference or campaign with regard to GM foods and crops. Their responses have again been segregated district-wise and have been presented below

Figure No. 1I: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of Nadia District

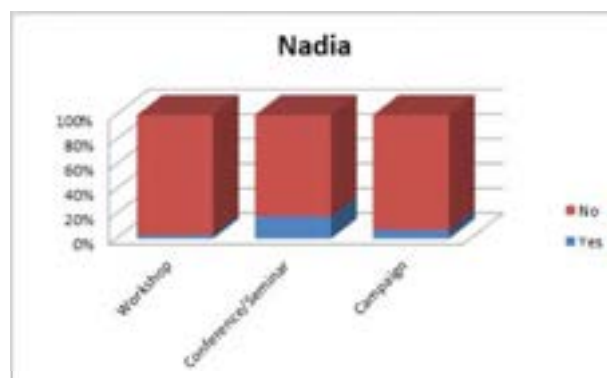


Figure No. 1J: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of North 24 Parganas District

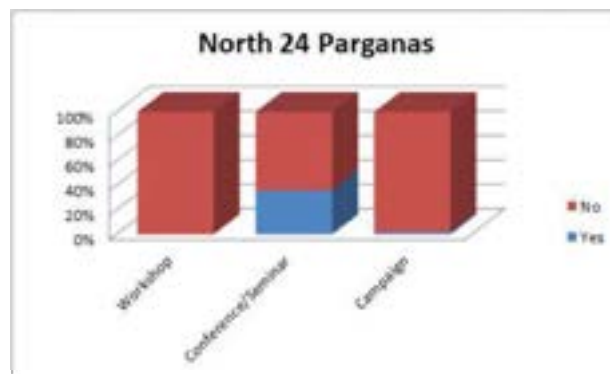


Figure No. 1K: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of South 24 Parganas District

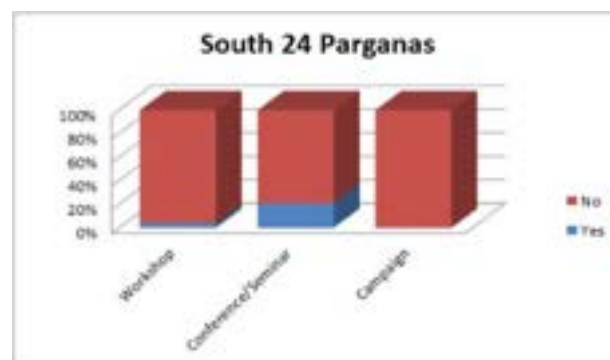
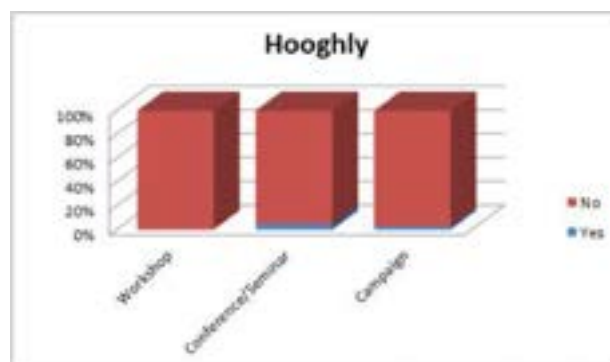


Figure No. 1L: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of Hooghly District



In Nadia district 3% of respondents had attended workshops; in North 24 Parganas and Hooghly no one had attended any workshop and in South 24 Parganas 4% of respondents had attended workshops. On detailed questioning it was found out that all respondents who had attended workshops had attended the Training Workshop on Environmental Biotechnology organized by ENVIS Centre on Environmental Biotechnology. The workshop was sponsored by the Ministry of Environment and Forests, Government of India and was hosted by University of Kalyani in 2003.

Seminars and Conferences on GM foods and crops were attended by 18% of respondents from Nadia; 36% of respondents from North 24 Parganas; 21% of respondents from South 24 Parganas and 5% of respondents from Hooghly. On detailed questioning it was found out that some of them had attended the Agri-Biotechnology—Opportunity and Challenges Seminar of 2007 organized by the Associated Chamber of Commerce and Industry of India in association with the Merchant's Chamber of Commerce; some others had attended the Seminar at Paribesh Bhawan, Bidhan Nagar in 2007 which had focused on Awareness Generation on Biosafety Regulations With Regard to Field Trials of Transgenic Crops that had been jointly organized by the Biotech Consortium of India Ltd; Department of Biotechnology, Government of West Bengal and the Department of Environment, Government of West Bengal. A few others had attended a Seminar on Merits and Demerits of GM Crop Introduction in the State in September 2007 that was organized by SATSA; while some others attended the 2008 Seminar on GM crops held at Nadia Zilla Parishad also by SATSA.

7% of respondents from the Nadia district; 2% of respondents from North 24 Parganas; 3% of respondents from Hooghly had attended GM related Campaigns. No one from

South 24 Parganas had attended any campaign. Most of the respondents who had attended a campaign stated that they had participated in the protest march against BRAI Bill in 2011, while a few others had participated in online campaigns on Facebook and Twitter by Greenpeace and Navdanya.

Out of a total of 400 respondents, 188 stated that they were not aware of any NGO or Social Advocacy group working with GM foods and crops. The 212 respondents who were aware of organizations working with GM foods and crops listed some issues which they thought that the organizations were focusing on with regard to GM foods and crops. The responses are summarized in the following table:

Table No 2A: Issues Raised by NGOs/ Social Advocacy Groups

Issues	Number of Respondents
Demand for Moratorium on GM Field Trials	107
Generic Anti-GM Sentiments or Demands	69
Pressure on/ Support for GM Free Regions	4
Discussion of Health Risks of GMOs	3
Demands for Increased GMO Regulations	6
Miscellaneous	23

It was observed that the majority of respondents stated that the major issue raised by new media, NGOs/Social Advocacy groups is the demand for moratorium on GM field trials. They considered this a popular issue primarily because they felt that the media covers this demand the most.

The 212 respondents were asked who they thought were the target groups that the new media, NGOs/ advocacy groups focused on in their awareness drives. The responses are summarized below.

Table No 2B: Target Group of New Media, NGOs/Social Advocacy Groups

Target Group	Number of Respondents
Farmer	127
Consumer	49
General Public	36

Majority of the respondents were of the opinion that the target group that NGOs and advocacy groups focused on for awareness drives and for influencing were the farmers. This group is usually focused on because they are considered the primary stakeholders in the GM debate since they are the potential producers of GM crops and food.

Conclusion

It can thus be concluded that the majority of the sample population have some idea or information about GM technology and its application in food production. The general public gives credit to sources like the internet, journals, community members and the like for information dissemination on GM. NGOs and advocacy groups are considered to be sources of information but they are not considered to be vital enough. Though the general public strongly agrees that NGOs and advocacy groups can play a vital role in affecting GM related government policy. Majority of the general public also strongly agrees that NGOs and advocacy groups can play an important role in influencing public sentiment as such organizations are trusted more than the media or the government.

The awareness of the general public with regard to knowledge about NGOs and advocacy groups working with GM foods and crops is low. Out of a total of 400 respondents, 188 are unaware. The 212 respondents, who are aware, know more about global and national level NGOs and advocacy groups. The local group SATSA as cited by respondents from Nadia, South and North 24 Parganas is an organization under the aegis of the State

Department of Agriculture, Government of West Bengal and hence is not an NGO. Earthcare books as cited by respondents from Hooghly is again not an NGO and can be called an advocacy group since it publishes and distributes books on environmental issues and sustainable development. Barasat Anweshan is an NGO working in the agricultural sector and DRCSC is an NGO working with food and livelihood security issues of the rural poor. Though YUVA is a local advocacy group yet the main focus of this group is youth empowerment.

It can also be seen that the workshops, conferences and seminars attended by the respondents were all organized by governmental bodies and NGOs played no major role. The most popular campaigns with regard to GM were organized by national and global level NGOs like Greenpeace and Navdanya but these campaigns were mostly online in nature. According to the general public, NGOs and advocacy groups working with GM foods and crops primarily focus on demanding moratorium on field trials and focus on farmer groups specifically for awareness raising drives. Thus it can be concluded that the general public is of the opinion that NGOs and social advocacy groups in the listed districts of West Bengal play no major role in raising awareness among the general public. These groups rather act as pressure groups, pushing the government to take measures to regulate biotechnological innovations and practices in the State.

■

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**Significance of Hindu Religion for Sustainable
Development in India**
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ABSTRACT: Hindu religion provides a moral guideline for environmental preservation and conservation.

Abuse and exploitation of nature is considered as unjust and sacrilegious. Hinduism believes in the force of nature and its interconnectedness with life itself. Certain rivers and mountains are sacred, as they give and sustain life. All plants and animals have souls, and people must serve penance for killing plants and animals for food. The teaching of Hinduism, as expressed in the Bhagavad Gita, present a learned description of ecology and the interdependence of all life forms, bacteria to birds. The rapid economic growth achieved after globalization by most of the

developing countries, has imposed considerable social costs and has become a major threat to sustainable development. There should be sustainable development by achieving a proper trade-off between environment and development. The far sightedness of the Hindu sages is evident in Vedic hymns, because, in ancient times, natural resources were not scarce and the capacity of nature to heal itself was much more than the harm inflicted on nature by human activity. Practices in Hinduism as mentioned earlier have been fulfilling this purpose. To maintain our age-old traditions is also a part of Sustainable development. The real meaning of nature worship in the Vedas is the prosperity of agriculture and the protection of the environment. Teachings of Hindu Philosophy to preserve our environment must be propagated by our government to achieve sustainable development. It's our tradition to submit to nature and preserve its sacredness.

Key words: Environmental, nature, Vedas, protection, Hinduism.

INTRODUCTION: Religion's interests in sustainable development have been strong since ages. Before and during 1988, religious organizations were using language of sustainability. All religious groups have a responsibility to preserve the environment so that humans in general can survive and prosper. Since primitive period the main motto of social life was to live in harmony with nature. Hindu religion demands veneration, respect and obedience to maintain and protect the harmonious unity of God and nature. Gita considers the Nature as the essence of human culture and man devoid of Nature is considered, an entity without soul. Religion plays a major and important role to protect our environment and also to control environmental degradation.

Ogburn defines, "Religion is an attitude towards superhuman powers."

Hindu ethics is based on the premise that ethical life is the means to spiritual freedom. Hinduism has behind it a philosophy

that is not only a religious doctrine but also a complex web of moral principles. It offers practical guidance, rites, prayers, festivals and social structures all aimed at securing social harmony and God realization. Since, God is the embodiment of truth and justice, right action is the means to experience God realization. Hindu ethical philosophy has been evolving for four thousand years. Its sources are the Vedas, the oldest known literature in the world. Hindu ethics differ from much of Western ethics perceiving a direct link between social and spiritual life. Greek philosophy is a pursuit of truth for its sake based on reason and the intellect in which the wise, the lawmakers, direct people to create a moral society. Hindu ethics is primarily concerned with right action as a means to religious fulfilment.

SUSTAINABLE DEVELOPMENT: Concept - The term “Sustainable development” has gained

currency in the last few years. From ‘Limits to Growth (1972) to ‘Brundtland Report’ (1987) and then to Kyoto Protocol (1997) all the countries have shown their concern towards Sustainable development. The Constitution of any country is the basic source of law and the provisions of all other laws are subject to the provisions of the Constitution itself. The Indian Constitution is amongst the few in the world that contains specific provisions on environment protection. The various provisions of the Constitution highlight the national consensus on the importance of environmental protection and improvement and lay the foundation for a jurisprudence of environmental protection. From the earliest days of the Hindu civilization, reverence for the environment has been an integral part of Hindu society. Our ancient forefathers perceived God’s presence around them through nature; they considered the natural forces which affected their lives as manifestations of the Supreme Being or God named Brahman.

Human civilization faces many ecological complications like climate change, natural disaster, pollution, related health issues.

Human society stand with faults to endure themselves with limited resources in globe. Ability to maintain and sustain this scenario is known as sustainability. Challenges of sustainability is imagined with allegory of shrinking capacity of Earth although environmental burdens are intensifying.

ECOLOGICAL SUSTAINABILITY THROUGH HINDUISM: Traditional religious texts have pointed out that may be understood as sustainable economic growth is not consonant with no economic activity as this is needed to raise poor out of inhumane living conditions. Concern for ecological balance is deeply embedded in Hinduism. Ancient sages and seers showed deep awareness of the need to maintain ecological balance in the interest of mankind. They understood the essential unity of man and nature and therefore advocated an integrated approach towards human progress without over exploitation of natural resources. Daily life from morning till evening was governed by nature's cycle. Houses and other building were built after taking into account the direction of wind and the seen in accordance with vastusastra. Groves, gardens and forests were developed to preserve the flora and fauna, and almost every village had a small adjoining forest. To prevent degradation of the environment, various rituals, regulations, duties and responsibilities were prescribed.

A perusal of Hindu religious scriptures called the Vedas, Upanishads, Smritis, Puranas, Ramayana, Mahabharata, Gita, mythological literature including stories, social and moral codes, and political rules reveal that the following were the general guiding principles to be observed by all in their daily life and environmental sustainability.

- Respect nature.
- Life in living is dependent on various components of nature.

- Deep harmony with nature.
- Protect natural environment.
- Utilize natural resources only to satisfy the need of the people.
- Presence of the divinity of nature in all living and non-living objects.
- Destruction of nature means destruction of mankind.
- All must have compassion for animate objects; for example, trees, animals, birds, aquatic life, etc.
- Air, water, land, sky, trees, animals are the creation of God and he dwells in all of them. Therefore, to worship them is to worship Him-the creator of the universe.
- Man, being one of the creations of God, has no special privilege or authority over other creatures on the other hand he has more obligations and duties to protect and improve them.
- Ahimsa Parmo Dharmah (non-violence) is the dharma of the highest order one should be nonviolent towards animals, trees, and other microorganisms alike. Hinsa (violence) was considered as a sin. Therefore, “not eating of meat in Hinduism is considered both an appropriate conduct and a duty”.
- Drought, fury of floods and storms, heavy rains, cloudbursts, lightning, earthquakes, volcanic eruptions, heavy tides are the violent forms of anger manifested by the gods and goddesses.
- Purity of thought and expression and cleanliness of the environment around us should be observed.

- All lives, human and non-human including trees, are of equal value and all have the same right to existence. It shows that the principle of sanctity of life is clearly ingrained in the Hindu religion.

HINDUISM ON SUSTAINABLE DEVELOPMENT AND THEIR ROLE TO SAVE ENVIRONMENT:

The Vedic philosophy of India has always emphasized on the human connection with nature. Hindu religious sacred books like the Vedas, Upanishads, Mahabharata, Ramayana, Bhagavad Gita, Puranas, Smriti contains important messages on ecological balance and need for people's ethical treatment of nature. They mostly emphasized on harmony with nature and recognized that all natural elements hold divinity. Religion makes men faith and faith in goodness insight them to be good and virtuous. Thus, religion has an encouraging place in human life and in human society, understanding and consciousness towards today's needs. Religion can act as a dominant potency to change human attitude towards more sustainable way of life.

In previous times, Sustainability of humankind was taken for granted and did not appear as an explicit goal. It certainly was an implicit goal: no human society has ever consciously promoted its own unsustainability. Global developments now focus attention on Sustainability as an explicit goal. But the concept has to be translated into the practical dimensions of the real world to make it operational. We must be able to recognize the presence or absence of Sustainability, or of threats to Sustainability, in the systems under our stewardship. We need proper indicators to provide this information, to tell us where we stand with respect to the goal of Sustainability. Sustainability is a dynamic concept. Societies and their environments changes, technologies and cultures changes, values and aspirations changes, and a

Sustainable society must allow and sustain such changes, i.e., it must allow continuous, viable and vigorous development, which is what we mean by sustainable development.

Vedic literature is rich in hymns that worship nature in all its manifestations. Vedas are considered the most sacred of all the Hindu scriptures. There are four principal Vedas: Rigveda, Yajurveda, Samaveda and Atharvaveda. Vedas begin with the worship of gods of nature. Preservation of Ecology is in fashion. World environment day is celebrated on June 5 every year. But there are so many such practices in Hinduism that are a part of saving our Environment such as worshipping Tulsi, Peepal, Amla tree as these plants purifies our environment. Ganga is sacred river. Our government is spending crores to clean this holy river. But Hinduism has always given a message to clean rivers also. Ecological dimension is always an organic part of Hindu Dharma. Ecologically Sustainable development is the most important component of Sustainable development. Practices in Hinduism as mentioned earlier have been fulfilling this purpose.

CONCLUSION: The process of teaching and learning laid down by religion helps to expand understanding and develop behaviour towards nature. Role of religion to shape attitudes to natural world is significant as it's dominance in human personality is recognizable. The ethical teaching, principles in Hindu religion are transferred from generation to generation. It has become a way of life. Those eco-friendly ethical standards influenced human life and become virtue of their life and gets passed on to different generations. The Industrial Revolution and acquisition of wealth through technological exploitation of nature, humanity has become more realistic. It promised a comfortable life with more deterioration which is a double-edged weapon. It has adverse effects on humanity's mental, physical wellbeing and on nature. The present eco-crisis humanity has to look for radical solutions and can be determined through values, priorities and choices.

All religious groups have a responsibility to preserve the environment so that humans in general can survive and prosper. Since primitive period the main motto of social life was to live in harmony with nature. Hindu religion demands veneration, respect and obedience to maintain and protect the harmonious unity of God and nature. Gita considers the Nature as the essence of human culture and man devoid of nature is considered, an entity without soul. Religion plays a major and important role to protect our environment and also to control environmental degradation. According to **Dr. Radhakrishnan**, “Hinduism is more a way of life than a form of thought. While it gives absolute liberty in the world of thought it enjoins a strict code of practice. The theist and the atheist, the sceptic and the agnostic may all be Hindus if they accept the Hindu system of culture and life. Hinduism insists not on religious conformity but on a spiritual and ethical outlook in life”. This is one of the most fundamental pillars of sustainable development.

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**Balancing economy and environment: A
study of spatial changes in and around
Dakshineswar Temple
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Abstract

In the present context of sustainable development, a balance of economic activities and environmental issues is of utmost importance. This paper aims to look at how the spatial changes in and around Dakshineswar temple are associated with this balance in the current situation of infrastructural development of skywalk and metro terminal. Based on a primary survey, covering local shopkeepers and transporters, as well as traffic conditions, this paper has attempted to portray the implications of spatial changes that have happened before and after the construction of

sky walk and metro station. A qualitative research approach is followed in which data is collected by in-depth interviews from 75 sample respondents, through purposive sampling method. This piece of research finds that the business situation has gone through considerable changes, mostly benefitting ferryghat shopkeepers in the vicinity of temple premises, as compared to skywalk shopkeepers. Local transportation in electric rickshaws has escalated. However, the congestion on roads during office hours is a point of concern.

Keywords: Skywalk, Business, Tourism, Electric Rickshaw, Metro services

Introduction:

Since 1985, when Brundtland Commission first introduced the concept of 'Sustainable Development', a balance of economic activities and environmental issues has become quite significant in development literature and policy practice. This concept of development not only focuses on the needs of present generation, but also prioritizes the requirements of future generation. Therefore, an improvement of physical infrastructure is also necessary in order to achieve and nurture long term goals of sustainable development. In this context, this paper aims to look at how the spatial changes in and around Dakshineswar temple are associated with this balance in the current situation of infrastructural development of skywalk and metro terminal. Dakshineswar temple, where *Maa Bhabatarini* is worshipped, is a very well-known religious place and established tourist spot. Established well back in 1855, under the aegis of *Rani Rashmoni*, this temple got popularized due to the unparalleled devotion of *Sri Ramakrishna* who ensured the participation of common devotees across all religions and caste groups. Till now, every year, thousands of devotees visit this *navaratna* architectural styled temple (Bose, 2024) and worship the goddess. Even "Western" tourists are

impressed (Barbiani, 2004). Therefore, economic activities associated with such worship, like shops selling items viz. flowers, incense sticks, sweets, photographs, souvenirs have grown up (Sultan, 2019; Rai & Das, 2022). One should also note that Dakshineswar temple is a part of religious tourism circuit that connects *Belur Math*, located opposite and just beside the right bank of Hugli river. In that sense, river front location of two religious tourist spots (Dakshineswar temple and Belur Math) and interconnecting river cruise are added attractions of tourists. Weekend day trip is quite popular in this riverside religious circuit that provides a combination of cultural heritage, natural beauty and local shopping experience. In order to ease the movement of large number of devotees, and to promote local business, skywalk has been constructed (Manna & Chatterjee, 2020; Khanna, 2018), which is functional since 2018. The strategic location of Dakshineswar, opposite to the ‘transport hub’ of Bally—where major roads and railway networks are very close to each other, is very significant from the perspective of transport planning. The integrated location of Dakshineswar bus stand and railway station allows people from far off places of Hugli and Howrah to commute to Kolkata city for multiple reasons. Therefore, to cater to the growing demand of transport, Kolkata metro services on north–south corridor have been extended further northward to join Dakshineswar with rest of the city of Kolkata since 2021. Such introduction of major infrastructural work i.e. Skywalk and Metro terminal, has resulted into certain changes in business pattern and mobility of transport—something which this piece of research aims to portray.

Database & Methodology:

This paper is written on the basis of a primary survey in and around Dakshineswar temple, the stages of which are outlined below—

Pre-field stage:-

Google Earth images of the study area i.e. the places adjacent to Dakshineswar temple are studied to explore the spatial changes that have occurred before and after the functional use of skywalk and metro terminal. A pilot survey is done to examine the implications of such spatial changes on local business and vehicular pattern. A ward map of Kamarhati municipality is obtained from Kamarhati Municipality to assess locational aspects.

Fieldwork stage:-

In the fieldwork stage, a detailed in-depth interview and discussions with local businessmen (i.e. shopkeepers of skywalk and surrounding areas) and local transporters (drivers of LPG autorickshaws, electric rickshaws/totos, bus and taxi) is done. A total of 75 sample respondents (i.e. 50 shopkeepers and 25 transporters) have been taken into account by choosing purposive sampling method.

Apart from this, a traffic survey is done in the morning and evening hours to examine the nature of vehicular flow and resultant congestions. Relevant geotagged pictures are captured by using a smart phone application.

Post-field stage:-

In this stage, the field based qualitative data is further explored. Relevant newspaper reports are gathered and their content is analyzed. Post-field verification of relevant information is also done.

This study has several *limitations*. Time constraints, first of all, have hindered larger coverage of sample respondents. Secondly, a few respondents have shown their unwillingness to divulge detailed information on some variables like changes in the volume of sales before and after functioning of skywalk and metro terminal. Thirdly, arcade shopkeepers are not allowed to respond in this primary survey.

Results and Discussion:

Changing business profile:-

This primary survey has covered changing business profile in areas of the Skywalk and ferry ghat approach road. In general, the footfall of visitors is higher during winter and early summer (November to April). Most of the shopkeepers are Hindu. Only two Muslim shopkeepers are identified who sell guava and ice cream just 2 or 3 days in a week. Mostly, *puja* items, pickle, toys, costume jewelry and other stationery goods are sold in cash-based payment system. Both own and rented shops are found in almost equal proportion. As the earlier street hawkers are rehabilitated to sky walk, those shops are permanent. Some ferryghat shops are temporary in structure (i.e. plastic roof and bamboo pillars). According to skywalk shopkeepers, who are predominantly males, business opportunities, measured in terms of sales volume and resultant income, has gone down as compared to pre-sky walk days. Earlier, they used to sell products to all customers – be it road pedestrians or train travelers. But now they get the opportunity to sell products to train travelers only. In the present context of infrequent longer waiting time of train movements, their number of customers has declined. Now, commuters prefer more frequent and convenient metro services and after deboarding at the metro terminal they directly visit temple premises and buy items directly from arcade shopkeepers. Moreover, skywalk business hours are limited – both in morning (6.30 am to 1.30 pm) and evening (3 to 8 pm). Apart from this, they have to pay an additional charge (Rs. 710/-) to Kamarhati Municipality. Added to these, rain water often enters into skywalk premises forcing shopkeepers to shut shops. On the other hand, the shopkeepers at the ferryghat approach road have experienced some positive changes before and after infrastructural development (skywalk and metro terminal). They are mostly local,

and hence, able to keep the shops open round the clock, and they still cater to customers who use ferry ghat approach road. Female members of these local shopkeeper households are also involved in the business. Due to enhanced metro connectivity, the number of visitors has escalated, some of whom prefer to board vessels via ferryghat approach road. As a consequence, sales volume and income of ferryghat shopkeepers have partially gone up. Moreover, they do not pay any additional fees to any authorized body. Recently, pay & use toilets, and food outlets have been opened in metro premises to cater to the floating population.

Changing local transport profile:-

After the commissioning of metro services, user-charge based bike parking (capacity of maximum 300) and car parking facilities have come up, just adjacent to metro terminal premises. Electric rickshaw (popularly known as Toto) stand has cropped up, which facilitates visitors to directly commute to temple. Moreover, toto services have expanded in other local short distance routes. The introduction of toto stand has made an impact on existing autorickshaw stand, which has been functional since last 25-26 years. The frequency of autorickshaw movement for moderate distance routes has gone down (from every 15 minutes to every 30 minutes) thereby reducing the income of auto rickshaw drivers. In fact, *Alambazaar* side toto number has escalated from 4 to 37 within 2012–2022. However, the number of auto rickshaws plying between Belur Math and Dakshineswar has remained same. The metro route has also made an impact on an existing bus route (i.e. Route 32 – which used to ply between Dakshineswar and Esplanade). As this route is now covered by metro in a more fast and convenient way, the bus route is changed to 32–A, which covers Dakshineswar and Salt Lake. It needs to be noted that the number of buses has gone down from 52 to 15 over years. Earlier, taxis used to be the most convenient mode of

transport for devotees of Dakshineswar, especially who were senior citizens, women and who came in family/friends' groups. Now, even if pre-paid taxi services, directly monitored by police authorities, are available, their demand is comparatively less due to expanded metro services. Now, taxis mostly cater to passengers who come from or go to areas still not covered by metro services, like Kolkata Airport.

Changing traffic profile:-

Before the construction of skywalk, traffic congestion was the most regular phenomenon in and around Dakshineswar. The skywalk has segregated pedestrians from motorized vehicles. But, a local traffic police officer, has pointed out in the detailed interview that metro services are attracting more bikes and private cars on the roads. App Cab/Two-wheeler based pick-up and drop services near metro premises have become popular. Therefore, traffic jam is mainly happening in office hours (8-10 am and 5-8 pm). The officer's version is validated in the field with traffic survey in the morning and evening with capturing of relevant geotagged photographs.

Concluding remarks:

This study shows that a lot of spatial changes has happened after the major infrastructural work (skywalk and metro terminal). Although skywalk bestows an aesthetic urban design and serves the primary purpose of segregation of pedestrians from motorized vehicles, its inherent architectural features are forcing shopkeepers to shut shops during rainy hours. For getting rehabilitated from street hawking to skywalk shops, such businessmen are losing income. However, the introduction of metro and toto services is environment friendly and creating diversified job opportunities. Therefore, the major infrastructural work is balancing environment and economic activities. However, the growing popularity of metro services is demanding better

management of traffic and rerouting of public buses. Multiple use of public space needs to be monitored closely, so that illegal encroachment doesn't take place.

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**Bangladesh, Bhutan, India and Nepal
(BBIN) MVA: Enhancing Cultural
Connectivity and Sub-Regionalism
in South Asia.**

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Abstract:

The Bangladesh, Bhutan, India, and Nepal Motor Vehicles Agreement (BBIN MVA) is a landmark initiative aimed at enhancing regional connectivity, fostering economic growth, and promoting cultural exchange among the four South Asian countries. Signed in 2015, the BBIN MVA seeks to facilitate the seamless movement of passenger, personal, and cargo vehicles across borders, improving transportation and trade linkages within the sub-region. This initiative is part of a broader vision for sub-regionalism in South Asia, where intra-regional cooperation can stimulate development, reduce poverty, and bridge infrastructure

gaps in a historically fragmented region. The BBIN MVA is particularly significant in its potential to foster cultural connectivity among Bangladesh, Bhutan, India, and Nepal. The agreement opens up new opportunities for cross-border tourism, enabling people from these countries to experience shared cultural heritage, traditions, and history. It also allows for the promotion of people-to-people ties, which is critical for the strengthening of mutual understanding and cooperation. By improving transport and logistics networks, the agreement aims to integrate the economies of the BBIN countries, contributing to regional development and reducing trade costs. This research article delves into the BBIN MVA, through the lens of Enhancing Cultural Connectivity and Sub-Regionalism in South Asia based on the shared cultural identities and historical bonds that unite them.

Keywords: BBIN, South Asia, Cultural Connectivity, Sub Regionalism

Introduction:

The aftermath of the Second World War essentially compelled the west to start rebuilding and reconstructing the economy of the destroyed European countries, as well as to find solutions to their shared issues. As a result, regionalism, or regional cooperation, gained prominence. Regionalism emerged as an important phenomenon in the European countries and eventually with time it also gained prominence in South Asia, given the common background of colonial rule and exploitation, it seemed natural that the South Asian countries would work together for the greater good of society. The region had to wait for a meaningful progress till 1980 when Bangladeshi President Zia-ur Rahman came up with a concrete proposal which finally culminated into the establishment of South Asian Association of Regional Cooperation (SAARC) in 1985. Owing to many factors, such as

the perpetual political strain between the two major member states -Pakistan and India, SAARC failed to effectively initiate the highly anticipated process of regional economic integration and this eventually paved the way for sub regionalism in the region.

India has always tried to culturally engage with the South Asian neighbours in order to mitigate the perceived animosity in the South Asia region. In South Asia, a common variant responsible for fragility is territorial disputes and political instability. South Asia is a region where various factors are intertwined and it is a realm of one of the oldest civilizations of the world where people from all races and religions have coexisted for over a long period of time. The people of the South Asian region are unified by a common cultural and ethical outlook; a wealth of ancient textual literature, regional languages, music and dance, ritual customs, modes of worship, and literary ideals which bear patterns of similarity, even though the region has been divided into kaleidoscopic political patterns through the centuries. The culture linkages have been always important and a determining connecting factor in the region of South Asia and various attempts to culturally reconnect the region has been undertaken. It is in this connection attempts of establishing sub regional cultural contacts were taken earlier to the establishment of BBIN. The idea of forming a growth triangle within South Asia was first discussed and agreed upon in May 1996 during the meeting of SAARC Council of Ministers in New Delhi. Thereafter different initiatives and proposals have been discussed and within the efforts of sub regionalism Bangladesh, Bhutan, India and Nepal (BBIN) stands to be important especially in terms of establishing cultural linkages and sustainability through economic cooperation and integration. Towards this end, India's neighbourhood policy has also been instrumental.

**Bangladesh, Bhutan, India, and Nepal (BBIN)
Initiative: Explifying Sub-Regionalism and Cultural
Connectivity:**

A subregional architecture of nations in Eastern South Asia, a subregion of South Asia, is known as the Bangladesh, Bhutan, India, and Nepal (BBIN) Initiative. It convenes with the official representation of member states to develop, carry out, and evaluate quadrilateral agreements in sectors like infrastructure, transportation, power, and water resource management. In this regard, Bangladesh, Bhutan, India and Nepal (BBIN) Motor Vehicles Agreement (MVA) was signed in 2015. It aims to facilitate the seamless flow of passenger, personal and cargo vehicular traffic between and among the BBIN countries. This agreement is taken as an important step on the part of economic cooperation among these four South Asian countries. Socioeconomic culture linkages despite interstate tensions have been an important characteristic for the South Asian region and to foster social economic cultural and civilizational linkages SAARC has tried to play a pivotal role. The BBIN connectivity project was conceived after the South Asian Association for Regional Cooperation (Saarc) failed to agree on a regional motor vehicles agreement at a summit in Nepal in 2014, mainly because of opposition from Pakistan. BBIN MVA aims at constructing an economic corridor connecting Bangladesh, Bhutan, India and Nepal by roads based on the idea of sub regionalism so as to foster mutual growth and development. The seeds of this agreement can be traced back to the time when the proposal of South Asian Growth Quadrangle (SAGQ) consisting of Bangladesh, Bhutan, Nepal and India (North East region) was put forth during the SAARC Foreign Ministers' Conference (1996). This agreement stands as a significant move to build and reinstate and establish mutual understand and trust and thereby

establish confidence building measures among these four South Asian countries through the channel of connectivity and transport.

Cultural linkages in terms of connectivity have been very much ingrained among these four countries. India and Bangladesh share more than 4000 km of the common border and historically had several railway linkages. Some popular railway linkages were Petrapole-Benapole, Gede-Darshana, SinghabadRohanpur, Radhikapur-Birol, Chilahati-Haldibari, Changrabandha-Burimari, Mahishashan-Shahbazpur, and Agartala-Akhuara. On the other hand, Nepal is a landlord country and there have been several reasons which have also contributed towards the obstacle of developing a very comprehensive connectivity framework in the country which includes inadequate capacity to plan and execute railway network projects, difficult terrain, high costs of establishing and maintaining railways, and the country's sparse population. Similar factors are also applicable for Bhutan but its recent approach towards establishing environmental stability in the country and hindering unlimited access of tourists has been a serious contention towards connectivity and cultural linkages to enhance sub regionalism. But smooth operationalisation of the BBIN agreement can foster connectivity and strengthen cultural linkages among these countries.

The agreement was created 'for the Regulation of Passenger, Personal and Cargo Vehicular Traffic between Bangladesh, Bhutan, India, and Nepal and to boost economic growth in the region. BBIN agreement will promote safe, economically efficient and environmentally sound road transport in the sub-region and will further help each country in creating an institutional mechanism for regional integration. The people of the four countries will benefit through the seamless movement of goods and passengers across borders which in turn will enhance trade and thereby promote accelerating economic growth, social progress and cultural development in the region as well as enhance active collaboration

and mutual assistance in the economic, social, cultural, technical and scientific fields among the four countries. The BBIN initiative also promises to facilitate the movement of people across borders. This has huge implications for both business and trade as it can lead to improved people-to-people contact, encourage business travel and most importantly can give a huge boost to trade in various services

(BBIN) Initiative and its Potentialities:

The BBIN initiative has the potential to significantly change the dynamics of the existing trade related activities paving the way for greater market access for production centres in the subregion. Given the relative openness of economies of the BBIN countries and India bearing the asymmetrical responsibilities, any improvement in infrastructure and connectivity will automatically result in better access to the large Indian market for smaller member states. Having a multi-modal transportation network in the BBIN sub-region would be quite useful for landlocked Nepal and Bhutan. They will be able to take advantage of cheap transit services to ports in India and Bangladesh. Cooperation in energy sector will be beneficial for everyone. The hydropower potential of Nepal and Bhutan and thermal power capabilities of India and Bangladesh could be utilised for each-others benefits. This can happen if the four countries develop a common transmission grid and supply energy where it is needed most. The initiative is important for India, as it aims to improve the sub-regional connectivity in South Asia which in turn would lead in the long run to materialise broader inter-regional connectivity. Additionally, this will help India develop its North-Eastern region, as the transportation cost for moving goods from other part of India to North-Eastern region through Bangladesh and vice-versa will be greatly reduced. It is important to note that the North-Eastern region of India is literally landlocked, or what many say Bangladesh locked, and connected to the rest of India only via the narrow

Siliguri Corridor. A study by the ADB has proposed 10 regional road networks as South Asian Corridors, out of which seven have been identified in the BBIN region. These economic corridors will allow landlocked trading centres of Nepal and Bhutan to gain access to ports in India and Bangladesh. For example, Tripura can get access to Bangladesh's Ashugunj port; Chittagong and Mongla ports can be accessed from Kolkata and the north-eastern state.

Studies reflect that the potential of trade between these 4 countries is huge. The trade between the BBIN countries grew six-fold between 2005 and 2019. But still, the potential remains massive at 93% for Bangladesh, 50% for India and 76% for Nepal and can be further enhanced by the strong operationalization of this agreement. World Bank analysis finds that under the MVA, a truck travelling from Agartala in India's northeast to Kolkata port will take 65 % less time and be 68 % cheaper. This agreement can potentially increase intra-regional trade within South Asia by almost 60% and with the rest of the world 30%. Under South Asia Sub-Regional Economic Cooperation (SASEC) programme. Further this agreement would amount to simpler regulations that in turn will help ease the movement of cargo. Further, Asian Development Bank (ADB) has been providing technical, advisory, and financial support in order to augment the entire initiative.

At present, around 22 documents and 55 signatures are needed to trade between Bangladesh and India. In Bhutan, importers need to submit their documents to different authorities 86 times on average, while exporters need to do so 74 times. **The early implementation of the BBIN Motor Vehicles Agreement (MVA) can lead to shorter transport routes, quicker travel times, and lower costs, in addition to a smaller carbon footprint thereby increasing connectivity and enhancing and strengthening cultural linkages, mutual**

understanding and a positive image building among these four nations. BBIN MVA can be seen as a first step towards a broader integration process. The locational advantage of South Asia implies that it can serve as a gateway for connecting to Southeast and East Asia. The BBIN MVA network has created the first step of this broader integration process. This particular agreement stands as an **institutional mechanism for regional integration** as low level of regional integration in South Asia is manifested by poor intra-regional investment, and even poorer intra-regional factor movements. This entire initiative can be an important stand through in establishing cultural relations and linkages through the aid of connectivity.

(BBIN) Initiative and Challenges :

The implementation of the BBIN Motor Vehicles Agreement (BBIN MVA), while promising, faces significant challenges that must be addressed to realize its full potential. Key challenges include infrastructural limitations, security concerns, and environmental considerations, particularly in Bhutan, which has expressed reservations about increased traffic flows.

Infrastructural Limitations: One of the most pressing challenges in implementing the BBIN MVA is the underdeveloped infrastructure across the region. The existing road networks, especially in rural and border areas, are often inadequate to support the increased traffic flows envisioned by the agreement. Poor quality roads, lack of modernized customs facilities, and insufficient transportation hubs create bottlenecks, slowing down the movement of goods and people. Upgrading infrastructure will require significant investment and coordination among the four nations to ensure that roads, bridges, and border checkpoints can handle the expected rise in vehicular traffic. Additionally, harmonizing transport standards, such as axle load limits and vehicle regulations, is necessary to ensure smooth cross-border operations.

Security Concerns: Another major challenge is security. The BBIN region is geographically diverse and often affected by internal conflicts, insurgencies, and cross-border tensions. The porous borders between these countries can become vulnerable to smuggling, human trafficking, and other illicit activities. Ensuring the safety of cross-border transport will require robust security measures, including coordinated efforts between border security agencies, intelligence sharing, and the deployment of modern surveillance technologies. The risk of transnational crime and terrorism, particularly in border areas, poses a threat to the seamless movement of vehicles and may necessitate more stringent border checks, which could counteract the agreement's objective of smooth transit.

Environmental Considerations: Environmental concerns, particularly in Bhutan, have been a key challenge to the full implementation of the BBIN MVA. Bhutan's unique environmental policies, which prioritize conservation and sustainable development, have led the country to be cautious about opening up to increased vehicular traffic. The fragile ecosystems in the Himalayan region, including Bhutan, are vulnerable to pollution, deforestation, and the effects of climate change. Increased traffic could exacerbate these issues, leading to higher emissions and environmental degradation. Bhutan has raised concerns about the potential ecological impact of cross-border traffic and, as a result, has sought to either delay or opt out of certain provisions of the agreement. Addressing these concerns will require integrating environmentally friendly transportation solutions, such as electric vehicles and sustainable infrastructure, into the BBIN framework.

Bhutan's Reservations: Bhutan's reluctance to fully participate in the agreement stems from a combination of environmental, infrastructural, and sovereignty concerns. The country has expressed reservations about the influx of foreign

vehicles, fearing that it could lead to environmental degradation and compromise its policy of “Gross National Happiness,” which emphasizes sustainability over economic growth. Bhutan’s decision to temporarily abstain from the agreement has slowed progress, as it is a key geographical player in the BBIN framework. However, efforts are ongoing to find alternative solutions, such as Bhutan-specific provisions or separate bilateral agreements with other BBIN countries to address its concerns. right now, the BBIN MVA has been ratified by three of the four countries. Following strong oppositional criticism, the parliament of Bhutan presented a 15-point complaint to the sub-regional motor vehicle agreement, refused to approve the BBIN MVA, and objected. Thirteen Bhutan is worried that more tourists, traffic, and pollution would arise from the simplification of passenger and freight vehicle transportation in the tiny Himalayan country. The number of tourists visiting Bhutan has significantly increased recently. Thus, it is challenging for a nation of 700,000 people to handle 180,000 tourists annually. In Thimphu, construction is booming as a result of the growing number of visitors. There will be several new lodging establishments opening soon. Many people think that this is having a detrimental effect on the ecosystem and ecology. The locals worry that more issues would arise if BBIN is implemented in its current form.

Despite these challenges, the BBIN MVA has the potential to significantly enhance connectivity, trade, and cultural exchange in South Asia. Overcoming these hurdles will require concerted political will, investment in infrastructure, enhanced security cooperation, and the adoption of sustainable practices. By addressing these challenges, the BBIN MVA can become a model for sub-regional cooperation in South Asia, contributing to economic integration, regional stability, and the strengthening of cultural ties across borders. To strengthen BBIN Initiative, in 2016, India approved \$1.08 billion for construction and upgrading

of 558 kilometres (347 mi) long roads that join Bangladesh, Bhutan and Nepal. The project will receive 50% funding from Asian Development Bank. The project is scheduled to be completed by 2018. It is estimated that this project will increase the regional trade by 60% while that with rest of the world by 30%.

The concept of BBIN is well received by C. Raja Mohan, Director of the Institute of South Asian Studies at the National University of Singapore. Although he acknowledges that the initiative did not advance far enough, he nevertheless urges Bangladesh and India “to take a fresh look at the forum and find ways to widen the scope and pace of BBIN activity.” Bhutan and Nepal are becoming more interested in economic integration with Bangladesh in the meantime. “The Observer Research Foundation advisor Sanjeev Ahluwalia suggests that BBIN, as a sub-region of BIMSTEC, establish “an interparliamentary group to enlarge cooperation say in cross border energy trade, digital security, space applications and green technology.” The entire concept of BBIN and the MVA agreement is taken as to be an important stand through of establishing cultural connectivity and sustainable development within the region.

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RETHINKING PRIESTHOOD IN INDIA: A SOCIOLOGICAL STUDY

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ABSTRACT

Priests, often referred to as Purohits, are knowledgeable individuals skilled in rituals who perform samskaras during all auspicious occasions. However, in India, "manhood" and "priesthood" are synonymous; the simplest translation of "priest" is "a Brahmin man," who should wear a sacred thread following Upanayana. Even if there have been reports of women becoming more active in the clergy recently, the number is hardly noteworthy. However, it is not entirely surprising to see female priests officiating at weddings these days. This study is an effort to highlight these instances of female priests actively engaged in their profession, the manners in which they carry out their duties, and the general

attitude of society and male priests toward the revival of women's priesthood. It is a little effort to understand the opinions of the general masses, and their thoughts about Kanyadaan, Kanakanjali, and other rituals.

The goal of this work is to throw light on the prevalent gender imbalance in Indian society today and, in doing so, reveal new perspectives on India as well as strategies to revive long-standing customs.

KEYWORDS: *Priesthood, upa nayana, female priests, attitude of the society, kanyadaan, kanakanjali, gender imbalance.*

INTRODUCTION

Hindu philosophy provides a fundamental contradiction in the idea of the female: on the one hand, she is fertile and kind—the bestower; on the other, she is aggressive and evil—the destroyer. Women have also been referred to in popular culture as Prakriti, or nature, the uniform matter of the universe, and Sakti, or energy/power, the universe's energizing force. (Wadley, 1977). Although in most popular parlance, women have been considered accorded a high position in society from the very beginning, the question arises as to why are they taken for granted or are considered as 'inferior' by the 'so-called' dominant patriarchal order. In this 21st century, though women are found to engage in a variety of professions, we find a dearth of female priests, though this profession of women was not completely unknown in the traditional Hindu social order. Priests or commonly known as *Purohits* are ritual specialists, wise individuals who conduct *samskaras* on any sacred occasion. But in India, 'priesthood' is equated to 'manhood'; the easiest translation of priest is a 'Brahmin man', who should have a sacred thread after Upanayana. Nowadays, though we can hear about the resurgence of women's priesthood, the figure is hardly

noteworthy. We rarely get to witness female priests officiating important Hindu ceremonies, especially marriage, which is one of the most significant social institutions of Hindu society. However, it is not totally astonishing to find lady priests conducting marriages today, and this paper is the attempt to bring out such instances of lady priests actively engaging in their profession, the ways in which they conduct their work, and the societal attitude in general and also of male priests regarding the revival of women priesthood. This work aims to throw light upon the practices of gender inequality in Indian society today at large and thereby exposes ways to re-think India in a completely new light or by revitalizing the old traditions.

Marriage is considered as an important social institution in Hindu societies since times immemorial and Hindu wedding sarees usually officiated by male priests. However, lady priests are not completely unheard of in Hindu society. Quite interestingly, in the present times, we find Hindu female priests making strides in this male-dominated profession. This work thus aims to delve into this newly revived domain to find out how many people in India are ready to rethink about this change.

This present work has been done in Kolkata, 2023; using both primary and secondary data, after some in-depth interviews with male and female priests and also after talking with some commoners.

WOMEN IN VEDIC AND ANCIENT STUDIES

There are allusions of female ascetics reciting Vedic hymns and even making mantras in all four Vedas. Throughout the Vedic era, education was valued for both males and girls. They used to take part in the Upanayana Samskara (Thread Ceremony), which marks the commencement of their academic phase (studentship). Deeksha of the Holy Gayatri Mantra was delivered to them. Girls used to stay at the preceptor's residence after the

thread ceremony to study discourses. According to the *Harit Smriti*, “Brahmin women have the right to holy begging, a sacred thread ceremony, a sacred fire ritual, and the study of Vedas”. There are 27 hymns from the Rigveda that were written by women known as ‘rishikas’; names of *Apala, Lopamudra, Ghosha, Shashwati, and Indrani are popular in the Vedas, and Gargi, Maitrayee are famous in Upanishads*. The *Rig Veda* (10.109.4) says, “When a Brahmin’s wife wears the auspicious thread, she becomes very popular” (Manjul, 2010). The *Atharvaveda* states that after adhering to stringent student guidelines (virginity, a healthy diet, exercise, regulation of the sense and action organs, self-study and giving discourses, respect for elders and teachers, etc.), girls used to find suitable life partners as a result of this achievement, i.e. Brahmacharya. The sacred threads worn by women, according to the scriptures. Additionally, references to some female purohitis who once served as preceptors can be found in *Panini’s Ashtadhyayi and the Mahabhashya*. Also, during the *Ramayana* period, girls received” Dharma Shikshan.” The *Ramayana* mentions that Sita practiced the Upanayana Samskara and used to perform Sandhya (daily prayers). Tara, the wife of Vali, was recognized as a Mantrvid, or someone who is fully versed in auspicious mantras. It was decreed during the *Mahabharata* also that well-behaved women in society should engage in Vedadhyayan (the study of the Vedas), just as” Draupadi,” the wife of the Pandavas, did. It is crucial to remember that despite this situation, *Bhagwad Gita* has already given women, Vaishyas, and Shudras the right to pursue the path of actual truth in order to get ultimate knowledge. Though there are numerous pieces of evidence of the fact that women were also equal in their religious sector as well, somehow the scenario changed and their social status started descending. *Manusmriti* notes that at the age of eight years old, there is no need for a sep

arate Upanayana Samskara for girls and that it should instead be combined with their marriage samskara. Puranas were prepared and authored to decide the rules and carry out regularly the irreligious activities for women, Shudras, and other uncultured people. They were denied the opportunity to study the Vedas. Girls were expected to plan their marriages before they were mature, which led to the practice of denying them the opportunity to pursue an education and denying them the right to learn. All of the circumstances finally resulted in a male predominance in social and religious spheres. (Prabodhini, 2018).

STUDIES ON GENDER AND PRIESTHOOD IN HINDU TRADITIONS

Ramabai's (1887) work remains a phenomenal contribution that questioned the rigidity of the Hindu dominant faiths of how a dominant caste Hindu woman complies with her own oppression, under a veil of ignorance. She suggested that high-caste Hindu women needed to learn self-reliance and education in order to stand up for themselves and deal with society. P.V. Kane in his work talks about women wearing the sacred thread, quoting instances from Dharmastras and Smritis. Wadley (1977), Narayanana (2005), and Joshi & Prabodhini (2018) in their articles on women's priesthood in Hinduism talk about the practice of priesthood by women and show how there is room to negotiate gender and sacerdotal functions in the Hindu patriarchal systems and how we can make space for egalitarianism in the gender and caste unequal Hindu society. V. L. Manjul gives an illustration of the practice of women's priesthood from Pune. Heanue (2018) in her article introduces the readers to Indian housewives who are studying to become Hindu priests in their "Second innings". An E Times article (2021) by Debolina Sen and Sruthi Raman and also a newspaper article by Chirag Gaur (2021) point out too few interesting instances where women priests are showing the door to patriarchal rituals in the Hindu marriage ceremonies.

MAIN DISCUSSION

A Sanskrit lecturer and Indologist, **Dr. Nandini Bhowmik** had been interviewed for the present study, who had directly opposed the existing patriarchy and triumph



hed in getting the identity as a ‘priestess’. Together with some other women, she practices priesthood as a part of the organization “*Shubhamastu*” in an effort to dispel the myth that only Brahmin men can carry out religious rites.

Priestess Nandini; PicCredit-eneewsroom.in The women priestess remarked, “The primary criticism we have encountered for a very long time is that we girls don’t observe chastity for four to five days each month. Women are prohibited from participating in religious activities such as Puja or worship while they are menstruating. The 21st century cannot sail through this. This is only a natural and biological process that provides us the power to create new life” (Bhowmik, 2021). After a detailed discussion with the female priestess associations, the points that came to the fore front are—

1. Females from all castes are cordially welcomed which indicates that there is no rigid caste or gender barrier in this case. This **relaxation of caste and gender** to be a *ritual*

specialist is definitely enhancing social mobility and broadening people's mindset.

2. They practice wedding ceremonies according to **Vedic traditions**.

All the mantras are explained, and the significance is stated in vernaculars like- Bengali and English so that people can understand their importance very easily.

4. On top of that, they have included Tagore's songs that match the mantras because Rabindranath Tagore was not only a lyricist; his songs are mainly based on Vedic literature, according to them.
5. They have omitted *Kanyadaan* and *Kanakanjali*, which is a very significant change.



Mr. Acharya with his team "Ladypurohit"; (Facebook)

Another group called "**Lady Purohit**" in Kolkata is also working and most strikingly this group has been formed by a male priest, laden with critical knowledge of Sanskrit, Mr. Keshab Ananda Acharya. It is quite unfortunate, that while on the one hand, there are male priests like Acharya, forming associations for female priestesses, on the other hand, there are innumerable males in general and male priests in particular who are opposed to this profession of female priestesses.

According to them, rituals like *Kanyadaan* and *Kanakanjali* were begun in old times may be, but as society is

changing, as the position of women is changing—there is no need to perform these rituals anymore. *Kanyadaan*, a by-product of Patriarchy, means “giving away the bride” in Sanskrit. They stated, women are not objects or commodities, one cannot donate his daughter only in the name of marriage. Nandini Bhowmik argues, “Historically, our world has been patriarchal, and owing to that, the laws and rituals were also formed in such a manner in the current context, **that needs to change completely** (thebett er india.co m). Members of ‘Lady Purohit’ argued that the wedding is performed both by a bride and a groom, as the groom’s father is not performing” Putrodaan”, there is no need for “*Kanyadaan*” as well. In another custom “Kanakanjali”, the bride pours back rice into her mother’s open “pallu” as a symbol of full repayment of all obligations. This is part of the ‘*vidaai*’ ceremony, which is supposed to signify ‘Mother! I’m grateful that you fed and raised me. Is it really possible to repay all the debts that one daughter gets from her parents?’ Thus, these women priests aim at creating more equitable nuptial ceremonies.

Uday Rajpandit who is working as a priest for the last 25 years is opposing women’s priesthood by saying, “As a priest, one has to deal with a lot of difficult questions, but as women only have a superficial education, they frequently are unable to respond. And the ceremony resembles entertainment more. It denigrates our occupation.”

In spite of facing various insults, ridicule, and negligence from the very beginning and even to some extent to date, Nandini Bhowmik and other priestess groups have not stopped doing their work. She narrated a personal experience where she along with her team went to officiate a wedding ceremony. After having completed their work, when they were leaving the venue, to their utter surprise they saw male priests making their way into the place to conduct “real” marriage rituals, according to the bride’s parents. These female priests are happily doing their work. In the word

so fN and inimadam,” Priesthood is an art form to up. No wouracceptance is in the sky. People not only accept us, but they also respect us a lot”. Priestess Datta priya shared that though there are mixed reactions from commoners till now, they are performing their job diligently with humongous hope that India is on its way to change.



A poster of the film, '*Brahma Janen Gopon Kommoti*',

As we know media always plays the role of harbinger of change in any society, it has been

A poster of the film, '*Brahma Janen Gopon Kommoti*',

Source- Indian Cultural Forum

Seen that most people have come across the idea of female priests mainly due to the influence of social media, newspapers, etc. The Bengali movie released in 2020 named, '*Brahma Janen Gopon Kommoti*', has worked as a radical catalyst to aware commoners of women's rights and equality. The concept of the *Kanyadaan, impure female body* has been depicted beautifully. Though everyone is not agreeing with the concept, many have agreed also.

People who support female priests believe that as 'society' makes the law, individuals bind people to norms, customs, and all—no body has the right to forbid females from enjoying the status of priestess and achieving gender equality in all spheres of life. But on the contrary, **those who are opposing this change** are satisfied with the idea that there is no need for priestesses as male priests are enough in number to perform all the rituals and also agree with the notion of an "impure body" due to menstruation.

Opinions about *Kanyadaan* have **revealed the squeamish nature of Indian people**. Those respondents who are supporting *Kanyadaan* are of the opinion that it is the most crucial ritual of marriage. Without *Kanyadaan* the marriage will be incomplete as the idea of *changing the gotra of the bride* happens with this custom. Those who are supporting priestesses but also want to continue the ritual of *Kanyadaan* think that as it is a century-long ritual and plays a significant role in marriage, we should follow it. Some have the fear of society, "what people will think if I do not perform *Kanyadaan*!". A few of the youngsters are also thinking about their parents' and grandparents' sentiments. But those who have expressed their true will to say 'no' to *Kanyadaan* are convinced by the idea that a daughter can't be given away; it is the weakest moment for a father, if the priestess allows, they will accept it happily without any fear of society. Most surprisingly, it was hypothesized that the aged people may not be able to accept this change, but a majority of them also have shared their own experiences about marriage and expressed their will to allow their children or grandchildren to get married with the help of a priestess and without *Kanyadaan*.

CONCLUSION

People have started believing that Ancient Hindu Shruti scriptures do not refer to traditions like forbidding women from

reading Vedic books, outlawing second marriages, or limiting property rights. Instead, a variety of cultural influences led to the evolution of these patriarchal traditions. Some of the economic pressures imposed on Hindu society as a result of invasions and wars, the spread of British colonial policies such as the prohibition of female inheritance, the reformulation of Hindu law with an emphasis on Victorian standards, and the reversal of prosperity under European mercantilism were among the most notable. On the one hand, we find that India is quite rigid in the mind set and is not ready to accept change wholeheartedly. On the other hand, there are many who are a little more liberal or rather greatly liberal in embracing change. The idea of female priests officiating at Hindu ceremonies is a rather new phenomenon, but it is becoming quite popular in today's world. The women's priest organization are expecting more acceptance and are full of hope. This points to the fact that after all India is not completely traditional in contemporary times rather it has opened up avenues of rethinking India in a new light.

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অনিতা অগ্নিহোত্রীর ‘মহানদী’ : আধুনিকতাকে আত্মস্থ করে
প্রবাহমানতার উপাখ্যান

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সারসংক্ষেপ :

বাংলা সাহিত্যের বিশ্ববিখ্যাত কথাকার মহাশ্বেতা দেবী বলেছেন যে, একজন সাহিত্যিকের থাকা উচিত সময়ের প্রতি, ইতিহাসের প্রতি দায়বদ্ধতা। সমাজ, ইতিহাসের প্রতি সাহিত্যিকের এই দায়বদ্ধতার সচেতন প্রকাশ আমরা পাই অনিতা অগ্নিহোত্রীর ‘মহানদী’ (২০১৫) উপন্যাসে। কর্মসূত্রে বহির্বাংলা ভ্রমণ অভিজ্ঞতালব্ধ পর্যবেক্ষণ শক্তি তথা সামগ্রিক জীবনবোধের উপলব্ধির বাণী তিনি শোনাতে পেরেছেন ‘মহানদী’ উপন্যাসে। নদীকেন্দ্রিক উপন্যাসের ধারায় মহানদী উপন্যাসটি এক উল্লেখযোগ্য নাম। মহানদীর প্রবাহমান যাত্রাপথের সঙ্গে সমান্তরাল ভাবে বর্ণিত হয়েছে উপন্যাসের কাহিনিমালা। নদী যেন সূত্রধরের মতো আমাদের নিয়ে যায় নানা জনপদের মধ্যে। নদীর গতিপথ

ঘিরে রয়েছে স্বতন্ত্র স্বতন্ত্র কাহিনিমালা। মহানদী উপন্যাসটি সেই সব কাহিনিমালার এক বৃহৎ সঙ্কলন। ঔপন্যাসিক অনিতা অগ্নিহোত্রীর অসাধারণ লেখিকাসত্তার মুনশিয়ানায়সমাজ— ইতিহাস— রাজনীতি-অর্থনীতি সমস্ত কিছুই যেন নিখুঁত ভাবে চিত্রায়িত হয়েছে কাহিনির বয়ানে। সমান্তরালভাবে সুনিপুণ শিল্পীর মতো তিনি তাঁর কলমের বর্ণমালায় সম্পৃক্ত করেছেন সে সব অঞ্চলের লোকসংস্কৃতি ও লোকসাহিত্যকে। পশ্চিমবঙ্গের বাইরে প্রবাহমান নদীকে কেন্দ্রবিন্দু করে মহাকাব্যিক কাহিনিমালা সঙ্কলিত উপন্যাসরূপে ‘মহানদী’ সমগ্র বাংলা সাহিত্যে এক অনন্য সংযোজন।

মহানদী, হীরাকুদ বাধ, রামায়ণ গ্রন্থ, লোকপুরাণ, লোককথা, মছল সই, হিউয়েন সাঙ, কবিরাজী চিকিৎসা ব্যবস্থা, প্যালিওলিথিক যুগ, মেসোলিথিক যুগ, লোক গান, লোক উৎসব ঝন্টানুয়া ব্রত, স্কন্ধ আদিবাসী সমাজ, কৈবর্ত সমাজ, রাজোয়া আদিবাসী সমাজ, লৌকিকদেবী লঙ্কেশ্বরী, লৌকিক দেব—দেবী, সিদ্ধার্থের বোধীসত্ত্ব লাভ, বুদ্ধমূর্তি, মার্জাকুদ দ্বীপ, ফাইলিন ঝড়, সুভাষচন্দ্র বোস, তাঁত ও রেশম শিল্প, জয়দেবের গীতগোবিন্দ কাব্য, পঙ্কো বিরোধী আন্দোলন, গান্ধীবাদী আন্দোলন, সমাজবাদী আন্দোলন ইত্যাদি।

মূল প্রবন্ধ :

বিশ শতকে নারীসমাজ পূর্ববর্তী শতকগুলিতে অর্জিত অভিজ্ঞতা ও উপলব্ধির ভিত্তিতে, দ্রুত জীবন ও জগতের নন্দনিক— জ্ঞানতাত্ত্বিক—পুনর্মূল্যায়নের নতুন নতুন পথ আবিষ্কার করে নিলেন। লিঙ্গ নিরপেক্ষ বয়ান বা সমালোচনার বদ্ধমূল ও অপরীক্ষিত ধারণাকে প্রত্যাখ্যান করে বিকল্প বক্তব্য তুলে ধরার নতুন নতুন ধরনও উপস্থাপিত হতে লাগল এ সময় থেকে। অবশ্যই এর প্রেক্ষাপটে ছিল দর্শন—বিজ্ঞান—সমাজবিদ্যার অভূতপূর্ব উদ্ভাসনে ঋদ্ধ মানবিকী ভাবনার পরম্পরা। সেই ভাবনারই দ্যোতক বলা যায় অনিতা অগ্নিহোত্রীর সাহিত্যিক দৃষ্টিভঙ্গি। কর্মসূত্রে বহুবছর তিনি ছিলেন ছত্রিশগড় ও ওড়িশায়। মহানদীর উৎপত্তিস্থল থেকে তার সুদীর্ঘ যাত্রাপথ সংলগ্ন অঞ্চলে বসবাস করেছেন দীর্ঘ সময় ধরে। পথের ধারে, বৃক্ষছায়ায় বিশ্রামকালে লেখিকা জানতে যেমন পেরেছেন ওইসব অঞ্চলে মানুষদের জীবন প্রণালী,

তেমনি খুঁজে পেয়েছেন মিথ, কিংবদন্তী, লোককথা, লোকপুরাণ। মানুষের মুখে মুখে গড়ে ওঠা জনজীবনের ইতিহাস। বিভিন্ন অঞ্চলের বুক থেকে নিঃসৃত মর্মবেদনা যা প্রবাসী বাঙালি লেখিকাকে জীবনমুখী হয়ে উঠতে সাহায্য করেছে। তিনি জীবনের পুঙ্খানুপুঙ্খের প্রতি অধিকতর মনোনিবিষ্ট হয়ে ‘আঞ্চলিক লেখিকা’র পরিণত হন এবং ‘মহানদী’র মতো কালজয়ী উপন্যাসের সৃষ্টি করেন।

একবিংশ শতাব্দীর এই প্রবাসী বাঙালি সাহিত্যিকদের মধ্যে বিশিষ্ট ওপন্যাসিক হলেন অনিতা অগ্নিহোত্রী। ভারতের বিভিন্ন অঞ্চলে বিশেষ ভাবে বিহার, উড়িষ্যা, ছত্তিশগড় ও মহারাষ্ট্র ভ্রমণের সুবাদে তাঁর উপন্যাসগুলিতে পটভূমিকা রূপে যেমন এসেছে সেসব রাজ্যের চালচিত্র তেমনি প্রতিফলিত হয়েছে অভিজ্ঞতা প্রসূত কাহিনি। অনিতা অগ্নিহোত্রী এমন একজন মানুষ, যিনি নিজের জীবনের উদাহরণ দিয়ে আমাদের বুঝিয়ে দেন মানুষের কর্মজগৎ কত বিস্তৃত পরিধি জুড়ে হতে পারে। বাঙালি মেয়ে অনিতা অগ্নিহোত্রী ইন্ডিয়ান অ্যাডমিনিস্ট্রেটিভ সার্ভিস (১৯৮০) পরীক্ষায় উত্তীর্ণ হয়ে ভারতের মহিলা কমিশন দপ্তরের সদস্য—সচিব পদ,বাণিজ্য ও শিল্প মন্ত্রণালয়ের আধিকারিক পদের দায়িত্ব পালন করেছেন অত্যন্ত নিষ্ঠার সঙ্গে। সমান্তরাল ভাবে সাহিত্য রচনা করেছেন তিনদশক জুড়ে। সাহিত্য যেন তাঁর বিভিন্ন ভাবনা ও কর্মজগতের অভিজ্ঞতারই এক স্বতন্ত্র বহিঃপ্রকাশ। লেখালেখির জগতে তাঁর হাতে খড়ি সত্যজিৎ রায় ও লীলা মজুমদার সম্পাদিত ‘সন্দেশ’ পত্রিকায়। কবিতা দিয়ে সাহিত্য জীবনের সূচনা করলেও ১৯৮০ সাল থেকে নিয়মিত গদ্য লিখতেন। প্রথম ছোটগল্প ‘দেশ’ পত্রিকায় ‘স্থানান্তর’ নামে প্রকাশিত হয়। বৈবাহিক সূত্রে চট্টোপাধ্যায় পদবী ত্যাগ করে অনিতা অগ্নিহোত্রী পরিচয়ে গদ্য, কবিতা, প্রবন্ধ, উপন্যাস, শিশুসাহিত্য ও ভ্রমণ সাহিত্য সর্বত্রই সচেতনভাবে লিখে চলেছেন। প্রকাশিত গ্রন্থ তালিকায় রয়েছে চল্লিশেরও বেশি গ্রন্থ নাম। সুইডিশ, ইংরেজি, জার্মান-এর মতো বহু বিদেশি ভাষায় অনূদিত হয়েছে লেখিকার পঁয়ত্রিশটির মতো গ্রন্থ। বঙ্গীয় সাহিত্য পরিষদ, ক্রসওয়ার্ড ইকোনমিস্ট পুরস্কার, ২০১১(‘সেভেনটিন’ গল্প সংকলন গ্রন্থের জন্য), ভুবনমোহিনী দাসী স্বর্ণপদকের মতো একাধিক পুরস্কারে সম্মানিত হয়েছেন লেখিকা অনিতা অগ্নিহোত্রী।

লেখিকা মহানদী উপন্যাসটি লেখা শুরু করেন ২০০৯ সালে। গ্রন্থাকারে প্রকাশিত হয় বৈশাখ, ২০১৫-এ। বারোটি পর্বে বিন্যস্ত এই উপন্যাস কোনও এক বিশেষ অঞ্চলকে নিয়ে নয়, মহানদীর জন্ম রহস্য উত্থাপন থেকে সুদূর বিস্তৃত জল প্রবাহের উত্থান—পতনের মধ্য দিয়ে বঙ্গোপসাগরে সঙ্গম পর্যন্ত উপন্যাসের কাহিনির পরিধি। উপন্যাসের বিষয়-পটভূমি ইত্যাদি বলতে আমাদের যে প্রথাগত ধারণা তার সঙ্গে ‘মহানদী’র আখ্যানকে মেলানো যায় না। প্রকৃত প্রস্তাবে ‘মহানদী’-তে বিষয়-কাহিনি-আখ্যান এসব কোনও কিছুই নেই। আছে শুধু মহানদী-ই। আছে তার নিরলস বয়ে চলা। এই প্রবাহমানতাই উপন্যাস। নদী এগিয়ে চলে, উপন্যাস এগিয়ে চলে, পাঠক এগিয়ে চলেন, লেখকও এগিয়ে চলেন। এই সমস্ত চলা যেন একই তালে চলে। যেমন তালে নদী চলে তেমনি করে চলে উপন্যাসের কাহিনি।

‘মহানদী ভারতের অন্যতম দীর্ঘ ও বৃহৎ একটি নদী’। ছত্তিশগড়ের ধর্মতরি জেলার সিহাওয়া পর্বতের পাদদেশ থেকে বেরিয়ে ছত্তিশগড়ের ভিতর দিয়ে প্রবাহিত হয়ে ওড়িশায় প্রবেশ করেছে। ১৯৫৫ খ্রিস্টাব্দে ওড়িশার সম্বলপুরে মহানদীর বাঁধ বেঁধে তৈরি করা হয়েছে হীরাকুঁদ জলভাণ্ডার। এরপর সুবর্ণপুর ও বৌদ্ধ জেলার মধ্য দিয়ে বয়ে মহানদী টিকরপাড়ার গভীর অরণ্যসংকুল গিরিখাতের মাঝখানে এসে পড়েছে। এখান থেকে নয়াগড় হয়ে কটক জেলার মধ্য দিয়ে বয়ে মহানদী জগৎসিংহপুরের কাছে বঙ্গোপসাগরে মিশেছে।^{২২}

হাজার কিলোমিটারের বেশি যাত্রাপথে আছে পাহাড়-পর্বত-মালাভূমি-গিরিখাত-অরণ্য-সমতলভূমি-উপনদী-শাখানদী-মোহানা-অজস্র জনপদ-গ্রাম-শহর-বন্দর-জনহীন প্রান্তর ইত্যাদি। আর এই সবই শেষ পর্যন্ত হয়ে উঠেছে মহানদীর জঙ্গম আখ্যানের পটভূমি। জলাধার এবং সেই সূত্রে নদী কত কত গ্রামকে নদীতে পরিণত করে দেয়। নদী যেমন বহু ইতিহাসকে মুছে ফেলে, তেমনি তাকে কেন্দ্র করে নতুন নতুন ইতিহাস তৈরি হয়। আসলে নদী বয়ে চলে ইতিহাস নিয়ে। যে সকল অঞ্চলের উপর দিয়ে মহানদী প্রবাহিত হয়ে চলেছে সেই সব অঞ্চলের মিথ-কিংবদন্তী-লোককথা-কৃষ্টি-সংস্কৃতি-অর্থনীতি-রাজনীতি-ঐতিহ্য... জনজীবনের প্রতিটি স্মৃতি-অনুস্মৃতি বয়ে নিয়ে চলেছে মোহানার দিকে। সমুদ্রের বাতিঘরে গিয়ে যাত্রা শেষ হয়েছে। এই যাত্রাকালে নতুন নতুন ইতিহাস তৈরি করতে করতে এগিয়েছে মহানদী।

সেই ইতিহাস-ই বিভিন্ন পর্বের ছোট ছোট এলোমেলো কাহিনিগুলোকে ছুঁয়ে আছে। প্রবহমানতা, জঙ্গমতাই ‘মহানদী’ উপন্যাসের মূল সুর। গ্রন্থনার মধ্যেও আছে এই জঙ্গমতা। পর্বের কাহিনিগুলির সূত্রে নদী এগোয়নি। নদীর সূত্রে এসেছে কাহিনিগুলি। প্রতিটি পর্বের কাহিনিগুলিও হারিয়ে গেছে কালের নিয়মে। কিংবা মহাসমুদ্রে যাত্রা করেছে। নদীর স্রোতধারার মধ্যে যে রহস্যময়তা থাকে তার উৎসার বিভিন্ন পর্বে উৎকীর্ণ। কোনও কোনও কাহিনি মোড়া আছে রহস্যময়তায়। সেই রহস্যময়তা জীবনের রহস্যময়তা। মহানদীর রহস্যময়তা। অধিকাংশ ক্ষেত্রে ব্যক্তি চরিত্র যতটা না গুরুত্ব পেয়েছে তার থেকে বেশি গুরুত্ব পেয়েছে জনপদগুলির সামগ্রিক যাপন। এবার উপন্যাসের সামগ্রিক আখ্যান সম্পর্কে সংক্ষিপ্তধারনা নেওয়া যাক।

‘বৈদ্যরাজ’ হচ্ছে উপন্যাসের প্রথম পর্ব। পর্বটিতে লেখিকা মহানদীর জন্ম সম্পর্কিত লোক কাহিনির প্রসঙ্গে বলেছেন— প্রাক রামায়ণ যুগে চোখ বন্ধ করে তপ করতে আসা ঋষির কন্ডলু থেকে গড়িয়ে পড়া জলধারা ক্ষুধাত নদীতে পরিণত হয়। জনবহুল এলাকাকে ধ্বংসের হাত থেকে রক্ষার্থে ঋষির আদেশ অনুসারে প্রবাহিত জলধারা দিক পরিবর্তন করে পূর্ব থেকে পশ্চিমে। ফলে কীর্তিনাশিনী নদী থেকে জীবনদাত্রী মহানদীর জন্ম। সেই সঙ্গে সুদূর চীন থেকে সপ্তম শতাব্দীতে পরিব্রাজক হিউয়েন সাঙ পরিভ্রমণের এবং প্যালিওলিথিক আর মেসোলিথিক যুগের বহু প্রত্নতাত্ত্বিক নির্দশনের কথা রয়েছে। তবে প্রধানকাহিনি রূপে বর্ণিত হয়েছে গৌড় জাতির খ্যাতানামা বৈদ্য তুলারাম ধুরু ও ফরেস্টার অবধূত সিং এর কথা। ভারতীয় ঐতিহ্যের বহু প্রাচীন কবিরাজি চিকিৎসা ব্যবস্থাকে তুলে ধরেছেন লেখিকা তাদের কাহিনি বয়ানের মধ্য দিয়ে। উপন্যাসের দ্বিতীয় পর্ব ‘মহল সই’। বুড়ো মহল গাছের ফুল আঁজলা ভরে সই পাতানো, জন্মজন্মান্তরের বন্ধুত্বের বন্ধনের কথা। মানেশ্বর গ্রামের মেয়ে হিমিরানি আর আদিবাসী মেয়ে মালতীর মধ্যকার মহল সই-এর কাহিনি। যাদের সম্পর্কের মধ্যে নিষ্ঠুর আঘাত এনেছিল ১৯৪৮ সালের এপ্রিলে হীরাকুদ বাঁধের পরিকল্পনা। ন্যায় ক্ষতিপূরণ ছাড়াই সরকারের উচ্ছেদ প্রক্রিয়ার মর্মবিদারী ছবি তুলে ধরেছেন লেখিকা লোকগানের মধ্য দিয়ে —

‘ডুব—ডুব—ডুবাই দেলা পানিকে—নানি মোর যৌবানী—মৌসা,
কেনকে জিমা,কেন্নে রহিমা, মৌসা কেনকে জিমা কহতা—কঁছ আইলা
ড্যামসরকার—নিয়া পরসা—উঠা বাসা—ঘরদুয়ার ছাড়ি পলটা—’^{২৬}

তৃতীয় পর্ব ‘সুবর্ণপুর’-এ হীরাবুঁদ জলভান্ডার থেকে কিছুটা দক্ষিণে
তেল, সাক্ষী ও অং নদীর মিলিত শহর হল সুবর্ণপুর। নৌকা বিহারের অছিলায়
আত্মগোপন করতে আসা দিল্লি বিশ্ববিদ্যালয়ের অধ্যাপক সমাজবাদী কর্মী
স্মিতা কুজুর কথা, কৈবর্তদের দেবী লক্ষেশ্বরীর মাহাত্ম্যের কথা, দাসমতী—
গৌরী—রাজঘাট এবং দিলবাহারপুরের জঙ্গলের কথা। ‘উপনদী’ পর্বে তেল
নদীর পাশ্বেবর্তী সুবর্ণপুর ও বরগড় জেলার বিশ্বখ্যাত তাঁত এবং রেশমশিল্প
ও শিল্পীদের দৈনন্দিন জীবনযাত্রার চিত্র। রাষ্ট্রপতি পুরস্কারপ্রাপ্ত শিল্পী মথুরা
মেহের প্রায় বন্ধ হয়ে যাওয়া নিজ পৈতৃক পেশাকে অতি দারিদ্রতার মধ্য
দিয়েও ভালোবাসার প্রসঙ্গ যেমন রয়েছে তেমনি অপর দিকে মুনাফালোভী
ব্যবসায়ী নবীন ও প্রবীণ প্রজন্মের দৃষ্টিভঙ্গির পার্থক্যের কথাও তুলে ধরেছেন
লেখিকা আলোচ্য পর্বে। ‘প্রত্নবিবাদ’ পর্বে বৌদ্ধ ধর্ম সাধনাকেন্দ্রিক ও দেশের
প্রাচীন প্রত্নতাত্ত্বিক নির্দেশন গুলির কথা বলেছেন। গ্রামের হাইস্কুলের
হেডমাস্টার হারাধন বাবুর ঐতিহাসিক নির্দেশন অনুসন্ধান প্রীতির মধ্য দিয়ে।
সেই সঙ্গে লৌকিক পার্বন ‘বন্টানুয়া’ ব্রতের কথা — নতুন ফসল সর্বপ্রথম
দেবতাকে উৎসর্গ করার পর নিজেদের ভাগ করে খাওয়া প্রথার কথা তুলে
ধরেছেন। এছাড়া মার্জাবুদ দীপে গ্রামপতি ও পীতাবলী দু’জন কন্ধ
আদিবাসীদের আরাধ্য লৌকিক দেবীর কথা। ‘নির্জন, গভীর’ পর্বে হীরাবুঁদ
বাঁধনির্মানের ফলস্বরূপ আশে পাশের জমিতে জলাভাব, সেই সঙ্গে দীর্ঘ
প্রায় বারো বছর ধরে অনাবৃষ্টির সুবাদে কন্ধ আদিবাসীদের দুর্ভিক্ষের দিনগুলির
জীবন চিত্র চিত্রিত করেছেন লেখিকা অনিতা অগ্নিহোত্রী। নিজ জন্মভূমির
প্রতি নাড়ির টান ও ভালোবাসার চিত্রও তুলে ধরেছেন। প্রসঙ্গত স্মরণীয়
স্কন্ধ বুড়ো হরমুদের গল্পকথায়—

‘আমি ওদের তাই একটু অভ্যাসটা টিকিয়ে রাখার তালিম দিচ্ছি। আমি
তো ঝরাপাতা, যে কোনও দিন মরণ আমায় উড়িয়ে নিয়ে যাবে।....তারপর
যদি বৃষ্টি আসে, ছেলেগুলো চাষবাস করে আর খেতে পারবে না, কারণ
চাষের অভ্যাস ভুলে গেছে।’^{২৭}

সেই সঙ্গে এসেছে পুরাণের প্রসঙ্গ। জনক নন্দিনী সীতা দেবী ও বৃষ্টির দেবতা ইন্দ্রের প্রসঙ্গ। “নীলমাধব”পর্বে রয়েছে নদীর চলনের দুর্নিবার গতির মতো সমস্ত সামাজিক বাধা অতিক্রম করে অবিবাহিত শবর রমণী আশাবরীর জননীসত্তার কাহিনি। মহানদীর সমতলে সমুদ্রের নিকটবর্তী স্লথ গতির মতো এসেছে সুভাষচন্দ্রের আদর্শে অনুপ্রাণিত ইন্দ্রনাথ মহান্তি ও তাপসীর বিচ্ছেদের মধ্যে সুগুপ্ত সচল প্রেমের কাহিনি। সুভাষ যেমন তার সবকিছু দিয়ে দেশকে ভালোবেসেছিল তেমনি ভাবে ইন্দ্রনাথ ভালোবেসেছে তাপসীকে। আজীবন প্রতিক্ষা করে চলেছে তার ভালোবাসা পাওয়ার।

‘টানি ও ভরনি’ পর্বে আছে তসর রেশম শিল্পীদের কাহিনি। মহানদীর উপকূল সন্নিহিত বাঁকি—তিগিড়িয়া—মানিয়াবন্ধর কাছাকাছি প্রায় দশটি অঞ্চল জুড়ে রয়েছে রেশম তসর সুতোর শিল্পীদের বাসস্থান। আশির দশকে রেশমের সুতো সবচেয়ে সহজে আমদানি হতো দক্ষিণে ব্যাঙ্গালুরু ও পূর্বে মালদহ থেকে। টানি ও ভরণী দুই ছিল উত্তম রেশম সুতোর নাম। টানি আমদানি হতো মালদহ থেকে ভরণী আমদানি হতো দক্ষিণ ভারত থেকে। দুয়ে মিলে দামী উৎকৃষ্ট তসরের কাপড় বোনা হতো। প্রসঙ্গে উপমন্যু শিল্পীর কথা। ছয় বছরের কঠিন পরিশ্রমে দেবনাগরী অক্ষরে তসরের সুতোয় স্তবক সজ্জায় সজ্জিত করে ফুটিয়ে তুলেছেন কবি জয়দেবের সম্পূর্ণ ‘গীতগোবিন্দ’ কাব্যটিকে। উপমন্যুর এই অধ্যাবসায় দেখে লেখিকা প্রসঙ্গ এনেছেন রাজকুমার সিদ্ধার্থের বোধিসত্ত্ব প্রাপ্তির কাহিনি। ‘ময়নাতদন্ত’ পর্বে যাদের হাতের কাজে শোভা পায় বড় বড় মিউজিয়াম গ্যালারি, ধনী গৃহের সজ্জালায় দোকান প্রদর্শনী সেই সমস্ত কারিগরদের অতীব দারিদ্র্য ক্লিষ্ট কুশ্রী জীবনপ্রণালীর চিত্র। অনাহারে বেঁচে থাকা কিংবা আত্মহত্যার মতো মর্মান্তিক বাস্তবোচিত সত্য ঘটনাগুলো তুলে ধরেছেন লেখিকা। ঔপন্যাসিকের কথায়—

‘অধিকাংশ মজুরের ঘরে রং ফোটাবার আলাদা পাত্র নেই। একই পাত্রে রং ফোটাচ্ছে, আবার সেই পাত্র ধুয়ে ভাত রাঁধছে। বিষাক্ত কেমিক্যাল পেটে গেলে? এদের সহজ উত্তর, গেলে যাবে। আবার আলাদা বাসন কোথেকে কিনব? তারপর ক্লিষ্ট এবং তিরস্কার ধরনে হেঁসে বলে — বেঁচে আছি, মরে যাবো, এইতো, আর কি?’^{২৫}

যা আমাদের মতো গণতান্ত্রিক দেশে উন্নতি, অগ্রগতি প্রতিশ্রুতি প্রদানকারী জনপ্রতিনিধিদের কণ্ঠরোধ করার মতো অত্যন্ত তাৎপর্যপূর্ণ বর্ণনা। ‘মোহনায়’ নদীর আঁকাবাঁকা চলনের মতো পারাদ্বীপ বন্দর সংলগ্ন কিছু বিচ্ছিন্ন জনজীবনের চিত্র। উপন্যাসের শেষ পর্ব ‘বাতিঘর’-এ লেখিকা পারাদ্বীপ বন্দরের পনরো কিলোমিটার পশ্চাতে অবস্থিত কুজঙ্গ অঞ্চলের জগৎ বিখ্যাত ক্ষয়িষ্ণু পানচাষীদের সঙ্গে পস্কে ইম্পাত কোম্পানি (পৃথিবীর বৃহৎ একটি ইম্পাত তৈরির কারখানা), গ্যাস কোম্পানির সঙ্গে আন্দোলনের কাহিনি বলেছেন। জগৎসিংহপুর, সুন্দরগড়, কটকের মতো অঞ্চলের পানচাষীদের প্রতিবাদের কাহিনি। কারখানা প্রতিস্থাপনের জন্য অন্যায় ভাবে পানচাষের জমি দখল, চাষীদের চাষাবাসে বাঁধা দেওয়া, চাষীদের পানচাষ থেকে বিরত করে ব্যবসায়ী শ্রমিক পেশায় রূপান্তরকরণের প্রচেষ্টা ইত্যাদি। ব্যবসায়ী সমিতির প্রতিনিধি সীমন্তের কথা প্রসঙ্গে পস্কেবিরোধী আন্দোলনের দলনেতা শ্রীকান্তের আত্মমনোমুগ্ধক উক্তি—

‘শালা মানুষ রাস্তায় পড়ে মরছে, আর তুমি বাণিজ্য দেখাচ্ছ! বাণিজ্যে বসতে লক্ষ্মী! হ্যাঁঃ, লক্ষ্মীর পো!’^{২৬}

শুধু ছেলেরা নয় মেয়েরাও এই আন্দোলনে গুরুত্বপূর্ণ ভূমিকা নেয়। যেমন নিয়ে ছিল মৃত্তিকা, পার্বতীর মতো মেয়েরা। মহানদী যেমন পারাদ্বীপের কাছে বঙ্গোপসাগরে মিলিত হয়ে নীল—সবুজ এক হয়ে যায় তেমনি বিপ্লবী কর্মী শ্যামও পার্বতীর মধ্যকার সুগু ভালোবাসার মিলনের দৃশ্য তাদের এক হয়ে যাওয়ার ইঙ্গিত দিয়েছেন লেখিকা।

‘ডিঙিনৌকায় লম্বা হয়ে শুয়ে আছে শ্যাম... বাতিঘরের সেই অপার্থিব আকাশ—নদী মেশা আলোর ভিতরে... কিন্তু সে যেন একা নয়, আতেলা রুক্ষ মাথাটা মনে মনে আর একবার চেপে ধরে নিজের মুখের উপর, দুই ঠোঁটে সেই আশ্চর্য ঝরা মছলে (পার্বতী রূপকে) সৌন্দা গন্ধ... ভিজে ভিজে শিশির মেখে থাকা মছল ফল...।’^{২৭}

মহানদীটি যেন ‘মহানদী’ উপন্যাসের মেরুদণ্ড। উপন্যাসের সমস্ত জনপদ এবং মানুষজনদেরও মেরুদণ্ড। সমগ্র উপন্যাসে প্রচুর ঐতিহাসিক তথ্য, ঘটনা, সাল তারিখের উল্লেখ করেছেন লেখিকা। বিভিন্ন ঐতিহাসিক, প্রাবন্ধিকের

রচনাও উদ্ধৃত করেছেন উপন্যাসে। কখনো কখনো পাঠকের মনে হতে পারে এটা কোনও গবেষণা গ্রন্থ। আবার কখনও-বা মনে হয় ইতিহাসের কোনও বই। এই উপন্যাসের ঐতিহাসিকতার একটি মহৎ ঐশ্বর্য আঞ্চলিক ইতিহাস। মহানদীর প্রবহমানতার সূত্রেই এসেছে এলাকার আঞ্চলিক ইতিহাস। লেখক অসাধারণ মুনশিয়ানায় আঞ্চলিক ইতিহাস-চর্চার সঙ্গে মিশিয়েছেন লোকপুরাণ ও লোকগল্পগুলিকে। ইতিহাস-চর্চিত অজস্র আখ্যান ‘মহানদী’ উপন্যাসটিকে মহাকাব্যিক ব্যাঞ্জনা দান করেছে। সাহিত্য-শিল্প হয়তো বাস্তবের ছব্ব ছবি নয়। কিন্তু তাকে বিশ্বাস্য ও সম্ভাব্য করে তুলতে হয়। নৃতত্ত্ব-ভূগোল-ইতিহাসের নানা প্রসঙ্গ, তথ্য সাল তারিখসহ তুলে ধরে অনিতা অগ্নিহোত্রী ছুঁতে চেয়েছেন আখ্যানের বাস্তবতাকে। মহানদী যেমন বাস্তব, তেমনি এই উপন্যাসও দাঁড়িয়ে আছে বাস্তবের মাটিতে। তথ্য-নিষ্ঠ গবেষণায় শেষপর্যন্ত মহানদী হয়ে উঠেছে মহানদীর দলিল স্বরূপ। আসলে তথ্যনিষ্ঠার ভিতর দিয়ে সভ্যতার সামগ্রিকতাকে ধরতে চেয়েছেন লেখিকা। অন্য এক জীবনবোধের কথা বলেছেন। শেষ পর্যন্ত অনিতা অগ্নিহোত্রীর জীবনানুভূতির সামগ্রিকতায় সমৃদ্ধ হয়ে ‘মহানদী’ উপন্যাসটি হয়ে উঠেছে মহানদীর উপাখ্যান।

তথ্যসূত্র....

- ১। “অনিতা অগ্নিহোত্রী। মহানদী”। দে'জ পাবলিশার্স, প্রথম প্রকাশ, ১লা মে, ২০১৫, ব্যাক কভার।
- ২। “অনিতা অগ্নিহোত্রী। মহানদী”। দে'জ পাবলিশার্স, প্রথম প্রকাশ, ১লা মে, ২০১৫, পৃষ্ঠা — ১১
- ৩। তদেব, পৃষ্ঠা — ৫৮
- ৪। “অনিতা অগ্নিহোত্রী। মহানদী”। দে'জ পাবলিশার্স, প্রথম প্রকাশ, ১লা মে, ২০১৫, পৃষ্ঠা — ১৭৯
- ৫। “অনিতা অগ্নিহোত্রী। মহানদী”। দে'জ পাবলিশার্স, প্রথম প্রকাশ, ১লা মে, ২০১৫, পৃষ্ঠা — ২৮৮ — ২৮৯
- ৬। তদেব, পৃষ্ঠা — ৩২০
- ৭। “অনিতা অগ্নিহোত্রী। মহানদী”। দে'জ পাবলিশার্স, প্রথম প্রকাশ, ১লা মে, ২০১৫, পৃষ্ঠা — ৩২৮

**Religion in 21st century India: Re-evaluating its presence
and dominance**

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Abstract:

Religion has been a matter of concern in India since long. A nation which had been scarred, where millions had bled and cried, protested and recoiled, suffered and tortured in the name of religion, still witnesses multiple fissures and fractures in the societal structures as far as the issue of religion is concerned. The historical event of the PARTITION of India solely done on the basis of religion itself shows the dominance of religion in our nation. But has religion been only a disruptive and divisive force in India, have we really shown no religious tolerance, can multiple religions really co-exist peacefully here is what this paper tends to explore. In the 21st century when India boasts of immense technological progress and technical advancement and has left an indelible mark in the global cartography, it is significant to note where religion in India stands today. How far have we been able to transcend the narrow barriers of religion in an age of globalization and cosmopolitanism, can religion today provide a binding force or

do the Right to practice any religion which is a fundamental right in the Indian Constitution exists only in theory only and not in reality, how dominant and terrifying are the concepts of religious intolerance, religious fanaticism, religious terrorism and godmen worship in India in the present times form the crux of this paper. Finally it will try to show whether HUMANITY which is often considered to be the greatest of all religions can possibly supercede all to usher in Unity in Diversity in the truest sense of the term.

Keywords: Religion, partition, tolerance, fanaticism, humanity.

Year: 1893, September 11.

Swami Vivekananda delivers his iconic speech at the World's Parliament of Religions in Chicago. His address to all as "Sisters and Brothers" is a monumental event in the history of mankind and put India in focus on the global map.

Year: 1905, October 16

Rabindranath Tagore urges Hindus and Muslims to tie 'rakhi' to each other as a mark of communal harmony, unity and universal fraternity and to protest against the Partition of Bengal collectively.

Year: 1947, August 14 midnight

The Partition of India gives birth to Pakistan and the barbed wires thus drawn in turn, changed the destinies of millions. The invisible shadow lines of hatred, jealousy, rivalry, narrow mindedness, suspicion born since in the hearts of both the nations is still a palpable reality.

Year: 2002, February-March

Godhra riots in Gujarat sees the state burning and in many ways replicate the Hindu-Muslim riots of pre and post Partitioned India only to deflate the balloon of 'Communal Harmony.'

The aforementioned events and incidents present India in dichotomy. On one side India boasts of religious tolerance, harmonious existence of diverse religious faiths, beliefs and ethos

and speaks of unity amidst diversity. Assimilation of humans metaphorically transcending all disorienting and divisive barriers project a progressive India. On the other side a India which still kills and bleeds in the name of religion, shows no empathy for anyone who is not of 'MY RELIGION' has little or practically no religious tolerance and acceptance of others, is euphoric in annihilating 'the other' who does not conform to 'my religion' is the regressive India. Thus, India both progresses and regresses at the same time as far as the sensitive issue of religion is concerned. The selection of my events may posit the illusion that the regression is related to a chronological passage of time, it may mean the more India has advanced in time the more religious intolerant she has become. However, this is not true to the core. There are plethora of incidents in the 21st century India of Hinduism and Islam-the two most powerful religions in India and Sikhism, Christianity, Jainism, Buddhism etc. peacefully coexisting. This peaceful equilibrium gets destroyed when religion becomes a 'political tool' in the complex interplay of power and control in society. Whenever the policy of 'divide and rule' is followed and religion becomes the chief aspect in the election manifestoes of our political parties with an eye to secure 'the vote bank' in politics, whenever religion is used to satisfy selfish vested interests of the powerful then communal harmony and religious tolerance go for a toss and religious fanaticism gets reincarnated in diverse shapes and forms. The consequences then are anarchy, chaos, violence, terror, bloodshed and brutality being let loose. Religion, thus, occupies a significant space in India politically, socially, culturally and psychologically. It is therefore important to note what is meant by religion and where does its etymological roots lie.

A random search in the Wikipedia will define Religion as 'a range of social-cultural systems, including designated behaviours and practices, morals, beliefs, worldviews, texts[...]that generally

relate humanity to supernatural, transcendental and spiritual elements.' Its etymological origin is both from Old French 'religiun' and Anglo Norman 'religioun' meaning piety, devotion, a way of life bound by monastic vows, sense of right, moral obligation, sacred reverence for the gods. Religion's ultimate derivation is from Latin 'religio' meaning conscientiousness, sense of right, faith, mode of worship, respect for the sacred. The modern interpretation connects 'religio' with the latin 'religare' meaning 'to bind fast' thereby emphasizing on a sense of moral obligation, a bond between man and the Almighty. 'Dharma', its Sanskrit equivalent, is often used as a synonym in popular usage though 'dharma' has a wider expanse than religion. The roots of 'dharma' lies in the Sanskrit 'dhr' which means to hold on to something, to bear or support. Its various connotations include duty, right way of living, path of righteousness, to bind, firm, law, order. Thus, religion is an unifying binding force and not a divisive one. All dominant religions of the world speak of humanitarian values of love, kindness, charity, honesty, empathy, righteousness, and above all 'to be humane'. At different junctures in history it is man and man alone who has solely been responsible for 'using', 'misinterpreting' and 'misrepresenting' religion to suit his purpose and interests.

Religion when used as a means to satisfy one's vested interest and agenda, a strategic psychological conditioning of the masses is required. Therefore, men in power categorically 'brainwash' the masses. They provoke, instigate and influence the masses to rise in arms in the name of religion and engage in severe fanatic acts. Obsession and over enthusiasm with one's own religion and the violent means to obliterate people of other religions are all part of Religious Fanaticism. This unreasonable violent behaviour which is a by product of extreme beliefs in one's own religion and extreme intolerance and hatred for other religions make religious fanatics the very epitome of inhumans in the garb

of humans and the very face of bestiality wearing the mask of humanity. Religious fanatics are 'created' and 'used' as puppets by the men in power to consolidate their power, position and dominance. From instigating communal abuse to perpetrating violence and hooliganism in the name of religion, religious fanaticism is a cancerous growth within the body politic of our motherland even after 78 years of Indian Independence.

Religious Terrorism, a subsequent result of religious fanaticism, 'focuses on religious imperatives, a presumed duty or in solidarity for a specific religious group, against one or more religious groups.' It has its roots in the partition of India and since then its vicious expansion has continued. India proudly proclaims in the Preamble of the Constitution that She is a secular nation and as such there is no single recognised state religion like theocratic states. However, in reality the dominance of Hinduism over other religions cannot be ignored. But in places like Jammu and Kashmir, Punjab, the North East, Lakshadweep etc. where Hindus are a minority, Religious Terrorism do exist. The violence on the Sikhs in Punjab during the regime of Prime Minister Indira Gandhi is as much a reality as is the brutality against the Kashmiri pandits in Kashmir, the pre Partition riots and the post partition riots of 1961 Jabalpur, 1964 Calcutta, 1966 Hindu-Sikh riots, 1992 Bombay riots, 2002 Godhra riots, 2008 Kandamal violence, the 26/11 Mumbai Attack constitute the endless list of religious terrorism in India. The violence that is perpetrated and manifested in the name of religion in India is petrifying.

The ultimate objective of dominant religions across the globe is that of the unification of the human soul with the Almighty, the 'Atman' uniting with the 'Paramatman', the ultimate liberation of the soul, attaining 'nirvana'. Since time immemorial selfless religious gurus, spiritual guides, yogis, prophets and monks in India have influenced the masses in a positive way with their

religious teachings, shown them the path to righteousness, morality, ethics and have enlightened their ignorant minds. But whenever any such spiritual guides have used or use religion as a commodity that 'sold or sells' and garnered/garners 'materialistic profits' then he or she ceases to be a 'guru' altogether. The problem, however, is the inability of the Indian masses by and large to identify these 'fake' self proclaimed spiritual gurus and godmen. Religion is intrinsically connected with the concept of divinity and these godmen take undue advantage of people's strong religious affiliations and blind faith on them. As divine representatives they exploit the masses economically, morally, sexually and culturally. So, why do the masses fall prey to their clutches and become easily gullible? The reason behind this is the unflinching belief and faith of the masses on these godmen (who to them are epitomes of piety, goodness, virtue.) This unflinching faith in turn arises out of conditioned upbringing where blind adherence to religion and everyone or everything connected to it. It reminds me of Pratiba Basu's partition story *The Marooned* where Bindubashini and Uttara fall prey to Keshabananda's evil designs because of their overt religiosity. The fictionalized Keshabananda lives in many avatars in today's Gurmeet Ram Rahim Singh, Asaram Bapu, Radhe Ma just to name a few. The recent unfortunate Hathras stampede and death of nearly 150 people in the 'satsang' (religious event) of Bhole Baba alias Suraj Pal and the baba's official insensitive statement thereafter yet again marks how religion is commodified and believers are used as pawns.

It is high time we start purging religion of the pollutants of insanity, fanaticism and extremism to truly contribute to a 'Swachh Bharat'. We forget that this is the India where plurality of religions was recognized and respected since long, where 'jibe prem kore jeijon sei jon sebiche Iswar' was followed, where innumerable times humanity have been preached to be the greatest of all religions and love, charity, universal fraternity to be the very base

of our harmonious co-existence. We need to understand that all religions in their purest essence have never been fanatic or preached discrimination and compartmentalized existence. Rather let universal love, wellbeing, peace, harmony, assimilation and integration be the foundation of sustainable growth and living. Religion in 21st century India is still a dominant presence, a culturally affiliated practice but let us make it more humane. We surely can if we believe we can, the same way Neeraj Chopra's mother could appreciate and congratulate Arshad Nadeem, the same way we cheer unitedly for our Men in Blue, the same way movies and cricket make us One Nation, in a similar vein without sounding childish or too idealistic let us try and keep trying to live and be humans till our very end and practice HUMANITY as the greatest of all religions. This is a pre-requisite to save ourselves and our future generations from being obliterated and making it to the list of extinction.

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**Shri Janhava Devi: A Beacon of Women Empowerment
in Vaishnavite Cult**

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Abstract: Foreign invaders were always ostracized by Indian society. When Turks conquered the western part of Northern Bengal in the early 13th century under Muhammad bin-Bakhtiar Khilji, establishing a Muslim kingdom, orthodox Brahmin leaders imposed stringent rules on Bengali society. To avoid the touch and attacks by Muslim rulers, Hindu leaders enforced Hindu laws during the medieval period, confining women to their homes and worsening their conditions. This condition was changed-by Vaishnavite movement in Bengal led by Sri Chaitanya Deva and Sri Nityananda Mahaprabhu. Vaishnavism, particularly its liberal strains, transformed the lives of women. Vaishnava literature depicted a joyful and peaceful existence for Vaishnava women. One of the most notable figures among them

is Sri Jahnava Devi, who was the spouse of Sri Nityananda Mahaprabhu. Jahnava Devi not only mastered scriptural knowledge but also surpassed male gurus, empowering other Vaishnava women. This discussion explores how Jahnava Devi became a renowned female Guru, leading the Vaishnava cult after Sri Nityananda Mahaprabhu and serving as a role model for others.

Key Words: Turkish invasion, orthodoxy in Bengali society, Vaishnavism, liberalism, Janhava Devi, religious leadership, women empowerment.

Introduction:

The period of *Smriti Shastra* began to start after the invasion of the Turks in Bengal. The orthodox Brahmin leaders of Bengal started to introduce their own Hindu rules and regulations with a view to protect the Hindu society, particularly the Hindu women. Such activities of the Brahmins made the situation of the women more miserable. To get rid of this tyranny Sri Chaitanya Deva and His liberal *Vaishnava* religion took a challenge to combat the oppressive *Smarta* laws as well as the buttressed social modes. The then social perspectives in Bengal began to response in favour of the Vaishnavite movements. Especially the condition of women within Vaishnava society was changed remarkably at the advent of the trend of liberalism introduced by Chaitainya Deva. Such changing features in Vishnava society led to emerge some female gurus and few of them became so powerful that they acquired the position equivalent to that of other male *Vaishnava* leaders. Janhava Devi was one of those powerful women who was even accepted as *Gurumata* by other Chaitanya-followers. This occurrence could be seen as a women empowerment through *Vaishnava* movement. Now the pertinent question is how it was possible for her to succeed the challenges attributed by the dominant patriarchal notions and whether the then other societies were also influenced by her or not. However,

this current work attempts to answer these problems to some extent.

From the very beginning of evolving of concept of human-family in the world it was inevitable to conjugate woman. In the period of 'Mahabharata' women were in much respected positions even in religious spheres. As a reference a remarkable verse of 'Mahabharata' - "यत्र नार्यस्तु पूज्यन्ते रमन्ते तत्र देवताः।यत्रैतास्तु न पूज्यन्ते सर्वास्तत्राफलाः क्रियाः।"

"¹ may be recalled. After hundreds of years almost the same thing was echoed by Rabindranath Tagore - "In a nation where women do not get any service, but they- themselves are only serving, in such a country they are humiliated, insulted and that country is Godless".²-Though in the Vedic age the rights and power of women were shrunked to a great extent in many spheres. And during the early medieval period, the situation worsened.

Later on, particularly during pre-Chaitanya period the overall situation of the women was worsened a lot in general. As a result of invasion of Turks, the ongoing culture and society in Bengal had undergone certain radical changes. Imposition of Islamic religion and culture had a deep impact in Bengali culture and society. The predominant Bengali society and culture began to treat the Islamic religion and culture a pervading one and deemed it to be strong enough to pervert the moral and ethical codes those were then in vogue. Raghunandan and his *Navyanaya* group (contemporary hegemonic Brahmin personalities) then wanted to shackle the Bengali society with some orthodox rules and regulations of the *Smarta* tradition (the scripture of Hindu code of conduct) as a defensive response to protect the Bengali societies, especially the Hindu women, from their perversion by the intruding religion and culture. On the other hand, the then *tantrism* began to adopt various malpractices to mitigate the antinomies. But all those eventualities and consequences resulted into severe oppression to the women imposing various rules, rites

and rituals against them. Various religious texts, articles, and literatures claim that the situation of the women in pre-Chaitanya period was badly oppressive as a result of patriarchal and Brahmin ruling. Child marriage, polygamy of *koulinya-tradition*, the *Sati* system (committing suicide into husband's funeral pyre) and more than that, lots of restrictions even within own family made the condition of the women intolerable in pre-Chaitanya and even during His contemporary period.³

But Sri Chaitanya Deva and His liberal Vaishnava religion did not bear with such oppressive *Smarta* laws and *tantrism* for the sake of maintaining the social equity and of course, the then social perspectives of Bengal buttressed the Vaishnavite movements. His liberal *Namadharma* (in the name of Lord Krishna and Radha) influenced all the societies, religions and cultures considerably. Though as an ascetic He used to keep himself away from women consciously, all of His disciples, especially Nityananda Mahaprabhu were instructed to preach the *Namadharma* to men and women indiscriminately and in general. Just like Ananda of Goutam Buddha, Peter and Paul of Jesus, Abu Bakar of Hazrat Muhammad, Vivekananda of Ramakrishna Paramhansa Deva, Nityananda Mahaprabhu was the salient disciple of Sri Chaitanya Deva to preach the *Namadharma*. That is why Vaishnava followers still sing “*Nitai eneche naam/ bolo Hare Krishna Hare Ram*”⁴ (Nitai has spreaded the majesty of Lord Krishna on the Earth,-hence chant the name of Krishna and Rama). As a result of such gender-indiscriminate preaching situation of the women in Vaishnava as well as in upper class societies began to be upgraded. In this perspective some female *gurus* evolved in *Vaishnavite* cult and amongst them the most remarkable name is Sri Janhava Devi Mata, the spouse of Sri Nityananda. Unlike pre-Chaitanya period Sri Nityananda Mahaprabhu began to treat men and women equal in the field of religious rites and rituals in the second half of 16th

century. This also helped many women to read and write, like Janhava Devi, Subhadra Devi, Hemlata Devi, Kanchanlatika Devi and so on. At the end of the sixteenth century they were allowed to take part in scholastic activities.⁵

According to 'Sajjantoshoni' Journal (4th edition) Sri Janhava Devi was born in 1409/10 in Bengali era at Ombika Kalna, India. Her father, Sri Surjadas-Sarekhela was a resident of Shaligram. He received the title "Sarekhela" as he used to keep the accounts for the king of Gaur Desh. His mother's name was Sri Kamala Devi. Surjadas had two daughters: Sri Vasudha and Sri Jahnava (younger).

There is a religious story behind the marriage of Sri Janhava Devi with Sri Nityananda. In 'Gaur-ganoddesh-dipika' it is stated that Sri Janhava and Vasudha are the expansions of Baruni and Revati of Vrindaban respectively and Surjadas-Sarekhela, whose body effulgence is like the sun, is an expansion of Kakudmir, the king of Raivat. The two Lords Gauranga and Nityananda were very affectionate to him. Seeing that his two daughters had reached the full bloom of their youth, he began to contemplate their marriage. Thinking in this way, he fell asleep and, in his dream, he saw that in a very happy mood he was presenting his two daughters to Nityananda Prabhu. Having seen such a wonderful dream, he began to float in an ocean of bliss. Then Surjadas offered his two daughters in marriage to Nityananda.

Another oral story is that when Nityananda Mahaprabhu came to marry Vasudha Devi, Janhava Devi was serving him foods and that time Nityananda Mahaprabhu told her that she is the perfect company (*Sadhan Sangini*) to worship Lord Krishna and to preach Her *Namadharma* together. Thus the marriage ceremony was very auspiciously performed and Nityananda Prabhu stayed at Shaligram with his two newly wedded wives for a few days. Then after roaming few disciples' homes Nityananda Prabhu came to Khardaha and began to settle there.⁶

After her marriage Sri Janhava Devi started to accompany Sri Nityananda Mahaprabhu in various religious activities, discussions, study of scriptures and in absence of Nityananda Mahaprabhu Janhava Devi started to supervise the religious occasions and programmes. Even sometimes it was told that in many occasions Janhava Devi came into controversy with Nityananda Mahaprabhu regarding many religious matters which proves her depth in knowledge, inner power and strength which was very uncommon in women in that time.

After some time, Shri Vasudhadevi gave birth to a daughter named Ganga and a son named Virachandra/Virabhadra. Shri Janhavadevi, on the other hand, had no child. It is told that her intrinsic devotion to the religious activities made her reluctant to family life. After disappearance of Nityananda Mahaprabhu Janhava Mata was the most powerful and respected Vaishnava Guru of Vaishnava and at the same time of some other societies also.

In absence of Sri Advaita Acharya, Sri Nityananda Prabhu, Srivas Pandit and many other associates of Sri Goursundar, Sri Janhava Mata with her son Birabhadra used to continue the rest works of her husband. She was the first Vaishnava woman who took the role of initiation to men and women. Virabhadra was the first male Vaishnava who received initiation from his mother Janhava Mata. Sri Nityananda Das (writer of '*Prem Bilash*'), Gyandas, Janhava's-adopted son Ramai and his brother Sachin Nandan received initiation from Janhava Mata. There were so many disciples and followers of Janhava Mata all over Bengal and Orissa. After the disappearance of Sri Chaitanya Deva, Nityananda Mahaprabhu and Adwita Acharya Vaishnava society of Gour Banga lost its usual direction and became bewitched. But at the end of the 16th century and first of the 17th century Janhava Devi and Virabhadra in association with Shyamananda, Sri Nibash Acharya, Narottom Das Thakur, Sri khanda group

and Shantipur group actively hold the robe of the boat.⁷ It was Janhava Devi accompanied by her son Virabhadra who spread Vaishnavism and doctrine of Chaitanya Deva rapidly throughout Bengal and some parts of Orissa and Vrindavana which was then too much difficult by a woman.

She not only strongly hold the robe of the Vaishnava lineage but also was honoured in many places as prestigious religious teacher of the Vaishnava society. At that time Janhava Devi was so famous as a *Guru Mata* that she was especially invited by three powerful Acharyas viz. Shyamananda, Srinibash Acharya and Narottom Das Thakur to take part in the religious festival to be held at Kheturigram which was conducted by them under the patronage of Narottom Das Thakur's cousin, Raja Santosh Datta. On the way to Kheturigram she at first went to her uncle Gauri Das Pandit's temple at Kalna, where she was Godlessly accepted by the followers of Vaishnava offering flowers and garlands etc. In the festival at Kheturigram some the then famous religious personalities like Sri Krishna Das Mishra (her uncle), Mineketan Ramdas, Murari Chaitanya, Jnana Das, Sri Parameswari Das, Balaram Das, Sri Brindavan Das Thakur, and other dear devotees of Lord Nityananda Prabhu were present. There all the organizers and members were so pleased with and devoted to the auspicious presence of Janhava Devi that king Santosh Datta himself welcomed her with respect and politeness.⁷ Regarding this festival Nityananda Das has written in '*Prem Vilash*' that "*Srijanhava Gosain nam-kebol-premomurti/ Kiba obotirno-hoila-Chaitanyero shakti*".⁸ This festival was accomplished with her unprecedentedly wonderful performance; even Srinibash Acharya, Narottom Das and Shyamananda were directed by her. Here she herself cooked foods for and served to not only the two Lords: Nitai and Gauranga, but also other followers. In the evening she conducted and performed a *namsankirtana* programme. She was adorned in the supreme position in that occasion.

Shrila Thakura-Bhaktivinoda offers her prayer to Jahnava Mata in *Kalyana-kalpa-taru* like “Oh Jahnava Devi! By the power of your divine qualities, be merciful to this servant of yours. Dispel this illusion which torments me. And relieve me of material existence. Let me take shelter at your lotus feet. You are Nityananda-shakti, the divine energy of Lord Nityananda Himself. You are the guru of Krishna bhakti. Be merciful to me and grant me the shade of your lotus feet, which are like a desire tree. You have delivered countless abominable sinners. Please deliver me in the same way. Today, praying for your mercy, this lowly sinner falls at your holy feet”.⁹ According to ‘*Bhakti Ratnakar*’ and ‘*Premvilash*’ she was full of affection, love and devotion and all these verses prove the inner power, strength and majesty of Sri Janhava Devi.

After presiding over the festival of Kheturigram, Janhava Devi decided to go to Vrindavana. On the way she passed through Prayag and Kashi and arrived in Mathura. To offer her a warm welcome some of the Vrindavana-devotees met her in Mathura. There she visited the holy birthplace of Lord Krishna, and after bathing in the *Vishrama Ghata* she entered Vrindavana. Sri Parameshwari Das and Narottam Das describe that many Goswamese of Vrindavan met her and some of them were Roop Goswami, Gopal Bhatta Goswami, Sri Jiva Goswami, Bhugarbha Goswami, Scholar Loknatha, Krishna Dasa Brahmachari, Sri Krishna Pandit, Sri Madhu Pandit and many others. All of them were introduced to Jahnava Devi by Jiva Goswami. All the Goswamese offered their *pronams* to her. There they discussed different types of scriptures with Sri Janhava Devi. This incident proves her depth in religious knowledge, position in Vaishnava society which is very astonishing, because at that time all these Vrindavana-Goswamese were very much rigid and reluctant to women unlike Gauriya Vaishnavism i.e., Nityananda-tradition.

She visited Vrindavana twice (thrice in another opinion) to preach *Vaishnavism*. During the second visit at Vrindavana, she enlightened many sinners and guided them to the right direction. It is found in '*Bhaktiratnakar*' that there was a dacoit named Qutubuddin who along with his associates were retrieved by Janhava Devi and all of them took Vaishnava religion.¹⁰ She helped lots of people on the way to Vrindavana when they were in troubles and difficulties. There are many other instances of her magnanimity.

Janhava Devi was an ideal better half of Nityananda Mahaprabhu. She exerted all sorts of her physical, mental, philosophical, spiritual and devotional power to preach the *Gournama* and principles of Sri Chaitanya Deva in very sincere and confident but polite manners. That is why she was regarded as an ideal *Guru Mata* by all classes of people. Her idols have been placed in many areas of Bengal, Orissa, Vrindavana etc; somewhere alone and somewhere along with Nityananda Mahaprabhu. She is still worshiped by many disciples. She was able to raise herself in a position to control the Vaishnava society successfully just like her male predecessors, which was a very challenging duty for a woman at that time. Sri Biman Bihari Majumder stated in his article '*Vaishnava Sahitye-Samajik-Sahityer-Upokoron*' that "after the death of Nityananda Mahaprabhu from the influence of his spouse we can derive a picture of Bengali women in general". He also stated that "Janhava Devi is very suitable to acquire the supreme position among the Bengali women". Dinesh Chandra Sen said in his book 'Chaitanya and His Companions' that "Janhava Devi, after her widowhood became a conspicuous figure in the Vaishnava community for a long time and honoured for her high character".

Conclusion:

However, liberalization of the philosophy of Vaisnavism and introduction of *Namadharma* by Sri Chaitanya Deva,

revolutionary preaching of Chaitanya's philosophy by Nityananda Mahaprabhu and particularly emergence of Janhava Devi as a widely acknowledged *Gurumata* helped the Vaisnava-women to elevate their situations radically. Occupying the supreme religious position by a woman (since the societies were then operated by the verdicts of the religious leaders) also encouraged the distressed women of other religions and societies to wake up. Thus, shrinkage of concept of child marriage and polygamy system, silent insurgency against sati system, participation of women in *Sahajiya* and other mystic lineages etc got an accelerated pace in Vaishnava society during 17th century onwards. Though the reflection of such changes was not so prominently observed in the rest of the societies in the then Bengal.

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A Literature Review of Global Warming

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Abstract:

Global warming is the primary threat to the global community at present. It is long past the stage to be ignored. This paper attempts a literature review of the global warming problem. Global warming has a wide range of impacts, from the melting ice caps and rising seas to the more insidious threats to biodiversity and human health. The vital ecosystems are under threat, leading to the loss of biodiversity and increased vulnerability of local communities. It reveals the need to emphasize a comprehensive approach integrating technological innovation, policy reforms, and behavioural changes.

Keywords: global warming, greenhouse gases, awareness, temperature

The spectre of global warming looms large over our 21st-century landscape, casting shadows across continents and

oceans, infiltrating our daily lives, and challenging our collective future. Once a mere whisper in the annals of scientific discourse, this phenomenon has burgeoned into a clarion call for immediate action, a testament to human activity's profound impact on our planet's delicate equilibrium. As the mercury rises and weather patterns grow increasingly erratic, the urgency to comprehend and combat global warming becomes ever more pronounced.

Fundamentally, global warming is the gradual increase in Earth's average surface temperature, primarily due to the accumulation of greenhouse gases in the atmosphere. By trapping heat, these gases create a warming blanket around the globe, exacerbated by the relentless march of industrialization, deforestation, and an insatiable appetite for fossil fuels. Imagine that CO₂ emissions were highest in the last 2 million years, glacial melt highest in 2000 years, last decade temperatures highest in 125000 years, sea water level rates highest in 3000 years, arctic glacier coverage smallest in 1000 years, ocean acidification highest in 25000 years and ocean warming is highest since the ice age and if all this does not ring a bell then what else will. The ramifications of this warming are far-reaching, affecting not only the natural world but also the very fabric of human society.

The narrative of global warming is not merely one of the scientific data and environmental shifts; it is a story of human endeavour and its unintended consequences. It is a tale of how our quest for progress and prosperity has inadvertently set us on a collision course with the systems sustaining life on Earth. It is a call to introspection, urging us to re-evaluate our relationship with nature and to forge a path towards sustainability and resilience.

In the following pages, we will embark on a journey through the multifaceted landscape of global warming. We will delve into its causes, exploring the intricate web of human activities fuelling this global crisis. We will examine its impacts, from the melting ice caps and rising seas to the more insidious threats to biodiversity

and human health. Finally, we will discuss the strategies and solutions that offer a glimmer of hope in this unfolding drama, highlighting the pivotal role of innovation, policy, and global cooperation. As we navigate this complex issue, it becomes clear that global warming is not just an environmental challenge but a moral imperative and an existential threat. It demands that we summon the best of our scientific knowledge, technological prowess, and collective will to safeguard the future of our planet. This essay aims to illuminate the path forward, providing insights and inspiration for the journey ahead.

Global warming, a term first popularized in the late 20th century, refers to the long-term rise in Earth's average surface temperature due to human activities, particularly the emission of greenhouse gases. The Earth's climate, as known, is regulated by a delicate balance of energy exchange between the sun, the atmosphere, and the Earth's surface. Solar radiation enters the atmosphere, where the Earth absorbs some of it, warming the surface. The Earth, in turn, radiates energy back into space through infrared radiation. Greenhouse gases, such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), trap some of this infrared radiation in the atmosphere, preventing it from escaping into space. This process, known as the greenhouse effect, is essential for maintaining temperatures supporting Earth's life. However, increased human activities and indiscriminate use of fossil fuels have significantly increased the concentration of greenhouse gases in the atmosphere, intensifying the greenhouse effect and leading to global warming. The primary sources of these emissions are burning fossil fuels (coal, oil, and natural gas) for energy, deforestation, industrial processes, and agricultural practices. Mauna Loa observatory in Hawaii has observed that since the Industrial Revolution, atmospheric CO₂ levels have risen from about 280 parts per million (ppm) to over 400 ppm, a concentration not seen in millions of years.

According to a report by the Intergovernmental Panel on Climate Change (IPCC), a body of experts established by the United Nations, the global average temperature has increased by approximately 1.0°C since the late 19th century and without significant reductions in greenhouse gas emissions, global temperatures could rise between 1.5°C to 4.5°C by the end of the 21st century and could result in catastrophic climatic conditions never seen by humankind.

The primary causes of global warming can be categorized into natural and anthropogenic (human-induced) factors. While natural factors like volcanic eruptions and variations in solar radiation do contribute to climate variability, the current warming trend is predominantly driven by human activities.

Coal, oil, and natural gas combustion for energy production and transportation releases significant amounts of CO₂ and other GHGs into the atmosphere. This is the largest source of anthropogenic GHG emissions.

Trees absorb CO₂ from the atmosphere. When forests are cleared for agriculture, urban development, or logging, this carbon sink is reduced, and the stored carbon is released back into the atmosphere.

Agricultural practices, including livestock farming, rice paddies, and synthetic fertilizers, produce substantial methane and nitrous oxide, both potent GHGs.

Manufacturing industries emit various GHGs through cement production, chemical manufacturing, and waste management.

Urbanization and land development alter the natural landscape, impacting the Earth's ability to absorb CO₂ and regulate temperature.

While natural causes are not the primary drivers of the current warming trend, they affect climate variability.

Eruptions can release large amounts of CO₂ and sulphur dioxide (SO₂), temporarily cooling the atmosphere by reflecting

sunlight away from Earth. Changes in solar radiation can influence Earth's climate, although this effect is relatively minor compared to anthropogenic influences.

The effects of global warming are far-reaching and multifaceted, impacting the environment, human health, and socio-economic structures.

Melting polar ice caps and glaciers, along with the thermal expansion of seawater, contribute to rising sea levels, which threaten coastal communities and ecosystems.

Increased temperatures lead to more frequent and severe weather events, including hurricanes, heat waves, droughts, and heavy rainfall. These events can cause widespread damage and loss of life.

Changes in temperature and habitat destruction threaten the survival of many species. Coral reefs, for instance, are susceptible to temperature changes and are experiencing widespread bleaching.

Increased CO₂ absorption by oceans leads to acidification, which affects marine life, particularly organisms with calcium carbonate shells and skeletons, such as corals and molluscs.

Higher temperatures increase the risk of heat exhaustion, heatstroke, and cardiovascular diseases, particularly among vulnerable populations such as the elderly and children. Increased air pollution and pollen production can exacerbate respiratory conditions like asthma and chronic obstructive pulmonary disease (COPD). Warmer temperatures and changing precipitation patterns can expand the range of disease-carrying vectors, such as mosquitoes, leading to a rise in diseases like malaria, dengue, and Zika.

Changes in climate affect agricultural productivity, leading to food shortages and increased prices. Extreme weather events can devastate crops and livestock. Altered precipitation patterns and reduced snowpack impact freshwater availability, leading to

water shortages for drinking, agriculture, and industry. The cost of responding to and recovering from extreme weather events and the loss of productivity can have significant economic impacts.

India has experienced a rise in average temperatures, leading to more frequent and intense heatwaves. This affects human health, agriculture, and water resources. Higher temperatures can reduce crop yields, affect livestock health, and disrupt planting and harvesting cycles. Crops such as wheat, rice, and pulses are particularly vulnerable. The Indian monsoon, crucial for agriculture, has become increasingly erratic. This unpredictability leads to droughts in some areas and floods in others, impacting food production and water availability. Heavy and erratic monsoon rains can cause severe flooding, damage crops, infrastructure, and homes, and lead to loss of life and displacement of communities. The Himalayan glaciers, which feed significant rivers like the Ganga, retreat due to rising temperatures. This threatens the water supply for millions of people. Reduced snowpack and glacial melt result in less river flow, impacting agriculture, drinking water supplies, and hydroelectric power generation.

With its diverse topography and significant coastline, West Bengal faces unique challenges due to global warming. Coastal Erosion and Flooding: Rising sea levels lead to coastal erosion and increased flooding, particularly in low-lying areas like the Sundarbans. This results in loss of land, property, and livelihoods. Sea-level rise causes saltwater intrusion into freshwater resources and agricultural lands, reducing soil fertility and affecting crop yields.

The Bay of Bengal is prone to cyclones, which have become more intense due to warming sea surface temperatures. Cyclones like Amphan in 2020 have caused widespread destruction in West Bengal, affecting infrastructure, agriculture, and human lives. The recent Remal bypassed us and left a trail of havoc and destruction.

Cyclones and storms bring storm surges that can inundate coastal areas, displacing populations and causing significant economic damage.

Erratic rainfall, increased salinity, and extreme weather events negatively impact agriculture. Crops such as rice, jute, and vegetables, critical to West Bengal's economy, suffer from these climatic changes. Many people in West Bengal depend on agriculture and fishing for their livelihoods. Changes in climate patterns threaten these industries, leading to economic instability and food insecurity.

The Sundarbans, a UNESCO World Heritage site, are particularly vulnerable to rising sea levels and increased salinity. These changes threaten the region's unique biodiversity, including the Bengal tiger and various fish and bird species.

Changes in temperature and precipitation, along with rising sea levels, lead to habitat loss for many species, disruption of ecosystems, and a decline in biodiversity.

Higher temperatures and changing rainfall patterns can increase the incidence of waterborne and vector-borne diseases. Areas affected by flooding and salinization are particularly vulnerable. Urban areas in West Bengal, including Kolkata, face significant heat stress during the summer months, affecting the health of vulnerable populations such as the elderly and children.

Mitigating global warming requires a multifaceted approach involving international cooperation, national policies, and individual actions. Strategies can be categorized into mitigation (reducing GHG emissions) and adaptation (adjusting to the effects of global warming).

Global agreements like the Paris Agreement aim to limit global warming to below 2°C above pre-industrial levels. Countries commit to reducing GHG emissions and enhancing adaptive capacities.

Transitioning from fossil fuels to renewable energy sources like solar, wind, and hydropower is crucial for reducing GHG emissions. Investment in renewable energy infrastructure is essential.

Improving energy efficiency in industries, buildings, and transportation reduces energy consumption and emissions. This includes adopting energy-efficient technologies and practices.

Planting trees and restoring forests enhances carbon sequestration, absorbing CO₂ from the atmosphere. Forest conservation efforts are vital for maintaining these carbon sinks.

Implementing sustainable agricultural practices, such as crop diversification, soil conservation, and efficient water use, reduces emissions and enhances resilience to climate change.

Promoting public transportation and using electric vehicles reduce reliance on fossil fuels, lowering transportation sector emissions.

Building resilient infrastructure, such as flood defences, storm shelters, and climate-resilient buildings, to withstand extreme weather events are essential for reducing vulnerability.

Implementing efficient water management practices, including rainwater harvesting, watershed management, and desalination, ensures water security in changing precipitation patterns.

Strengthening disaster preparedness and response mechanisms, including early warning systems and emergency planning, mitigates the impacts of extreme weather events.

Individuals are crucial in combating global warming through lifestyle changes and advocacy. As global citizens, we hold the power to combat the looming threat of global warming through collective and individual actions. We can contribute by reducing our carbon footprints, embracing renewable energy sources, and supporting policies promoting environmental sustainability. Simple changes in our daily lives, such as conserving energy, reducing waste, and planting trees, can create an impact. By raising

awareness and advocating for climate action, we can inspire others to join the fight. Together, we can create a resilient and sustainable future for our planet.

Simple actions like using energy-efficient appliances, reducing water heating, and switching to LED lighting can significantly reduce household energy consumption.

Opting for public transport, carpooling, biking, and walking reduces carbon footprints. Using electric or hybrid vehicles also contributes to lower emissions.

Reducing water waste by fixing leaks, using water-saving fixtures, and adopting water-efficient practices in daily life conserves this vital resource.

Minimizing waste through recycling, composting, and reducing single-use plastics lowers GHG emissions associated with waste management.

Installing solar panels, choosing green energy plans, and supporting policies that promote renewable energy contribute to a sustainable energy future.

Raising awareness about global warming and advocating for local, national, and global climate action is vital. Educating others and participating in environmental initiatives can drive collective action.

Global warming is an undeniable reality that profoundly impacts the environment, economies, and societies worldwide. The consequences are multifaceted and severe for countries like India and particularly vulnerable coastal states like West Bengal. Rising temperatures, erratic monsoon patterns, glacial melts, and extreme weather events such as cyclones disrupt agriculture, water resources, and human health. The Sundarbans and other vital ecosystems are under threat, leading to loss of biodiversity and increased vulnerability of local communities.

Addressing the challenges posed by global warming requires immediate and sustained efforts at multiple levels. Governments

must implement robust policies to reduce greenhouse gas emissions, transition to renewable energy, and enforce regulations protecting natural resources and vulnerable populations. At the same time, local communities and individuals must adopt sustainable practices, reduce their carbon footprint, and participate in grassroots environmental initiatives.

The findings from studies like “Quantifying the Human Cost of Global Warming” and insights from resources like “Climate Change: The Science of Global Warming and Our Energy Future” emphasize the critical need for a comprehensive approach integrating technological innovation, policy reforms, and behavioural changes. Achieving the targets set by international agreements such as the Paris Agreement is crucial for minimizing human and environmental costs of climate change.

Ultimately, combating global warming is not just about mitigating its impacts but also ensuring a sustainable and equitable future for all. Every individual, community, and nation has a collective responsibility to act. By working together, embracing sustainable practices, and supporting policies that promote environmental stewardship, we can safeguard our planet for the future.

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**Domestic Violence in the Family: A Critical
Study of the Selected Plays of Vijay Tendulkar,
Girish Karnad, and Mahesh Dattani
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Abstract:

Domestic violence in families is a critical social issue that involves the abuse of power and control within family relationships. It can manifest in various forms, including physical, emotional, sexual, and financial abuse. Understanding and addressing domestic violence involves recognizing its causes, impacts, and the necessary interventions. The exploration of domestic violence in the plays of Vijay Tendulkar, Girish Karnad, and Mahesh Dattani provides a comprehensive view of the issue across

different settings and perspectives. Their works serve as a powerful critique of societal norms and a call for change, emphasizing the need for greater awareness and intervention to combat domestic violence in its various forms. Dattani addresses contemporary issues and the hidden nature of domestic violence in modern urban settings, often focusing on the psychological impact and the quest for identity. Karnad uses myth and folklore to contextualize domestic violence, showing its deep roots in cultural narratives. Tendulkar focuses more on the societal structures and the systemic nature of abuse, often highlighting the helplessness of the individual.

Keywords:

Portrayal of social issues, domestic violence, psychological and emotional abuse of women and the patriarchal structures.

Introduction:

Violence against women has always been accepted and even promoted. More than 2,000 years ago, Roman law gave a man control over his wife, both in life and death. In the seventeenth century, English common law allowed a man to discipline his wife and children with a rod or whip no wider than his thumb. This 'rule of thumb' was standard practice in both America and England up until the late 1800s. Many feminists argue that violence against women is caused by a deeply entrenched patriarchal culture that values and encourages male domination. It is stated that in a patriarchal society, men are more likely to use violence to preserve their position of authority. In Indian drama; prominent playwrights like Vijay Tendulkar, Girish Karnad, and Mahesh Dattani have explored this theme extensively. Their works not only highlight the physical abuse but also delve into the psychological and emotional aspects of domestic violence, thereby offering a nuanced critique of societal norms and power dynamics within the family structure. All three playwrights depict domestic violence not just as physical abuse but also emotional,

psychological, and societal. They highlight the patriarchal structures that perpetuate such violence. The plays often show the resilience and struggles of women as they navigate oppressive environments.

Vijay Tendulkar: Representation of Domestic Elements

Tendulkar's plays often portray the brutal realities of domestic life and the underlying power struggles. In 'Silence! The Court is in Session,' Tendulkar explores the societal and familial oppression faced by women. The mock trial in the play reveals the deep-seated misogyny and the violence women endure in the name of social propriety. Another notable play, 'Kamala', showcases the commodification of women and the emotional violence inflicted upon them within the family. As Beauvoir (1949) said:

“..... equality and liberation would be achieved only by destroying the male's superiority and refusing to succumb to a traditional role...women were “imprisoned” by the roles of mother, wife, and sweetheart.”¹ (p.797)

In the world of absurdity anything can happen still fall on us because there is nothing deterministic and certain in the world. This is what we find in Tendulkar's 'Silence! The Court is in Session'. A group of amateur players comes to stage the mock-trial of American President for his involvement in the proliferation of nuclear weapons. But they stage a mock-trial of an unmarried woman making the latter isolated from them with an accusation of infanticide against her. Quite unprepared, Benare is plunged in an absurd situation. Being accused infanticide she begins to feel alienated from others. However, because of the absence of the correspondence of her need and its fulfillment she takes to suicide twice. Though her body saved, these suicidal acts may be construed as her attempt to enjoy freedom from bad faith. She has chosen being born on her own terms. For this she has anguish, but she does not flee anguish in bad faith as a flight from anguish,

from freedom, and from responsible. She reveals to Samant her attitude to life without mincing the matter she tells to Samant:

“Forget about the sage Tukaram. I say it- I, Leela Benare, a living woman, I say it from my own experience. life is not meant for anyone else. It’s your own life. It must be. It’s a very important thing. Every moment, every bit of it is precious”²(p.8)

This sort of choice provokes anguish in her because she knows that her choice does not conform to social norms and institutions which, in the eye of tradition and religion, are holy and pure. Benare’s anguish begins to increase in the court as blames one after another are heaped upon her character. On proof of evidences, the accuser and the judge roll into one and a savage verdict is meted out to her

“no memento of your sin should remain for future generations. Therefore the court hereby sentences that you shall live. But the child in your womb shall be destroyed”³ (p.76).

This verdict projects many options before her. She is free to choose any one of them in order to flee anguish. She may comply with the verdict by destroying the baby or she may commit suicide or she may try to live for giving birth to the baby by any mean. Her existential problem-’to be or not to be- she solves by refusing to comply with the verdict:

“No! No! No! I won’t let you do it-I won’t let it happen- I won’t let it happen!”⁴ (p.76)

Girish Karnad: Representation of Domestic Elements

Girish Karnad’s ‘Nāga-mandala’ that is based on an English translation of the original play in Kannada written by Karnad himself, it had its world premiere at the Guthrie Theatre in Minneapolis. The play is based on two oral folk tales of Karnataka. These folk tales were narrated by older women of the family to the children and other women of the family and were passed on orally from generation to generation. These tales also serve as a parallel system of communication among the

women in the society. Karnad's play focuses on a woman's yearning for love which is not satiated by her husband but by a cobra who assumes the shape of her husband.

The play opens with a small Prologue which shows the inner sanctum of a ruined temple where the idol of the presiding deity was broken, so the deity could not be identified. A man was sitting there probably a dramatist who is striving to keep his eyes open so as not to sleep. He has been cursed by a mendicant that he has to wake at least a single night in this month, otherwise he will be dead. He tells to the audience that:

"I may be dead within the next few hours. I asked the mendicant what I had done to deserve this fate. Moreover, he said, "You have written plays. You have staged them. You have caused so many good people, who came trusting you, to fall asleep twisted in miserable chairs that all that abused mass of sleep has turned against you and become the Curse of Death."⁵ (pp. 22-23)

Domestic abuse is a prominent issue that is deeply integrated into the story in Girish Karnad's drama 'Naga-Mandala.' The drama delves into the predicament of Rani, a youthful bride ensnared in an abusive union with her spouse Appanna. Rani is subjected to violent physical and emotional abuse by Appanna. He keeps her confined to the house, takes away her independence, and shows her little emotional support. Her loneliness and suffering are made worse by his adultery and disregard for her welfare. Rani sees Naga—a legendary serpent who assumes the appearance of Appanna—as a means of escaping her violent upbringing. Even though Naga and Rani seem to have a more loving and caring relationship, Naga tricking Rani by assuming her husband's shape poses difficult issues with consent and autonomy. The play draws attention to the larger patriarchal culture that supports and tolerates domestic abuse. Though not uncommon, Rani's situation illustrates the systematic

discrimination that many women experience. Through Rani's persona, the social standards that maintain women's subjugation and voicelessness are criticized. The narrative revolves around Rani's transformation from an oppressed and obedient wife to a woman who acquires some agency over her life. Her desire for empowerment and self-assertion is highlighted by the usage of mythical and folkloric motifs, such as the magical hair and the transformations. The play's denouement, in which Rani's virginity is demonstrated through trial by torture, left open-ended questions of how domestic violence is resolved. Even though Rani appears to be gaining respect and authority, the fundamental problems of patriarchy and abuse are not addressed, indicating that societal transformation is still a long way off.

Mahesh Dattani: Representation of Domestic Elements

Dattani's plays are known for their bold exploration of taboo subjects, including domestic violence. In 'Bravely Fought the Queen', Dattani portrays a family plagued by violence, both physical and emotional. The characters' struggles highlight the impact of domestic violence on all members of the family, including the children. Dattani counts under the section of writers who establish women at the centre of their fictive world. Focus on Discriminatory Patriarchal Social Order Feminist writers have tried to highlight the weaknesses of the discriminatory Patriarchal social order and successfully drawn our attention to the various issues relating to the miserable plight of women. Dattani is one such writer who has brought to our notice the discrimination and injustice done to women of our society. He depicts the feminine side which always has to come to terms with society which is a male-dominated world. Although, the people talk about women enfranchisement and feminine liberation, subconsciously all women are well known of the fact that they have to go a long way to break the trials and tribulations built by men in their every walk of life.

The play 'Bravely Fought the Queen' deals with three couples, each existing in a hierarchical relation with others. The play centres on the Trivedi family with its two brothers Jiten and Nitin and their wives Dolly and Alka. Dolly and Alka are sisters. All the relations are maintained strictly under some rules and regulations. Praful is the only brother for the two sisters. The third family that is connected with the characters of the Trivedi house, is that of Lalitha and Sridhar - a couple whose identity is still in formation. In this hierarchical relationship Sridhar is the employee of the Trivedi brother's, and Lalitha in that sense, is socially subservient to the two sisters. Jiten and Dolly Jiten the elder son always treats his wife Dolly as slave and she is considered to be a pawn in his hand. Dolly has been married for fifteen years to Jiten who has always ill-treated and beaten her up. She reminds him up that how on her mother Baa's instigation, he had beaten her up and kicked her when she was pregnant. As a result she gave birth to a premature and spastic Daksha who is now studying in a spastic school and wants to be a dancer. Her only interest is to listening to soulful thumris by Naina Devi to forget her sorrows and the emptiness of her life. Both husband and wife feel reluctant to talk about Daksha till the end of play. In conversation, we see:

"ALKA: She must like you very much. She hardly ever mentions her daughter to anyone. DOLLY: Stop it! ALKA: She doesn't tell anyone..... DOLLY: Stop it, I said!"⁶(p.34).

Dolly by listening her daughter's name always remembers how she was tortured during pregnancy when a letter arrived insinuating that Dolly, Alka and Praful's father was not legally married to their mother and that he lived elsewhere with his family and four children.

This shows his hatred for her as he considers only a puppet that must follow and not to demand and command. Baa, the mother-in-law keeps filling in the blanks from the upper level

that Dolly's brother has lied about their parents. Dolly tells her husband that she didn't know what Praful told him about their father and she thought that her husband knows everything before marriage. But the damage was done. At that time Dolly and Alka's father was living with his wife and four children, implying that the two sisters and Praful were born out of wedlock and that their mother was that man's mistress. Baa becomes very angry when she comes to know the truth and says:

"BAA: Your mother is a keep...a mistress! My sons have married the daughters of a whore! DOLLY: Your mother never understood that. She blamed it on us! BAA: Throw them out of the house. (p. 96). Dolly takes up for her mother: "My mother didn't know about his wife till later. She was deceived too..."⁷.(p. 96).

Jiten is a womanizer and plays with all girls who work as a model in his company. Dolly never asks him about it and remains silent. Dolly reminds Jiten that she won an argument with him only once and that too when she became pregnant, otherwise it is he who always has his own way. Jiten wants Lalitha to get out of the house before they can argue any further. But Dolly is adamant. But Nitin apparently asks her to stay at home and he alone moves out. He tells to Sridhar:

"It is the biggest advantage of having an office on Grant Road. It was pointed out to me by the bugger who sold this place to me. No checking into seedy hotels in City Market. Just drive down Lavelle Road and pick one up. Bring her here and pack her off in half an hour. You save a lot of time..... it is a regular thing for Nitin and me. Driving out and picking a couple up."⁸(p.67).

Both the brothers are obviously no respecters of women; they neglect their wives and have been beating them up and driving them out of the house.

Comparative Analysis:

While Tendulkar, Karnad, and Dattani each have their unique styles and approaches, their portrayal of domestic violence shares several commonalities. They critique the patriarchal structures that enable and perpetuate domestic violence. Beyond physical violence, they emphasize the psychological and emotional trauma inflicted on victims. Their works often center on the experiences of women, highlighting their suffering and resilience. Through their plays, they advocate for a reevaluation of societal norms and call for systemic change to address domestic violence. Women should be encouraged to reflect on their values, objectives, and aspirations. This can entail exploring one's own beliefs and motivations through journaling, meditation, or therapy. In the epigraph of one of their books, these feminists assert that they oppose all types of sex discrimination. Rather than being the result of specific male malice, patriarchal culture and familial systems may be the source of women's oppression. The assumption that a woman's identity should grow out of and become one with her roles as a wife and mother is the root of the issue.

Significance in 21st Century:

Domestic violence remains a critical issue in the 21st century, impacting individuals, families, and societies worldwide. Despite legal advancements, domestic violence remains pervasive across different cultures and socioeconomic strata. Victims often suffer severe physical injuries and long-lasting psychological trauma. Exposure to domestic violence can have detrimental effects on children, perpetuating a cycle of violence. Treatment of injuries and mental health issues resulting from domestic violence places a significant burden on healthcare systems. Victims often face difficulties maintaining employment, leading to economic instability and loss of productivity. Many countries have enacted laws to protect victims, but enforcement and support systems often fall short. Effective policies require comprehensive

approaches, including education, support services, and robust legal frameworks. As a result of domestic violence, trust, understanding, belief, self dependency and bondless of are lost. Identity crisis of women, divorce rate, extramarital appears, suffering and frustration of old parents are increasing day by day.

Conclusion:

The exploration of domestic violence in the plays of Vijay Tendulkar, Girish Karnad, and Mahesh Dattani provides a critical lens through which we can examine the complexities of familial relationships and societal expectations. Their works serve as powerful commentaries on the need for greater awareness, empathy, and action to combat domestic violence and support its victims. Through their poignant storytelling, these playwrights continue to inspire discussions on this pressing social issue and advocate for a more just and equitable society. The 21st century has seen a rise in awareness campaigns and advocacy efforts, highlighting the importance of addressing domestic violence. Social media and technology have played crucial roles in bringing attention to domestic violence cases, offering platforms for victims to share their stories. Factors such as race, ethnicity, and economic status can influence the prevalence and severity of domestic violence. Understanding and addressing domestic violence in the 21st century requires a multi-faceted approach that encompasses legal, social, economic, and cultural dimensions. Efforts must be sustained and coordinated to create a society where everyone can live free from violence and fear.

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**Community and WASH (Water Sanitation and
Hygiene) Programme:
A Review-Report
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Abstract

To fill a gap, this multidisciplinary literature review study will focus on community participation and water, sanitation, and hygiene (WASH) in the Indian subcontinent. This study looks at various WASH interventions, including software interventions like the creation of WASH or water committees, health promotion and education initiatives, and training, as well as hardware interventions like new latrines and water supply systems, as well as their operation and maintenance.

Keywords:Community, Health, Management, WASH, Development

Introduction:

The proper sanitation system is part of human hygiene which is a critical chapter in the history of human civilization and that cannot be isolated or accorded as an inferior position. ‘

The World Health Organization (WHO) defines sanitation as the “Provision of facilities and services for the safe disposal of human urine and faeces”. Along with the definition WHO also mentioned that “Inadequate sanitation is a major cause of disease. World-wide improvement of sanitation system is known to have a significant beneficial impact on health both in households and across communities” (Pathak, Bindheshwar: 2015). According to WHO estimates, intestinal worm infections from contaminated water, inadequate sanitation, and hygiene are linked to 50% of malnutrition cases ([www. sulabhtoiletmuseum.org](http://www.sulabhtoiletmuseum.org): 201 (Raj, Kamla, J Hum Ecol,2009)). Due to the poor sanitation system, 60, (Raj, Kamla, J Hum Ecol,2009) 00 children in the age group between 1-10 years have died yearly in this country ([http:// unicef.in](http://unicef.in)). One of the important factors that cause serious health impacts is lack of access to clean water and poor sanitation (4). Even a community can have a major economic and social impact triggered by a lack of access to drinking water and basic Water and Sanitation Hygiene (WASH) facilities.

Literature review:

Various studies worldwide examined the health issues related to sanitation and drinking water at school levels. The objective of this review is to describe how inadequate water and sanitation in different parts of the world are creating an impact on the health of the communities. Over the last 15 years, UNICEF has led a global effort to improve water, sanitation, and hygiene conditions for millions worldwide. In this context “WASH” is an abbreviation for ‘Water and Sanitation Hygiene’ developed by ‘Water Supply

and Sanitation Collaborative Council' (WSSCC). It is the collective term for Water, Sanitation, and Hygiene. These three fundamental concerns are combined to reflect a developing industry because of their interdependence. Despite being distinct professions, one depends on the existence of the other. For instance, the absence of toilets contaminates water sources, and the absence of clean water makes it impossible to exercise basic hygiene. This term was lobbied for MDGs targeting sanitation problems to develop advocacy campaigns at a global level.

In a country like Indonesia, diarrheal disease is the third leading cause of child death. This study examines the effects of drinking water and sanitation facilities on diarrhoea incidence among children under five while controlling for risk factors at the household and community levels. Multilevel logistic regression analysis was used for the 'Demographic and Health Survey'. Interactions were studied between the water and sanitation variables and other risk factors to assess the role of the context of poor sanitation conditions. Research found that piped water, child age and sex, household wealth, living in an urban area, environmental hygiene, health status and health facilities, and poor sanitation conditions to negatively associated with diarrhoea incidence. (swachhindia. ndtv.com, 2023)

Among the various researches conducted throughout the world, most of them presented data related to increased mortality which is associated with poor household water, sanitation, and hygiene (WASH) practices. In 2012, a cross-sectional survey including the community was carried out in four mandals. The objective was to study the WASH practices for under-five children among households of the Sugali Tribe, Chittoor district, Andhra Pradesh, India, where a total of 500 households with under-five children were identified. A summary WASH score was generated from four specific indices-i) water ii) sanitation iii) hygiene and iv) hand washing practices. As a result of the total

households, 69% reported doing nothing at home to make the water safe for drinking. More than 90% of the families stated that they kept water in lidded utensils and retrieved it by dipping glasses into the containers. The practice of open defecation was often recorded (84.8%). About three-fifths of the study's households reported using water and soap for cleaning dirty hands and one-third (3(Raj, Kamla, J Hum Ecol,2009).4%) reported using water and soap after defecation. (Sumitra, G; CW Bhodiakhara,2019)

Another empirical study revealed a fact that in Bikrampur G.P., Bankura, West Bengal shows that, most of the people (more than 80%) in the study area are not under basic sanitation facilities. Due to a lack of awareness, they neither practice hand washing in critical times nor treat drinking water and other important hygienic practices in their day-to-day lives ((Raj, Kamla, J Hum Ecol,2009)).

Encouraging individuals to use restrooms is essential for maintaining public health. A research based on ethnographic and technical methods in rural villages of West Bengal and Himachal Pradesh over the period September 2012 to May 2013. They identified elements of successful sanitation adoption depended on three factors (i.e., toilet tripod): (Pathak, Bindheshwar, 2015) multi-scalar political will on the part of both government and NGOs over the long term (www.sulabhtoiletmuseum.org: 201(Raj, Kamla, J Hum Ecol,2009)) proximate social pressure (i.e. person-to-person contact between rural inhabitants and toilets) (<http://unicef.in>) political ecology(i.e. guaranteed water supply, suitable soil composition, and shifting land use). In addition to advancing global public health and sustainable development, this research develops a philosophy and framework for effective sanitation. This research demonstrated that successful sanitation is a paradoxical concept in the context of Indian social structure. (Murray, JL.Christopher & D. Lopez, Alan, 2009)

In various studies, it is assumed that a woman's perspective can contribute a great deal to improving the planning, functioning, and utilization of sanitary facilities. A study was conducted in four Nirmal Gram Villages in December 2006. Quantitative (house-to-house survey), qualitative (Focus group discussions), and participatory rapid appraisal techniques (transect walks) were used to conduct the study. Only 18 out of the 55 Women's Latrine Complexes were functional, a majority of which were noted to be of poor quality and lacking in maintenance and cleanliness. Women have played important and varied roles in the Total Sanitation Campaign. Their active involvement has contributed towards the achievement of the goal of an open defecation-free village. Women have not only been one of the main beneficiaries but also participants but the participation was neglected in the various socio-structural levels (Komarulzaman, Ahmad; Smits, Jeroen; de Jong, Eelke, 2014).

The above literature revealed a fact that most of the research-oriented-quantitative research data related to diseases associated with poor sanitation conditions and water-related issues but in an open horizon in this issue the socio-climatic variation and its association with the regional disparity in the context related to poor sanitation is not considered intensely.

Sanitation-Related Programmes Taken By the Government of India:

Sanitation is the core of human dignity and human progress and the right to use clean sanitary toilets not only ensures the dignity of the individual but also has a positive impact on health and well-being. On the grounds of the Indian societal structure, no one is eager to talk about 'Health and sanitation' related issues and problems, which are faced by people in their daily life. Society is faced with human excretions of the order of 900 million litres of urine and 135 million kilograms of faecal matter per day with an inadequate system of collection and disposal (Reddy,

Venkatashiva, et. al,2016). In the period Indus Valley civilization(2600–1900 BCE) in India, at a place called Lothal (62 Kilometres from the city of Ahmadabad in Western India) and in the year 2500 BC, the people had water-borne toilets in each house which linked with drains covered with burnt clay bricks. This architectural planning showed the world a proper scientific sewerage system, which proved that ancient society was concerned about health and sanitation-related issues (O'Reilly, Kathleen & Louis, Elizabeth, 2016). After independence from 1951-till a total of 12 five-year plans were conducted in India and the first five-year plan (1951-1956), the main thrust was given to sanitation-related issues (World Health Organization,2008). Increasing investments have been made in subsequent plans also. In National policy guiding India's approach to water supply and sanitation in the Eighth, Ninth, and now the Tenth Plan broadly guided by the New Delhi declaration, adopted by the 'United Nations General Assembly' (www.unicef.org, 2008). The RCRSP (Restructured Central Rural Sanitation) was launched on 1st April 1999; the main focus of that program was to promote toilet resources in an affordable range. For urban poor or slum populations, a new scheme VAMBY – (Valmiki Ambedkar Awas Yojana) was introduced for community pay-and-use toilet complexes, but it suffered with various obstacles and in 2012 this program was newly launched as 'Nirmal Bharat Abhiyan' and renamed as Swachh Bharat Abhiyan in 2014.

Among the pioneers of Indian society, who are the trendsetters in the movement against open defecation, Dr. Bindeshwar Pathak is one of them. He is a social reformer who first realized that there was a need for technology to replace the bucket toilet system in India. His study led him to develop the system that would eventually replace bucket toilets. This invention of Dr.Pathak is popularly known as the Sulabh two-pit pour-flush ecological compost toilet (1968). Dr. Pathak gave the

concept that human excreta can be decomposed with the contact of soil and keeping this in mind he invented, innovated, and developed the ecological two-pit compost flush toilet, also known as Sulabh Shauchalaya or Sulabh Toilet, which gained popularity. This technological invention made a path-breaking difference in the lives of untouchables in different sections of Indian society. The main aim of this Sulabh Shauchalaya is to offer a fearless and shameless toilet system for the common people and create a disease-free society. Despite that today Indian society faces poor sanitation-related problems.

Against this backdrop, it is necessary to decipher the societal role and political participation to make a new clean sanitation movement in a multicultural place in a state like

Present situation of West Bengal in the context of the WASH programme:

The geography of West Bengal is unique in the sense that its northern part is the Himalayan Range, whereas the extreme southern part touches the Bay of Bengal and is covered by the Active Delta of the Sundarbans Mangrove Forest and in the western part of the Rarh. Along with this feature rainfall variation is also one of the most important factors in this context. The annual rainfall varies in the different parts of the state. The region with the most rainfall, 200–400 cm, is North Bengal. Rainfall in the state is distributed as follows: 200 cm in coastal areas, 150–200 cm in the Ganga plain and central sections, and 100–125 cm in the western plateau region. The districts of Bankura and Purulia are prone to drought. So the availability of water is not the same throughout the year whereas the geological structure also creates a dynamic phenomenon in the case of groundwater distribution. Not only the climatic variation is predominated factor in West Bengal but different socio-economic classes along with the different tribal groups also help to secure this as a unique position. So to analyze the community awareness and community

participation in the framework of water sanitation and hygiene-related issues it will emerge as a different one in the research arena (UNICEF).

According to 'UNICEF' districts like Midnapur have demonstrated that remarkable improvements are possible in household toilet coverage through a decentralized, community-based system. With 100% coverage, Midnapur has inspired other districts in the state, such that, the overall sanitation coverage in the state is 65%, well above the national coverage of 32%((Raj, Kamla, J Hum Ecol, 2009)) followed by Nadia district which was officially declared as the first open defecation free (ODF) district in West Bengal on 30th April 2015 by the government.

Conclusion:

This study will show how knowledge, awareness and hygiene issues are important predisposing factors to determine positive hygiene behaviour among the communities. On the other hand, this research will also open a new horizon where two important angles – i.e. physical and climatic factors also incorporated to express the situation of hygiene and awareness in selected study areas in different regions. Based on an understanding of the factors that influence hygiene behaviour; an assessment can show that motivational factors are significantly associated with hygiene behaviour issues.

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Socio-Cultural Issues, Challenges and sustainability

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***Abstract:** The 21st century has ushered in unprecedented socio-cultural transformations driven by globalization, technological advancements, and shifting societal values. These changes present a complex interplay of opportunities and challenges that impact cultural identities, social structures, and community sustainability. This article explores key contemporary socio-cultural issues, including the effects of globalization on cultural identity, persistent social inequalities, the digital divide, and environmental crises. It examines how cultural homogenization and hybridization shape cultural landscapes, while economic, racial, and*

gender disparities perpetuate social inequities. The technological revolution, characterized by the rise of social media and uneven access to digital resources, further complicates these dynamics. Additionally, environmental degradation and climate change threaten both cultural heritage and social stability. Addressing these challenges necessitates a multifaceted approach involving effective policies, education, community engagement, and sustainable practices. Strategies such as preserving intangible and built cultural heritage, policy reforms to address inequalities, bridging the digital divide, and integrating sustainable practices are crucial for fostering a more inclusive, equitable, and sustainable future. This article underscores the importance of understanding and responding to these socio-cultural dynamics to build resilient and vibrant communities in the 21st century.

Keywords: *socio-cultural issues, globalization, social inequality, digital divide, environmental sustainability, cultural heritage, 21st century.*

Introduction

The 21st century has witnessed transformative changes driven by globalization, technological advancements, and shifting socio-cultural landscapes. These dynamics present complex challenges and opportunities that impact cultural identities, social structures, and community sustainability. This chapter probes into contemporary socio-cultural issues, the challenges they pose, and explores sustainable strategies to address them. Understanding these intricate relationships is essential for fostering a more inclusive, equitable, and sustainable future.

Section 1: Contemporary Socio-cultural Issues

1.1 Globalization and Cultural Identity

Globalization has facilitated unprecedented cultural exchange and interaction, resulting in both beneficial and detrimental effects

on cultural identities, often leading to both positive exchanges and detrimental homogenization.

Globalization, the process by which businesses, technologies, and cultures spread around the world, has profoundly impacted societies. It has led to the homogenization of cultures, where local traditions and identities are increasingly overshadowed by global norms. For instance, Western cultural elements such as fast food, fashion, and media have permeated almost every corner of the globe (Steger, 2020).

While globalization fosters economic growth and cross-cultural exchange, it also poses significant challenges to cultural sustainability. Indigenous cultures and languages are at risk of disappearing, leading to a loss of cultural diversity (Hopper, 2018). The dominance of a few global languages, particularly English, has further marginalized minority languages.

Cultural Homogenization: Cultural homogenization refers to the process by which local cultures become more similar to each other, often leading to a loss of unique cultural identities. This phenomenon is largely driven by globalization, where economic, technological, and social exchanges increase across the world, resulting in the widespread dissemination of certain cultural practices, values, and products.

The widespread influence of Western culture through media, fashion, and consumer products often leads to the erosion of local and ethnic traditions and values, a phenomenon known as cultural homogenization. This diminishes cultural diversity and marginalizes indigenous and minority cultures (Tomlinson, 1999).

Cultural Hybridization: Cultural hybridization refers to the process by which different cultures blend together to create new, hybrid cultural forms. This occurs when elements from various cultural traditions combine, resulting in something that is neither entirely original nor purely foreign but a mix of both.

For example, when people from different cultural backgrounds interact—through migration, trade, or media

exchange—they may adopt and adapt aspects of each other's cultures. This can be seen in food, music, fashion, language, and other cultural expressions. An example of cultural hybridization is the fusion of traditional cuisine with ingredients or cooking techniques from other cultures, such as Tex-Mex food, which blends Mexican and American culinary practices.

Cultural hybridization allows for creativity and innovation but also raises questions about the preservation of traditional cultures.

Conversely, globalization also promotes cultural hybridization, where elements from different cultures blend to create new cultural expressions. This process enriches cultural landscapes but poses challenges to preserving distinct cultural identities (Pieterse, 2009).

Cultural Heritage Protection: Cultural heritage protection involves safeguarding the tangible and intangible cultural assets of a community or nation, ensuring they are preserved for future generations. This includes protecting monuments, historic sites, artifacts, traditional practices, languages, and knowledge systems that are vital to a community's identity and history.

International conventions such as UNESCO's Convention for the Safeguarding of Intangible Cultural Heritage (2003) provide frameworks for the protection and promotion of cultural practices. These frameworks encourage countries to recognize and preserve their intangible cultural heritage (UNESCO, 2003).

Language Preservation: Language protection involves efforts to preserve and revitalize languages that are at risk of disappearing. Languages are vital to cultural identity, as they carry traditions, knowledge, and ways of thinking unique to a community. When a language is lost, much of the cultural heritage associated with it can be lost as well.

Aspects of Language Protection:

1. Documentation: Recording and documenting endangered languages through written texts, audio, and video recordings is essential. This creates resources for future generations and for educational purposes.

2. Revitalization Programs: These programs aim to teach and encourage the use of endangered languages, often through immersion schools, community classes, and the creation of new media in the language.

3. Legal and Policy Support: Governments and international bodies can support language protection through policies that recognize and promote linguistic diversity. This includes granting official status to minority languages and ensuring their use in education, media, and public life.

4. Community Involvement: The involvement of native speakers and communities is crucial. Language protection efforts are most successful when they are led by the communities themselves, respecting their cultural context and needs.

Language protection is essential for maintaining the world's linguistic diversity and ensuring that the knowledge and traditions embedded in languages are preserved for future generations. Top of Form

Bottom of Form

Policies aimed at preserving linguistic diversity are essential. For instance, promoting bilingual education and supporting media in indigenous languages can help maintain linguistic heritage (Fishman, 1991).

Education and Awareness: Raising awareness about the importance of cultural sustainability through education is vital. Education and awareness on socio-cultural issues play a crucial role in fostering understanding, tolerance, and positive change in society. These issues often include topics such as racism, gender equality, cultural diversity, poverty, and human rights. By educating individuals and communities about these challenges, society can work towards greater inclusivity, social justice, and cohesion.

Curriculum Development: Integrating cultural studies into school curricula can foster an appreciation of cultural diversity from a young age. This education should include local cultural

heritage as well as global cultural awareness (Banks, 2008).

Public Awareness Campaigns: Campaigns to raise public awareness about the value of cultural heritage and the threats it faces can mobilize communities to engage in preservation efforts. Media, including documentaries and social media platforms, can be effective tools in these campaigns (Smith, 2006).

Raising awareness and educating people about socio-cultural issues is essential for building a more just and equitable society. It empowers individuals to recognize and challenge injustices, respect cultural differences, and contribute to positive social change.

1.2 Social Inequality

Social inequality refers to the unequal distribution of resources, opportunities, and privileges within a society. This inequality often manifests along lines of class, race, gender, ethnicity, and other social categories, leading to disparities in wealth, education, health, and power. Social inequality is deeply intertwined with socio-cultural issues, as cultural norms, values, and practices can either reinforce or challenge these disparities.

Despite technological and economic progress, social inequality remains a pervasive issue, affecting various aspects of life in this 21st century.

Economic Disparities: Economic inequality is a major component of social inequality, where wealth and income are unevenly distributed. This often results in limited access to essential resources like quality education, healthcare, and housing for those in lower economic strata. The gap between the wealthy and the poor continues to widen, exacerbating social tensions and reducing social mobility. Economic inequality has profound implications for social stability and individual well-being (Piketty, 2014).

Racial and Gender Discrimination: Racial and ethnic minorities often face systemic discrimination, leading to disparities

in employment, education, and legal justice. These inequalities are rooted in historical injustices and perpetuated by cultural stereotypes and institutional biases. Gender-based inequality affects women and gender minorities in areas such as wages, career opportunities, political representation, and reproductive rights. Cultural attitudes about gender roles often sustain these disparities, limiting the potential of those affected. Discrimination based on race, gender, and other social categories persists, limiting opportunities and perpetuating cycles of disadvantage for marginalized groups (Crenshaw, 1991).

1.3 Technological Impacts

Technological impacts refer to the wide-ranging effects that advancements in technology have on society, culture, the economy, and the environment. While technology has significantly improved human life by enhancing communication, productivity, and healthcare, it also brings challenges that must be addressed. Technological advancements have transformed daily life, work, and social interactions, bringing both opportunities and challenges.

Technology profoundly shapes our world, offering immense benefits while posing significant challenges. Addressing its impacts thoughtfully is crucial to ensuring that technological progress contributes to a more equitable, sustainable, and inclusive future.

Digital Divide: The digital divide refers to the gap between individuals, communities, and nations in terms of access to, use of, and knowledge about digital technologies. This divide creates disparities in opportunities, education, and economic growth, as those with limited or no access to technology are often left behind in an increasingly digital world. Access to technology is unevenly distributed, creating a digital divide. Those without access to digital technologies are at a significant disadvantage, missing out on educational, economic, and social opportunities (Norris, 2001).

Social Media and Culture: Social media platforms have revolutionized cultural expression and communication, enabling rapid dissemination of ideas and cultural products. However, they

also contribute to the spread of misinformation and can promote superficial engagement with complex issues (Castells, 2009).

1.4 Environmental Crises

Environmental crises refer to severe and often urgent threats to the environment, resulting from natural or human-made causes. These crises can lead to significant damage to ecosystems, loss of biodiversity, and adverse effects on human health and livelihoods. Addressing environmental crises is one of the most pressing global challenges of our time.

Environmental degradation and climate change pose significant threats to cultural heritage and social stability. Environmental crises threaten the planet's ability to support life as we know it. Addressing these crises requires urgent and coordinated action at local, national, and global levels to ensure a sustainable future for all.

Climate Change: Communities worldwide, particularly those dependent on natural environments, are severely impacted by climate change. Rising sea levels, extreme weather events, and shifting ecosystems threaten cultural heritage sites and traditional ways of life (UNESCO, 2018).

Resource Depletion: Overexploitation of natural resources leads to conflicts and disrupts the cultural practices of communities reliant on these resources. Sustainable resource management is crucial for preserving both environmental and cultural sustainability (Diamond, 2005).

Section 2: Challenges to Sustainability

2.1 Preserving Cultural Heritage

Preserving cultural heritage is the practice of safeguarding the tangible and intangible aspects of a culture that are significant to its identity, history, and values. Cultural heritage includes monuments, artifacts, traditions, languages, and knowledge systems that define a community's legacy. Preservation efforts are essential for maintaining the diversity and richness of human culture, ensuring that these assets are passed down to future

generations. Maintaining cultural heritage amidst modernization and globalization requires deliberate and sustained efforts today.

Intangible Cultural Heritage:

Intangible cultural heritage encompasses practices, rituals, languages, music, dance, and other forms of expression that are not physically tangible but are vital to cultural identity. Preservation of intangible heritage often involves documenting traditions, promoting their practice, and ensuring they are transmitted across generations. Protecting intangible cultural heritage, such as languages, rituals, and traditional knowledge, is essential for maintaining cultural diversity. Policies and initiatives that document and promote these practices are crucial for their survival (UNESCO, 2003).

Built Heritage: Built heritage refers to historical structures, buildings, and landmarks that have cultural, architectural, or historical significance. It encompasses a range of constructions such as temples, castles, historic homes, and public buildings. Preserving built heritage is crucial for maintaining cultural identity, historical continuity, and architectural diversity. Efforts in conservation and restoration help protect these sites for future generations and often play a role in cultural tourism and local identity. The conservation of historical sites and monuments is vital for cultural continuity. These efforts require significant resources, political will, and community engagement to ensure preservation aligns with local needs and values (Feilden & Jokilehto, 1998).

2.2 Addressing Social Inequalities

Tackling social inequalities involves systemic changes and targeted interventions of the Governments.

Policy Reforms: Governments must implement policies that address economic disparities, promote equal opportunities, and protect the rights of marginalized groups. This includes progressive taxation, affirmative action, and anti-discrimination laws (Stiglitz, 2012).

Community Empowerment: Grassroots initiatives that empower communities to advocate for their rights and needs can drive meaningful change. Community-driven development projects and participatory decision-making processes are vital components of this approach (Chambers, 1994).

2.3 Bridging the Digital Divide

Ensuring equitable access to digital technologies and literacy is essential for social and cultural sustainability.

Infrastructure Development: Investing in digital infrastructure, particularly in underserved areas, is necessary to bridge the digital divide. This includes expanding internet access and providing affordable devices (World Bank, 2016).

Digital Literacy Programs: Educating individuals on how to use digital technologies effectively and responsibly can empower them to participate fully in the digital age. Such programs should be inclusive, addressing the needs of all demographic groups (Warschauer, 2003).

2.4 Mitigating Environmental Impacts

Addressing environmental crises requires a holistic approach that integrates cultural, social, and ecological considerations.

Sustainable Practices: Promoting sustainable practices in agriculture, industry, and daily life can reduce environmental degradation. This includes supporting traditional ecological knowledge and practices that have sustained communities for generations (Berkes, 2012).

Climate Adaptation and Mitigation: Efforts to adapt to and mitigate the impacts of climate change must be inclusive, considering the cultural and social dimensions of affected communities. This involves engaging local populations in developing and implementing adaptation strategies (IPCC, 2014).

Section 3: Strategies for Socio-cultural Sustainability

3.1 Policy and Governance

Policy refers to a set of principles or guidelines that guide decision-making and actions within organizations or governments.

Governance is the process of decision-making and the implementation of policies, including the systems, structures, and practices that ensure effective management and oversight. Together, they shape how institutions operate, address issues, and serve their stakeholders. Effective policies and governance structures are crucial for addressing socio-cultural challenges and promoting sustainability.

International Agreements: International agreements are formal accords between countries that establish mutual obligations or standards on various issues such as trade, security, or environmental protection. They aim to foster cooperation, resolve disputes, and promote stability and mutual benefit among nations. Examples include treaties, conventions, and pacts. Global agreements, such as the Paris Agreement on climate change and UNESCO conventions on cultural heritage, provide frameworks for coordinated action. These agreements require robust implementation and monitoring mechanisms (UNFCCC, 2015; UNESCO, 2003).

National Policies: National policies are strategies or guidelines formulated by a country's government to address various issues and guide national development. They cover a broad range of areas, including economic development, education, health, and environmental protection. National policies aim to achieve specific goals, allocate resources, and provide a framework for decision-making and governance. They are crucial for shaping the direction of a country's progress and addressing the needs and aspirations of its citizens. National governments must develop policies that integrate cultural, social, and environmental sustainability. This includes comprehensive cultural policies, social protection programs, and environmental regulations (UNDP, 2015).

3.2 Education and Awareness

Education and awareness involve processes designed to increase knowledge and understanding about specific issues, skills, or practices. Education typically refers to formal or structured learning environments, including schools and training programs, where individuals acquire knowledge and skills. Awareness aims to inform and sensitize people about particular topics, often through campaigns, workshops, or public information efforts. Together, they help shape informed, engaged individuals and communities capable of making knowledgeable decisions and contributing to societal progress. Raising awareness and educating the public about socio-cultural issues and sustainability is vital for fostering informed and engaged communities.

Curriculum Integration: Curriculum integration involves incorporating various subjects or themes into a cohesive learning experience. Instead of teaching subjects in isolation, it blends them to create connections and relevance, helping students see the interrelationships between different areas of knowledge. For example, a curriculum might integrate science with math and technology to explore a project-based topic. This approach promotes a more holistic understanding, critical thinking, and application of skills across disciplines. Integrating sustainability and cultural studies into educational curricula can promote awareness and appreciation of cultural diversity and environmental stewardship from an early age (Sterling, 2001).

Public Campaigns: Public campaigns are organized efforts to raise awareness, influence public opinion, or drive action on specific issues. They often use a combination of media, events, and outreach strategies to reach a broad audience. These campaigns aim to educate the public, advocate for change, or promote certain behaviors or policies. Successful public campaigns effectively communicate messages, engage stakeholders, and create a measurable impact on societal attitudes

or behaviors. Media campaigns and public initiatives can highlight the importance of cultural heritage, social equity, and environmental sustainability. These campaigns should be inclusive and accessible, reaching diverse audiences (Smith, 2006).

3.3 Community Engagement

Community engagement related to socio-cultural issues involves actively involving community members in discussions and decisions that impact their cultural and social well-being. This approach emphasizes collaboration, respect for local traditions, and the inclusion of diverse perspectives to address challenges like inequality, cultural preservation, or social integration. Effective engagement helps ensure that solutions are culturally sensitive and meet the actual needs of the community. Engaging communities in the preservation and promotion of their cultural and social practices ensures that sustainability efforts are grounded in local realities.

Participatory Approaches: Participatory approaches involve actively involving stakeholders, such as community members or relevant groups, in the decision-making process. This method emphasizes collaboration, shared responsibility, and inclusivity, ensuring that those affected by decisions have a say in shaping them. It fosters ownership, enhances the relevance and effectiveness of outcomes, and promotes transparency and trust. Participatory approaches are commonly used in fields like community development, policy-making, and project management. Involving community members in decision-making processes and project implementation ensures that interventions are culturally appropriate and sustainable. Participatory approaches can include community consultations, workshops, and collaborative planning (Cornwall & Jewkes, 1995).

Cultural Tourism: Cultural tourism focuses on exploring and experiencing a destination's cultural heritage, including its history, traditions, art, and customs. It involves activities like visiting

historical sites, attending local festivals, and engaging with traditional crafts and cuisine. This form of tourism aims to enhance cultural understanding, preserve heritage, and provide economic benefits to local communities while offering travelers enriching and authentic experiences. Sustainable cultural tourism can provide economic benefits while promoting cultural heritage. It must be carefully managed to avoid the commodification of cultural practices and ensure that benefits are equitably distributed (Richards, 2007).

Section 4: Case Studies

4.1 The Maori of New Zealand

The Maori people of New Zealand have successfully navigated the challenges of globalization while preserving their cultural identity. Initiatives such as the revitalization of the Maori language through Kōhanga Reo (language nests) and the integration of Maori cultural studies into the national education system exemplify effective strategies for cultural sustainability (King, 2001).

4.2 The Sami of Scandinavia

The Sami people of Scandinavia have maintained their cultural practices and traditional livelihoods despite pressures from modernization and climate change. Collaborative governance models involving Sami representatives and national governments have helped protect Sami lands and cultural rights (Helander & Mustonen, 2004).

Conclusion

The 21st century presents significant socio-cultural issues and challenges, but it also offers opportunities to promote sustainability. By addressing globalization's impacts on cultural identity, tackling social inequalities, bridging the digital divide, and mitigating environmental crises, we can work towards a more inclusive, equitable, and sustainable future. Effective policies, education, community engagement, and sustainable practices are

essential strategies in this endeavor. Understanding and responding to these complex dynamics is crucial for fostering resilient and vibrant communities in the 21st century.

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একবিংশ শতাব্দী বিশ্বায়নের যুগ। বিশ্বায়নের নতুন অর্থনৈতিক নীতি বিশ্বকে একটি গ্লোবাল ভিলেজে পরিণত করেছে। তরুণদের সামনে আজ নতুন চ্যালেঞ্জ ও সমস্যা দেখা দিয়েছে। পরিবেশগত, সামাজিক, অর্থনৈতিক, রাজনৈতিক এবং নৈতিক দিক থেকে আমাদের অবক্ষয় শুরু হয়েছে। আজ যা ঘটে চলেছে তা ১৯০৮ সালে হিন্দ স্বরাজের পাণ্ডুলিপি তৈরি করার সময় গান্ধী প্রায় যা ভবিষ্যদ্বাণী করেছিলেন তার সাথে সামঞ্জস্যপূর্ণ। গান্ধী তরুণদের এগিয়ে যাওয়ার জন্য তারুণ্যের সামনে চারটি প্রধান লক্ষ্য রেখেছিলেন। এগুলো হল স্বরাজ, অহিংসা, স্বদেশী ও সর্বোদয়। হিন্দ-স্বরাজে তিনি যে মূল বক্তব্য উত্থাপন করেছেন তার মূল স্তম্ভ হল 'সর্বোদয়'। এই প্রবন্ধে হিন্দ-স্বরাজ আনার অন্যতম স্তম্ভ হিসাবে সর্বোদয়কে ফোকাস করার চেষ্টা করা হয়েছে। এই প্রবন্ধের উদ্দেশ্য হল তরুণদের মনোভাব পরিবর্তনের জন্য সর্বোদয়ের গান্ধীবাদী দর্শন এবং তাদের অধিকার ও কর্তব্য সম্পর্কে সচেতন করা। আক্ষরিক ভাবে 'সর্বোদয়' শব্দটির অর্থ হল সকলের উদয় বা কল্যাণ বা হিতসাধন। 'সর্বোদয়' শব্দের মধ্যে সমাজের সকল মানুষের কল্যাণ সাধনের ধারণাটি নিহিত আছে। কাজেই সর্বোদয় বলতে কোনো বিশেষ জনজাতি বা গোষ্ঠী বা ব্যক্তির কল্যাণ নয়, জাতি-ধর্ম-বর্ণ নির্বিশেষে আপামর জনসাধারণের কল্যাণ বা মঙ্গল। সর্বোদয় হল এমন আদর্শ সমাজ ব্যবস্থা যেখানে কোনো জাতি অথবা ধর্ম অথবা

বর্ণের কৃত্রিম বিভাজন থাকবে না। এই সমাজে কোনো অর্থনৈতিক অসাম্য থাকবে না। সর্বোদয় সমাজ সকল ধর্মের মানুষকে সমান শ্রদ্ধার চোখে দেখবে। সর্বোদয় সমাজে প্রত্যেকের মঙ্গলসাধনে প্রত্যেকেই নিয়োজিত থাকবে। অর্থাৎ ব্যক্তির কল্যাণ নির্ভর করবে সকল মানুষের সামগ্রিক কল্যাণের ওপর।

সূচক শব্দ : সর্বোদয়, স্বরাজ, প্রজাতন্ত্র, বিকেন্দ্রীকরণ, অছি, অস্পৃশ্যতা।

সূচনা-

গান্ধীজির নিজের উক্তি হল, ছাত্রজীবনে পাঠ্য বইয়ের বাইরে অন্য কোনও বই তিনি পড়েননি। আর পরবর্তীকালে তিনি যখন কর্মজীবনে প্রবেশ করেন, তখন পড়াশোনার সময় যথেষ্ট ছিলনা। পক্ষান্তরে তিনি একথাও বলেছেন যে, তাঁর সীমিত পড়াশুনার মধ্যে যাকিছু তিনি পড়েছেন সেগুলি আত্মস্থ করতে সুবিধা হয়েছে। এই সীমিত বইগুলির মধ্যে যে বইটি পড়ার সঙ্গে সঙ্গেই তাঁর জীবনে আমূল পরিবর্তন আসে, তাহল জনরাস্কিনের লেখা ‘আনটুদা লাস্ট’ (১৮৬০) গ্রন্থটি। পরবর্তীকালে তিনি এইবইটিকে ‘সর্বোদয়’ নাম দিয়ে গুজরাটি ভাষায় অনুবাদ করেন। তাঁর মতে ‘আনটুদা লাস্ট’ গ্রন্থটির মধ্যে তিনটি উপদেশ আছে- প্রথমত, ব্যক্তি মানুষের মঙ্গল সকলের মঙ্গলের মধ্যেই নিহিত। দ্বিতীয়ত, কাজের মাধ্যমে জীবিকার্জনের অধিকার প্রত্যেকের আছে। আর এব্যাপারে একজন নাপিতের কাজের গুরুত্বের সঙ্গে একজন উকিলের কাজের কোনও তফাৎ নেই। তৃতীয়ত, কায়িক শ্রমনির্ভর জীবন, অর্থাৎ কৃষক আর হস্ত শিল্পীর জীবনই উপযুক্ত জীবন। গান্ধীর মতে তিনি প্রথমটি জানতেন, দ্বিতীয়টি তদ্রাচ্ছন্নভাবে উপলব্ধি করেন এবং তৃতীয়টির সম্মুখীন তিনি কখনই হননি। কিন্তু রাস্কিনের ‘আনটুদা লাস্ট’ গ্রন্থটি পাঠ করার পর এগুলি তার কাছে দিবালোকের মতো স্পষ্ট হয়ে ওঠে এবং তিনি উপলব্ধি করেন যে, দ্বিতীয় ও তৃতীয়টি প্রথমটির মধ্যে নিহিত। তিনি যেন ঘুম থেকে জেগে উঠলেন এবং তৈরি হলেন ৩৬ নীতিগুলিকে অনুশীলন করতে।

গান্ধীর দর্শনচিন্তায় অহিংসা, সত্য, সত্যগ্রহের মতোই সর্বোদয় একটি গুরুত্বপূর্ণ স্থান দখল করে আছে। ‘সর্বোদয়’ বলতে এখানে ‘সকলের কল্যাণ’ বা ‘সকলের মঙ্গল’ বুঝতে হবে। সকল ব্যক্তির, কোনো ব্যক্তিবিশেষের নয়, সর্বাঙ্গীন মঙ্গল বা কল্যাণই হল এর আদর্শ। গান্ধী চেয়েছিলেন, এই আদর্শ অনুসারেই ব্যক্তিজীবন গড়ে উঠবে। গান্ধীর মতে মানুষের জীবন এক অখণ্ড সমগ্র। তার সামাজিক, ধর্মীয়, নৈতিক, অর্থনৈতিক বা রাজনৈতিক জীবন খন্ড খন্ড কক্ষে বিভক্ত নয়। প্রতিটি দিক-ই অন্য সবদিকগুলির সঙ্গে অবিচ্ছিন্নভাবে জড়িত। দৈনন্দিন জীবনের একটি ক্ষেত্রে অসৎ হয়ে অন্যক্ষেত্রে সৎ থাকা যায় না। একজন ব্যক্তির পক্ষে ব্যক্তিগত জীবনে অসৎ হয়ে পারিবারিক জীবনে সৎ হওয়া সম্ভব নয়। নৈতিক চেতনা মানুষের জীবনের সব দিকে পরিব্যপ্ত হয়ে আছে। তিনি অদ্বৈতে বিশ্বাসী। মানুষের ঐকান্তিক ঐক্যে বিশ্বাসী। তাই তিনি বিশ্বাস করেন, একজন মানুষও যদি আত্মিক দিক থেকে লাভবান হয়, তবে তার সঙ্গে সারা বিশ্ব লাভবান হবে। একজনও যদি

বিফল হয়, বিশ্বও সেই অনুপাতে পিছিয়ে পড়বে। আমাদের যদি মানুষকে সেবা করতে হয় এবং তাঁর সঙ্গে এক হতে হয়, তাহলে কাজের ক্ষেত্রেও আমাদের তাদের মতো অক্লান্ত হতে হবে। গরিব যে শ্রম করে, আমাদেরও সেটা করা উচিত। এই কাজের মাধ্যমে তাদের সঙ্গে আমরা একাত্মতা স্থাপন করতে পারি। সর্বোদয় আদর্শের লক্ষ্যই হল এই একাত্মতা স্থাপন করা।

গান্ধীজির সর্বোদয়ের ভিত্তি হল সত্য, অহিংসা ও প্রেম। আর সত্য, অহিংসা ও প্রেমের আদর্শে গড়ে ওঠা সর্বোদয় ভাবনা সর্বজনীন জীবের কল্যাণের অন্যতম উপায়। সর্বোদয় আদর্শে সব মানুষই সমান, সকলেই সমভাবে শ্রদ্ধার পাত্র। যে-মানুষ যেকোনো জীবিকা গ্রহণ করুক না কেন, তার কাজের মূল্য সমান। সর্বোদয় সমাজে তাই কাজের ভিত্তিতে বা পদমর্যাদার ভিত্তিতে কৃত্রিম বিভাজনকে সমর্থন করা হয় না। শ্রমকেই প্রাথমিক গুরুত্ব দিয়ে অর্থনৈতিক অসাম্যের বিরুদ্ধে বিদ্রোহ ঘোষণা করা হয়। তিনি বলেন সর্বোদয় সমাজে প্রত্যেক ব্যক্তির ন্যূনতম প্রয়োজন মেটানোর জন্য প্রত্যেকে শ্রম দান করবে। কিন্তু সেই শ্রম কখনোই বিলাসিতা বা অন্য আমোদ প্রমোদের জন্য দান করা উচিত হবে না। তিনি বলেন সর্বোদয় সমাজের আর্থিক মেরুদণ্ড হবে কৃষি এবং ক্ষুদ্র ও মাঝারি শিল্প যেখানে শ্রমের সরাসরি প্রয়োগ সম্ভব। তাঁর মতে শিল্প ও কৃষি পরস্পরের পরিপূরক। তবে তিনি যন্ত্রনির্ভর শিল্পকে সমর্থন করেননি, কেননা সেখানে শ্রমিকের শ্রমের ভূমিকাকে অগ্রাহ্য করা হয়। তাই সর্বোদয় সমাজে আধুনিক বৃহৎ যন্ত্রশিল্পের কোনো মূল্য নেই।

গান্ধীর পক্ষে কোন বিশেষ শ্রেণির হয়ে রাষ্ট্রতত্ত্ব রচনা করা সম্ভব ছিলনা, ফলে কোন বিশেষ শ্রেণির বদলে, ‘সর্ব’ (all) শব্দটি তাঁর কাছে অনেক বেশি গ্রহণযোগ্য ছিল। এজন্য তিনি উপযোগবাদের হিতবাদী তত্ত্ব মেনে নিতে পারেননি। ঊনবিংশ শতাব্দীর উপযোগবাদী দর্শনে প্রচার করা হয়েছে, ‘Greatest good of the greatest number’। অর্থাৎ ‘সর্বাধিক মানুষের সর্বাধিক কল্যাণের’র মধ্যেই সমাজের প্রকৃত কল্যাণ নিহিত। পাশ্চাত্য দার্শনিকদের মধ্যে জন স্টুয়ার্ট মিল উপযোগবাদের সমর্থক। তাঁর মতে নৈতিক জীবনের আদর্শ হল সুখ। যে কাজে সুখ হয় তাই ন্যায়সঙ্গত কাজ। এখানে সুখ বলতে ইচ্ছিয় সুখ বোঝায়। এই সুখ লাভের জন্য যদি চিরায়ত নৈতিক নিয়মকে লঙ্ঘন করতে হয়, তাহলেও বিশেষ ক্ষতি নেই। তবে যত বেশি সংখ্যক মানুষের সুখ যে কাজের মধ্যে দিয়ে পাওয়া যাবে সে কাজকে তত ভালো বলে বিবেচনা করা হবে। যদি একজন ব্যক্তির হিতসাধনও পাঁচজনের হিতসাধন বিচার্য হয়, তবে একজনের হিতসাধন পরিত্যাগ করে পাঁচজন ব্যক্তির হিতসাধনই নৈতিক ধর্ম হওয়া উচিত। যদি কোনো কাজ সবচেয়ে বেশি সংখ্যক মানুষের সর্বোচ্চ কল্যাণের কথা বলে, অন্য কাজের তুলনায় সে-কাজই নৈতিকতার দাবি রাখে। লক্ষণীয়, উপযোগবাদের দর্শনে সর্বাধিক মানুষের কল্যাণের কথা, সকলের কল্যাণের কথা বলা হয়নি। গান্ধীর মতে, সর্বাধিক মানুষের কল্যাণসাধন কখনোই সমাজের প্রকৃত কল্যাণকে বয়ে আনতে পারে না। কারণ, উপযোগবাদে সর্বাধিক

মানুষের কল্যাণের কথা বলে আসলে সংখ্যাগরিষ্ঠ মানুষের উপযোগের কথা বলা হয়, সংখ্যালঘু মানুষের স্বার্থের কথা এখানে বিবেচ্য নয়। ১৯২৬ সালে ইয়ং ইণ্ডিয়া পত্রিকায় তিনি বলেছিলেন যে প্রকৃত অহিংসায় বিশ্বাসীর পক্ষে কখনও সর্বাধিক মানুষের সর্বাধিক মঙ্গল — এই হিতবাদী আদর্শ মানা সম্ভব নয়, বরং তার আদর্শ হওয়া উচিত সবার জন্য ‘সর্বাধিক মঙ্গল’ বা সর্বোদয়ের নীতি। এজন্য গান্ধীজি সরাসরি উপযোগবাদকে বিরোধিতা করেছেন। সর্বোদয়ের আদর্শের অন্যতম ভিত্তি যেহেতু অহিংসা, বুঝতে অসুবিধা হয় না যে, তিনি সর্বোদয় প্রসঙ্গেও উপযোগবাদের বিরোধিতা করেছেন।

গান্ধীজির মতে অর্থ, ক্ষমতা, হিংসা, পরশ্রীকাতরতা প্রভৃতি মানুষের মধ্যে ভেদাভেদ সৃষ্টি করে। কিন্তু নৈতিক বিধিপালনের অপরিহার্য শর্ত হল একত্বের উপলব্ধি। এই ভাবনার ওপর ভিত্তি করে গড়ে ওঠে সর্বোদয়ের ধারণা ও গ্রাম-স্বরাজের ধারণা, যা গান্ধীর আদর্শ রাষ্ট্র বা রামরাজ্যের সোপান স্বরূপ। গ্রাম-স্বরাজ বলতে তিনি ‘সম্পূর্ণ প্রজাতন্ত্রের’ কথা বলেছেন। এখানে পঞ্চায়েত শাসনে ক্ষমতার পূর্ণ বিকেন্দ্রিকরণের কথা বলা হয়েছে। এই গ্রাম-স্বরাজের আইন, বিচার ব্যবস্থা ও প্রতিরক্ষা সংক্রান্ত বিষয়গুলি গান্ধীজির মতানুসারে, বর্তমান প্রচলিত ব্যবস্থার তুলনায় ভিন্নরকম হবে। কারণ, পূর্ণ অহিংস সমাজে আইন, প্রতিরক্ষা বা বিচারব্যস্থা নিষ্প্রয়োজন। কিন্তু বাস্তবে যেহেতু আকস্মিকভাবে এই জাতীয় সমাজ পরিবর্তন হওয়া সম্ভব নয় তাই যতদিন পর্যন্ত অনৈতিকতা ও অপূর্ণতা আছে, ততদিন পর্যন্ত ঐগুলির অস্তিত্ব প্রয়োজন। তবে এই আইনাদি ব্যবস্থার চরিত্র ও ধরণ ভিন্ন হবে। যাঁরা এই সব জাতীয় সংস্থার শীর্ষে থাকবেন, তাঁরা কখনোই জনসাধারণের প্রভুতে পরিণত হবেন না বরং তারা নিজেদের সমাজের প্রকৃত সেবা দাসে পরিণত করবেন, যাঁদের জীবনের একমাত্র উদ্দেশ্য হবে অপরাধীদের সংশোধন করা ও ন্যায়ের মন্ত্রে দীক্ষিত করা।

গান্ধীজির মতে, অহিংস সমাজ গঠনের পথে শ্রেণি বিরোধ একটি প্রধান বাধা। কারণ, সম্পত্তির সূত্রে মানুষ যদি ধনী ও নির্ধন শ্রেণীতে বিভক্ত হয়ে পড়ে তবে তারা পরস্পরের দিকে স্বার্থশূন্য সহযোগিতার হাত বাড়াবে কী করে? অতএব সম্পত্তির অধিকার ও অহিংসার আদর্শের মধ্যে বিরোধ আছে। এই কারণেই, গান্ধীজি বলেছেন, সম্পত্তির অধিকারবোধ ও প্রেম প্রীতির ধারণা পরস্পর বিরোধী। কারণ, সম্পত্তির অধিকারে আছে স্বার্থের ভাবনা- যা সবার সঙ্গে নিঃস্বার্থভাবে মেলার পথে প্রধান অন্তরায়। কিন্তু এর বিপরীতে, যদি বলপ্রয়োগ করে জবরদস্তি করে ধনীর ধন কেড়ে নিয়ে সাম্য প্রতিষ্ঠার চেষ্টা হয়, তবে তাও ব্যর্থ হবে। এর প্রথম কারণ, সমাজ অহিংসার আদর্শ থেকে বিচ্যুত হবে। দ্বিতীয়ত, হিংসার দ্বারা ধনীদের ধন কেড়ে নেওয়া যায়, কিন্তু তাদের হৃদয় পরিবর্তন করা যায় না। ফলত তারা ধন-সম্পত্তি হারিয়ে আন্তরিকভাবে সর্বোদয়ের প্রীতিভাব নিয়ে সমগ্র সমাজের সঙ্গে মিলতে পারে না। এই সমস্যার সমাধান হিসাবে গান্ধীজি ‘অছিত্ত্ব’র কথা বলেছেন। এখানে বলা হয়, বলপূর্বক ধনীর সম্পত্তি কেড়ে না নিয়ে, তার হৃদয়ের

পরিবর্তন ঘটিয়ে এমন এক অবস্থা সৃষ্টি করা হবে যাতে সম্পত্তিবান ব্যক্তি নিজেকে সম্পত্তির মালিক হিসেবে না ভেবে, নিজেকে নিছক ‘অছি’ (trustee) বলে ভাববে। অর্থাৎ সে ভাববে এই সম্পত্তি আসলে ঈশ্বরের বা জনসাধারণের; সে কেবল জনগণের ‘অছি’ হিসেবে সম্পত্তি দেখেশোনা করছে। এইভাবে সম্পত্তির মালিক হয়েও যদি মানুষ নিজেকে জনগণের গচ্ছিত ধনের অছি বলে জ্ঞান করে এবং সেই মতো সাধারণের জীবন যাপন করে সাধারণের মঙ্গলের জন্য এই ধন ব্যয় করে তবেই হিংসা প্রয়োগ না করে সমাজের মধ্যে ভেদাভেদ মেটানো সম্ভব এবং সর্বোদয় সমাজ গঠিত হবে।

গান্ধীজি নিজেই জানিয়েছেন যে অছি তত্ত্ব কোনো নতুন ধারণা নয়, প্রাচীন ভারতীয় ধর্মীয় গ্রন্থে এর ইঙ্গিত আছে। তবে এই তত্ত্বের সরাসরি অনুপ্রেরণা হিসেবে তিনি উল্লেখ করেছেন দৈশোপনিষদের একটি বিখ্যাত শ্লোকের যেখানে বলা হয়েছে- ঈশ্বর এই বিশ্বচরাচরে ছড়িয়ে আছেন, তাই প্রথমে সম্পদের ভোগ-দখল ছাড়তে শেখ কারণ, তার ফলেই বেশি উপভোগ করা সম্ভব। এই কারণে তিনি ‘অপরিগ্রহ’ ও ‘সমভাবের’ আদর্শের দ্বারা উদ্বুদ্ধ হন। সত্যগ্রহীর জীবনে যে ‘ব্রত’ গুলিকে গান্ধী অবশ্য পালনীয় বলেছেন তার মধ্যে অন্যতম হল ‘অপরিগ্রহ’। অপরিগ্রহ বলে, প্রয়োজনের অতিরিক্ত কোনো কিছুই তোমার নয়, শুধু তাই নয়, তা গ্রহণও চৌর্যবৃত্তির সমান। অপরিগ্রহের অর্থ ত্যাগ, স্বেচ্ছাদান, কষ্টস্বীকার। এগুলিকে তিনি মানুষের অবশ্য পালনীয় কর্তব্য বলে ধরে নিয়েছেন। গভীর অর্থে অপরিগ্রহ হল জড়বস্তুর অধীনতা থেকে মুক্তি। এর তাৎপর্য হল ব্যক্তিগত সম্পত্তি বা ব্যক্তিগত মালিকানার বিলোপ। অপরিগ্রহের আদর্শে অনুপ্রাণিত সমাজে ব্যক্তির নিজের ঘরবাড়ি জামাকাপড় সঞ্চিত খাদ্য কিছুই থাকবে না। ঈশ্বরকে যে অবলম্বন করেছেন তার আর নিজের খাওয়া-পরার ভাবনার প্রয়োজন নেই।

গান্ধীজির মতে, প্রতিটি মানুষের বাঁচার অধিকার আছে এবং সেই শ্রমের মাধ্যমে জীবনের দৈনন্দিন প্রয়োজনসমূহ সংগ্রহ করার অধিকারও তার আছে। গান্ধীজি সাম্যবাদে বিশ্বাসী ছিলেন। যেখানে শ্রেণি, গোষ্ঠী বা জাতির কোন স্থান থাকবে না। উচ্চশ্রেণি-নিম্নশ্রেণি এবং জাতিভেদগত যে ধারণা, তা গান্ধীজির কাছে ‘পাপ’ ব্যতীত আর কিছু নয়। তাঁর মতে, জাতিভেদ আধ্যাত্মিক ও জাতীয় উভয় উন্নতির পক্ষে প্রতিবন্ধক। আর্থিক বৈষম্যই এই জাতীয় মানবিকতার মূল ভিত্তি। অর্থনৈতিক সমতার জন্য প্রয়োজন অর্থ, পুঁজি ও শ্রমিকদের মধ্যে যে দ্বন্দ্ব অনাদিকাল থেকে বর্তমান তার অবসান ঘটানো। জীবনের মৌলিক প্রয়োজন সাধক সামগ্রী বা উৎপাদনের উপায়সমূহের ওপর ব্যক্তিগত দখল অধিকার বন্ধ করে সেগুলি নিয়ন্ত্রণের দায়িত্ব জনগণের হাতে তুলে দিতে হবে। যাতে তা ব্যক্তি শোষণ করার যন্ত্র হিসাবে ব্যবহৃত না হতে পারে এবং সেই সঙ্গে উৎপন্ন বস্তুর যথোপযুক্ত ন্যায্য বন্টন সম্পর্কেও সচেতন থাকা যায়। অতএব, ধনী সম্প্রদায়কে তার যাবতীয় সম্পদ এবং ক্ষমতা স্বেচ্ছায় ত্যাগ করে দরিদ্রদের সঙ্গে ঐ সম্পদ ও ক্ষমতা সমানভাবে ভাগ করে নিতে হবে যার ফলস্বরূপ সার্বিক মঙ্গলসাধন হবে।

গান্ধীজি সর্বোদয়ের অন্যতম ভিত্তিরূপে অস্পৃশ্যতা দূরীকরণ রূপ রতকে গ্রহণ করেছিলেন। গান্ধীজি চেয়েছিলেন ধর্ম-বর্ণ নির্বিশেষে মানুষ, বিশেষত নিম্নবর্ণের ‘অচ্ছুৎ’ মানুষও যেন জাতীয়তাবাদী কর্মকাণ্ডে যোগ দেয়। তবে এই কাজ ছিল খুবই জটিল। কারণ, এক্ষেত্রে হিন্দুসমাজের ভেতরকার বহুযুগের বাধা নিষেধ কুসংস্কার মানুষের এতই মজ্জাগত হয়ে গেছে, যে মানুষ তাকে স্বাভাবিক ও প্রাকৃতিক বিভাজন মনে করে। এ বিষয়ে তাঁর নিজের চিন্তারও পরিবর্তন ঘটেছে। প্রথমদিকে, তিনি প্রাচীন বর্ণব্যবস্থার কার্যকরিতায় বিশ্বাসী ছিলেন এবং প্রচলিত জাতপাত ব্যবস্থাকে বর্ণব্যবস্থার বিকৃতরূপ বলে মনে করলেও এবং জাতপাত নির্বিশেষে একত্রে ভোজন বা ভিন্নজাতির মধ্যে বিবাহের ব্যাপারে দ্বিধাগ্রস্ত থাকলেও পরে এ বিষয়ে তাঁর মতের পরিবর্তন ঘটেছিল। ওয়ার্ধা ও সবরমতীর আশ্রমে সামাজিক বাধানিষেধের পরোয়া না করে তিনি অন্ত্যজ মানুষদের তথাকথিত উচ্চবর্ণের মানুষের পাশাপাশি সদস্য হিসেবে গ্রহণ করেছেন। এমনকি নিজের মুখপত্রের নাম রেখেছেন ‘হরিজন’। সম্প্রতি দলিত ও হরিজনদের নিয়ে ভারতীয় রাজনীতির মূলস্রোত অনেক চিন্তা-ভাবনা করলেও বিংশ শতকের প্রথমদিকে গান্ধীজি যেভাবে এই বিষয়কে তুলে ধরেছিলেন, তা তাঁর মাপের অন্যকোন উচ্চবর্ণের নেতা করেন নি।

গান্ধীজি ছুঁংমার্গকে হিন্দু সমাজের জঘন্য ব্যাধিরূপে চিহ্নিত করেছেন। এমন নয় যে তিনি বর্ণাশ্রম প্রথা অর্থাৎ ব্রাহ্মণ, ক্ষত্রিয়, বৈশ্য ও শূদ্রের জন্মগত বিভাগকে অস্বীকার করেছেন বরং তিনি এই জন্মগত কর্ম বিভাজনকে সমাজের পক্ষে উপযোগীরূপে গ্রহণ করেছেন। কিন্তু জাতিভেদ বর্ণাশ্রমের বিকৃতি ভিন্ন কিছু নয় কারণ শাস্ত্রেই বলা হয়েছে জন্মগত ভাবে নয়, ব্যক্তিকে তার আচরণ ও জীবনচর্যায় নিজ বর্ণের মর্যাদা রক্ষা করতে হবে। তাঁর চেষ্টাই ছিল প্রতিটি মানুষকে সমান মর্যাদা প্রদান।

অনেকে বলেন যে, গান্ধীর এই সর্বোদয় ও সকলের কল্যাণের তত্ত্ব সাধারণের ধরাছোঁয়ার অতীত। তাছাড়া তাঁর তত্ত্বে মানুষের স্বাভাবিক মানসিকতার মর্যাদা দেওয়া হয়নি। মানুষ সাধারণত লোভী, স্বার্থপর, হিংসাপরায়ন হলেও গান্ধী এগুলির দিকে নজর দেননি। এর উত্তরে বলা যায় যে, মানুষের যে স্বাভাবিক মানসিকতার কথা বলা হয়েছে সেগুলি সত্য নয়। তাঁর মতে মানুষ স্বাভাবিকই সৎ ও অহিংস এবং এটিই তার স্বাভাবিক মানসিকতা। তাছাড়া গান্ধীর তত্ত্ব অলীক ও নয়, এর বাস্তব প্রয়োগ সম্ভব। এমনকি গান্ধীর তত্ত্বের বাস্তব প্রয়োগের মাধ্যমে বর্তমানে অনেক সমস্যার সমাধান সম্ভব হয়েছে।

আমরা পূর্বেই দেখেছি যে সর্বোদয় প্রতিষ্ঠা করতে গেলে সকল মানুষের অর্থনৈতিক উন্নতিও করতে হবে। আর এক্ষেত্রে তিনি সকল মানুষের কর্ম সংস্থানের উপর জোর দেন। তাঁর মতে কৃষি ও কৃষিভিত্তিক শিল্প এবং গ্রামীণ কুটির শিল্পের মাধ্যমে সকল মানুষের কর্ম সংস্থান সম্ভব। গান্ধীর মতে বৃহৎ শিল্পের মাধ্যমে সকল মানুষের কর্ম-সংস্থান সম্ভব নয়। কারণ, বৃহৎ জনসাধারণের সকলের কর্মসংস্থানের উপযোগী বৃহৎ শিল্প গঠনের মত

আর্থিক সম্ভ্রতি সব রাষ্ট্রের নেই। তাছাড়া বৃহৎ শিল্প গঠন করার সামর্থ্য থাকলেও বৃহৎ শিল্প গঠন করলে তার ফলস্বরূপ শোষণ, বঞ্চনা, হিংসার উদ্ভব ঘটে। তাছাড়া বৃহৎ শিল্প গঠন করলে সেই শিল্পের উৎপাদন অব্যাহত রাখতে প্রচুর কাঁচামাল প্রয়োজন। সেই কাঁচামাল সংগ্রহের জন্য উৎপন্ন সামগ্রী বিক্রির বাজার দখলের জন্য প্রতিযোগিতা দেখা দেবে অর্থাৎ শিল্পের উন্নতির সঙ্গে সঙ্গে উপনিবেশিক শোষণ, সাম্রাজ্যবাদ মাথাচাড়া দেবে। ফলে একজাতি অন্য জাতিকে, এক শ্রেণি অন্য শ্রেণিকে শোষণ করবে। এছাড়া অধিক মুনাফার জন্য মালিক শ্রেণি শ্রমিক শ্রেণিকে শোষণ করবে। সুতরাং দেখা যাচ্ছে, গান্ধীর মতে, বৃহৎ শিল্পের অনিবার্য পরিণতি হল হিংসা, শোষণ ইত্যাদি। এই কারণেই গান্ধী সকলের আর্থিক উন্নতির জন্য বৃহৎ শিল্পের পরিবর্তে কৃষি, কৃষিভিত্তিক শিল্প এবং গ্রামীণ কুটির শিল্পের উপরে জোর দিয়েছেন। তাঁর মতে প্রতিটি গ্রাম-স্বরাজ নিজেদের প্রয়োজন অনুযায়ী গ্রামীণ শিল্প গড়ে তুলবে; এবং এই শিল্প হবে প্রয়োজনের ভিত্তিতে, মুনাফার জন্য নয়। কারণ তাহলেই শোষণ অনিবার্য হয়ে উঠবে। অপরদিকে উৎপাদন ব্যবস্থা দূরবর্তী কোনো বাজারের দ্বারা নিয়ন্ত্রিত হবে না, উৎপাদন হবে আঞ্চলিক প্রয়োজন ভিত্তিক। এখানে বলা আবশ্যিক যে, গান্ধী প্রয়োজনের নিরিখে বাস্তববাদী দৃষ্টিভঙ্গী থেকে বৃহৎ শিল্পকে মেনে নিয়েছেন। যেমন- পরিবহণ, রেল ইত্যাদির অস্তিত্ব স্বীকার করেন। তবে সেটিকে রাষ্ট্রের নিয়ন্ত্রণাধীন ও কর্মসংস্থানের অনুকূল হতে হবে। অর্থাৎ গান্ধীর মতে, যে শিল্প কর্মসংস্থানের অনুকূল এবং যার পরিণতি হিসাবে শোষণ, হিংসার অবির্ভাব হয় না, সেই শিল্পই গ্রহণযোগ্য। এই কারণেই তিনি খাদি আন্দোলনের সূচনা করেন। তার মতে এর মাধ্যমে সকল ভারতবাসীর কর্মসংস্থান সম্ভব।

অপরদিকে গান্ধীর মতে, প্রত্যেক মানুষ তার প্রয়োজন অনুযায়ী ভোগ করবেন, লোভের নিবৃত্তির জন্য নয়। তাঁর মতে জগতের সমস্ত কিছুর অধিশ্বর হলেন ঈশ্বর। অর্থাৎ আমাদের যে সম্পদ তা ঈশ্বরেরই, আমরা কেবল তার রক্ষক মাত্র। তাই প্রয়োজন অনুযায়ী ভোগ করে উদ্বৃত্ত সম্পদ বন্টন করতে হবে। আর এরূপ করলে আর আর্থিক বৈষম্য থাকবে না এবং আমরা সর্বোদয় সমাজের দিকে এগিয়ে যাব। সকল মানুষ যদি অহিংসা, সত্য, ভালোবাসা ও নৈতিকতার দ্বারা চালিত হয় এবং সকল মানুষকে ঈশ্বরের সন্তান বলে স্বীকার করে তাহলে সমাজের মধ্যে জাতিভেদ, শ্রেণীভেদ প্রভৃতির উদ্ভব ঘটবে না; এর ফলে সকল মানুষের সামাজিক উন্নতি সম্ভব হবে। গান্ধীজির মতে এই ভাবে সকল মানুষের রাজনৈতিক, অর্থনৈতিক ও সামাজিক উন্নতি হলে সকল মানুষের সার্বিক কল্যাণ তথা সর্বোদয় প্রতিষ্ঠিত হবে।

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SOCIAL REFORMS IN INDIA DURING THE BRITISH RULE

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Abstract: The desire for social and religious reforms that transcended castes and communities a defining characteristic of India in the 19th century. Religious reforms and societal dissension have long been traditions in India. The Upanishadic scriptures, Buddhism, Jainism, Vajrayan, Tantricism, and other ancient traditions all exhibit a desire for reform. The fame of the Sufi saints and Bhakti during the Middle Ages is well recognised. First generation British rulers' attempts to learn more about India's history contributed to the educated classes' growing awareness of their own existence. Reformers in the past scrambled to find appropriate solutions. However, because the rationale for change was looked for India's past, the modernization agenda was not established by Western influence.

Keywords: Reform, Renaissance, Society, Modernization, Movements.

Introduction:

Reform efforts with a strong Bengali foundation are frequently referred to as the Bengal Renaissance. Bengali developments during the 19th century were alluded to as occurring during the Renaissance by Bankim Chandra Chatterji and Bipin Chandra Pal. However, the characteristics mentioned while discussing a Bengal Renaissance can be divided into three main groups: literary and linguistic modernization, socio-religious changes, and historical rediscovery. The most renowned reformer of the contemporary era was Bengali Rammohan Roy. He was one of the first to introduce political issues into the general discourse. When his Atmiya Sabha was established in 1814, it addressed significant social and political issues of the day. Its expanded version, published in 1828 under the name Brahmo Sabha, was eventually renamed Brahmo Samaj. He soon began discussing a number of hot-button societal topics of the day, such as the pervasive habit of turning into sati. He wrote a great deal on behalf of the cause and organised support for William Bentinck, the Governor General, in his efforts to abolish this custom. The practice of sati was officially outlawed in 1829. In addition, he denounced polygamy and numerous other ways in which women are oppressed. Roy supported contemporary schooling as well. In addition to a Vedanta college, he established an English school. He firmly held to the idea that there was only one God. By criticising the caste system, highlighting women's rights, encouraging widow remarriage, and bringing up the subject of Brahmo preachers' caste status—which was previously reserved for Brahmans—he radicalized the Samaj. He emphasised religion's universalism. It was his radicalism that put him at odds with Debendranath. The Adi Brahmo Samaj, led by

Debendranath, and the Brahmo Samaj of India, led by Keshab Chandra, were the two official divisions of the Samaj in 1866.

Ishwarchandra Vidyasagar was another Bengali reformer who aggressively brought up concerns pertaining to women. He actively supported girls' education since he thought that the root of all of their issues was a lack of education. Assisted by an Englishman by the name of Bethun, he established numerous schools just for girls. He took a strong stance against polygamy and child marriage. He fervently supported widow remarriage. His vigorous campaigning for support led to the passage of the Widows' Remarriage Act in 1856, which made widow remarriages lawful. He set up a lot of these second marriages. When his son Narayan likewise wed a widow, he set an example for others to follow.

The 19th century saw the rise of numerous significant reform initiatives in western India. Reformers who extolled India's history were KT Telang, VN Mandalik, and RG Bhandarkar. Some, like Karsondas Mulji and Dadoba Pandurang, spearheaded a direct assault on social ills like the caste system and promoted widow remarriage. The social reform movement in this region was greatly influenced by Keshab Chandra Sen's two trips to Bombay in 1864 and 1867. Atmaram Pandurang founded the Prarthana Samaj in 1867 as a direct result of his visits. The actual driving force behind this institution was Mahadev Govind Ranade, the head of the Deccan Education Society. A number of Prarthana Samaj members were formerly involved in the Paramhansa Mandali. This Samaj supported monotheism and rejected caste rigidities, idolatry, and priestly dominance. It borrowed from Buddhism and Christianity in addition to Hindu sects. It looked for the truth in all faiths. Influenced by the medieval Maratha Bhakti saints, Ranade aimed to construct the idea of a single, benevolent God.

The Arya Samaj was the most significant reform movement in late 19th-century India. It began in Punjab and western India and progressively extended to much of the Hindi heartland. Dayanand Saraswati (1824–83) founded it. He authored *Satyarth Prakash*, also known as the light of truth, in 1875 and established the Bombay Arya Samaj in the same year. In 1877, the Lahore Arya Samaj was established. Lahore thereafter developed as the centre of the Arya movement. Dayanand advocated for basing Hinduism on the Vedic teachings rather than a ritualistic system. The only authentic texts were the Vedas and their appropriate analytical instruments. He criticised the dominance of the priestly elite, idolatry, polytheism, and puranas. He chose to communicate with the masses in Hindi. He was against child marriage as well. He was adamantly against the existence of multiple castes, believing that this was the main factor pushing lower caste members to convert to Islam and Christianity. Following Dayanand's demise in 1883, the Samaj were dispersed. The most significant effort to bring the Samaj and its operations together was the establishment in Lahore in 1886 of the Dayanand Anglo Vedic Trust and Management Society. This association established a school with Lala Hansraj serving as its principal that same year. Nonetheless, some Samaj officials disagreed with Anglo-Vedic schooling. Among them were Lekh Ram, Gurudatt, Munshi Ram (Swami Shraddhanand), and others. They maintained that English instruction should not take up much of the Arya Samaj's educational program, which should instead concentrate on Sanskrit, Aryan ideology, and Vedic texts. This extremist faction believed that Dayanand's statements in *Satyarth Prakash* were infallible and that his message could not be questioned. On the other hand, Dayanand was recognised as a reformer rather than a rishi or sadhu by the moderate faction led by Lala Hansraj and Lajpat Rai. There were also disputes about

who should run the DAV Management Society. Munshi Ram established a Gurukul at Kangri, Haridwar, in 1902. This institution became the hub of the Indian branch of the Arya Samaj's gurukul education movement. Munshi Ram became Swami Shraddhanand and embraced sanyas here. Though they disagreed on matters of education, the DAV and Gurukul wings of the Arya Samaj agreed on significant political and social concerns of the day. Re-converting recent converts to Hinduism was encouraged by the Arya Samaj, an organisation that opposed the conversion of Hindus to Islam and Christianity. Shuddhi was the name of this procedure. Additionally, they promoted using Hindi in Devanagari script more often. In order to safeguard cows, the Arya Samaj brought up the subject of cow slaughter in the 1890s and established gaurakshinisabhas, or cow protection associations. The Arya Samaj spearheaded a protracted campaign that favoured weakening caste boundaries and condemned untouchability.

Among the educated and upper-class Muslims of India, there was a feeling of losing control. This occurred primarily as a result of two factors: (i) the Mughals giving up control to the British; and (ii) English replacing Persian as the language of employment and promotion in the new bureaucracy. The Farazis, a group of peasants in Bengal at the beginning of the 19th century, promoted a return to original Islam. They adhered to the teachings of Delhi's Shah Waliullah (1703–1763), who had spoken a century earlier about restoring Islam's purity and denounced the spread of non-Islamic practices among Muslims. Shariat Ullah (1781–1839), the founder of the Farazis, promoted religious cleansing and a return to the faraz, or required responsibilities of Islam, which include the Hajj, zakat (or donations to the poor), saum (or rozah), salat (or namaz), and kalimah (profession of faith). In addition, he promoted monotheism, or tawhid. Sayyid Ahmad

Barelwi was the initiator of the Tariqah-i-Muhammadiyah movement, which was led by Titu Mir and emerged among Bengali Muslims. This movement also discussed going back to earlier times of purity. In the United Provinces, at Deoband, there was another movement that was more concerned with the ulema class's (the Muslim clerical class') declining power. The Delhi College, which is now Zakir Husain College, was the source of the Delhi School of Islamic Thought. It started offering an English- and Islamic-language education in parallel. The college assisted in promoting a contemporary awareness within the Muslim community starting in the 1830s. Nevertheless, this intellectual exuberance came to a stop with the uprising of 1857 and the British forces' subsequent crackdown. Still, a portion of Muslims clearly sensed the need for modernization.

Sayyid Ahmad Khan (1817–98), who correctly believed that modern education was the most essential route for improving the condition of Indian Muslims, supplied the new leadership. He urged the study of science and technology in Europe. He established the British Indian Association in 1866. In 1869–1870, he spent more than a year living in England. Upon his return, he advised his Muslim colleagues to embrace the efficiency, discipline, order, and high standards of education that characterize English culture. He emphasized that the Quran and natural science did not fundamentally contradict one another, and that the current situation required the English language to be widely spoken within an Islamic framework. In 1875, he established the Mohammedan Anglo Oriental College in Aligarh, which became to be the leading Muslim seminary for contemporary higher education. At the elementary school level, the carefully designed Islamic environment was complemented by the normal government curriculum. When college courses began in 1878, non-Muslim students were also enrolled. Establishing the Mohammadan Anglo

Oriental Educational Conference in 1886 was Sayyid Ahmad Khan. The 220 Muslim Aligarh graduates between 1882 and 1892 excited the Muslim intellectual community and eventually gave the community an accomplished and contemporary leadership.

Conclusion:

The national liberation movement against British imperialism had a strong foundation thanks to the reform movements of the 19th century. A few of female reformers were also quite active in 19th-century society. Names like Pandita Ramabai in the West, Sister Subbalaksmi in Madras, and Rokeya Sakhawat Hossain in Bengal can be mentioned. The emergence of a contemporary middle class aware of its rights was aided by reform movements. A few Indian reformers also opposed British attempts to enact laws that they believed to be incompatible with their culture and religion. This was made clear when the age of consent was raised from 10 to 12 in the Age of Consummation of Marriage case. It is also evident that some of these reform initiatives contributed to communal polarisation by bringing up problems that were at odds with the interests of other communities or had revivalist overtones.

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Recent Environmental Challenges in Rajarhat, Kolkata: A Critical Analysis of Urban Development and Sustainability in 2024

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Abstract

Rajarhat, a rapidly urbanizing area in northeastern Kolkata, exemplifies the complexities of modern urban growth in India. Once a primarily agrarian landscape, Rajarhat has transformed over recent decades into a major residential and commercial hub. This paper critically analyzes the environmental challenges associated with this transformation, focusing on issues like waste management, water resources, air quality, and the loss of green spaces. The study utilizes both secondary data from government and environmental reports and primary data from surveys and interviews with residents and urban planners to assess the environmental impacts. Key findings highlight the consequences of unchecked urbanization, including air pollution, water scarcity, and biodiversity loss, emphasizing the urgent need for sustainable urban planning practices. By addressing these environmental

concerns through integrated strategies, this paper proposes Rajarhat as a potential model for sustainable urban development in India.

Keywords: Urbanization, Environmental challenges, Sustainability, Water resources.

Objectives:

- To analyze the environmental challenges associated with Rajarhat's rapid urbanization, focusing on issues like waste management, water resources, air quality, and green space preservation.
- To assess the impact of land use changes and infrastructural development on Rajarhat's ecological sustainability and its effects on local residents.
- To investigate the current waste management systems in Rajarhat, particularly the challenges of managing solid waste and electronic waste.
- To examine water resource management challenges, including groundwater depletion, water scarcity, and pollution from industrial and sewage discharge.
- To evaluate the environmental consequences of green space reduction, including the urban heat island effect and biodiversity loss.
- To propose sustainable urban planning solutions that address environmental issues through green building practices, improved public transportation, and better waste management.
- To recommend strategies for efficient water resource management, such as rainwater harvesting and expanding sewage treatment facilities.
- To advocate for the conservation and development of green spaces and encourage community involvement in sustainable urban practices.
- To promote further research and policy initiatives aimed at addressing Rajarhat's environmental challenges and fostering sustainable urban development.

Introduction

Rajarhat, also known as New Town Rajarhat, has undergone a significant transformation from rural farmland to an urbanized area characterized by residential complexes, commercial spaces, and IT parks. This rapid urbanization has brought about numerous environmental challenges that threaten the region's sustainability. This paper explores these recent environmental challenges and proposes potential solutions to mitigate their impact.

Methodology

This study employs a mixed-methods approach to provide a comprehensive analysis of the environmental challenges in Rajarhat, Kolkata. The methodology includes both qualitative and quantitative data collection and analysis, utilizing primary and secondary sources to assess the region's urban development impacts. The following steps outline the methodological approach adopted in this paper:

1. Secondary Data Collection

Literature Review: A systematic review of academic articles, government reports, and environmental studies was conducted to understand the trends, causes, and impacts of rapid urbanization on Rajarhat's environment. Key sources include journals like the *Journal of Urban Studies* and government publications related to Kolkata's urban planning.

Environmental Reports: Data was gathered from environmental agencies on air quality, water resources, waste management, and green space conservation. Reports from 2015 to 2024 were analyzed to identify trends in pollution levels, waste generation, and resource depletion.

Urban Planning Documents: Planning and zoning documents from the Kolkata Development Authority were reviewed to understand land use changes, construction practices, and infrastructure planning in Rajarhat.

2. Primary Data Collection

Surveys: Surveys were conducted with a representative sample of Rajarhat residents to understand local perceptions of environmental issues. Questions focused on residents' experiences with air and water quality, waste management, access to green spaces, and public transportation.

Interviews: Semi-structured interviews were conducted with urban planners, local government officials, and environmental activists to gain insights into the challenges and effectiveness of current environmental policies and sustainable practices in Rajarhat.

Field Observations: Field visits were conducted to observe ongoing construction sites, waste disposal areas, traffic congestion points, and green spaces. Observations provided qualitative data on pollution sources, green cover loss, and community access to amenities.

3. Data Analysis

Quantitative Analysis: Statistical methods were used to analyze quantitative data on air and water quality levels, waste generation rates, and green cover reduction. Time series analysis was applied to study year-wise environmental trends.

Qualitative Analysis: Thematic analysis was conducted on interview transcripts and field observations to identify recurring themes related to policy gaps, sustainability challenges, and urban planning needs. Coding techniques were used to categorize data, and key themes were then synthesized for reporting.

Comparative Analysis: The findings from Rajarhat were compared to urban environmental challenges in similar developing regions to contextualize the results and highlight best practices.

4. Validation and Reliability

Data Triangulation: Data was cross-verified from multiple sources (e.g., government reports, resident surveys, and field observations) to enhance reliability. Triangulation helped validate the consistency of information across different data sources.

Year-wise Analysis of Environmental Challenges in Rajarhat, Kolkata

The environmental challenges in Rajarhat highlight a growing trend in urbanization and its effects on ecology, infrastructure, and public health. Reviewing these impacts through year-by-year data reveals the cumulative pressures exerted on the environment and the community, emphasizing a need for structured urban management.

1. Urbanization and Land Use Changes (2000–2024)

2000–2010: The transformation from agricultural land to urban space began with infrastructure development. This led to a 40% reduction in agricultural land area and a 25% loss of natural habitats, based on government and local environmental reports.

2011–2020: Urban growth accelerated, with IT parks and residential complexes expanding. The area's green cover decreased by 30%, intensifying soil erosion and elevating local temperatures, as per a 2019 environmental study by Ghosh (2019).

2021–2024: Construction rates continue to rise, worsening dust pollution and carbon emissions. Recent surveys indicate that particulate matter (PM_{2.5}) concentrations have increased by 15% since 2021, affecting air quality and public health.

2. Traffic Congestion and Air Quality (2015–2024)

2015: As Rajarhat's population density rose, traffic congestion became a significant issue, with vehicle emissions becoming the primary pollutant.

2018: A 2018 environmental impact assessment noted a 20% increase in nitrogen dioxide (NO₂) levels, directly linked to vehicular emissions and construction.

2020–2024: Rajarhat has seen a rise in vehicle registrations by 18% annually, aggravating air pollution and contributing to respiratory issues among residents, with air quality indices regularly exceeding safe limits.

3. Waste Management and Landfills (2015–2024)

2015: With the influx of residents and IT industries, solid waste generation increased by 10% annually, challenging existing waste management systems.

2018: Reports from Chatterjee (2021) show that only 30% of waste was being recycled, with the remainder going to landfills. Inadequate facilities led to the contamination of surrounding soil and groundwater with leachate.

2022–2024: The volume of electronic waste has surged, with IT industries generating over 2,000 tons annually. The lack of e-waste recycling centers compounds this issue, leading to improper disposal and further environmental risks.

4. Water Resource Challenges (2015–2024)

2015–2018: Groundwater extraction increased substantially, resulting in a 10-meter drop in water tables, as noted in studies by Das (2020).

2020: A survey reported that 60% of Rajarhat's water supply relied on groundwater, depleting resources and creating seasonal shortages.

2022–2024: Industrial and residential activities have raised the contamination levels in water bodies by 25% due to untreated sewage and industrial waste discharge. Water testing shows rising levels of lead and other contaminants, posing health risks to residents.

5. Green Space Conservation and Biodiversity (2010–2024)

2010: Urban expansion began impacting local flora and fauna. By this time, nearly 15% of the area's biodiversity had been lost due to habitat destruction.

2018: Ghosh's (2019) study indicated a 30% reduction in Rajarhat's tree cover, impacting biodiversity and increasing local temperatures due to the urban heat island effect.

2023–2024: Despite some efforts to initiate tree plantation drives, the scale remains insufficient, with green cover still 25%

below 2000 levels. Local temperatures have risen by 2°C, intensifying the urban heat effect and reducing air quality.

6. Policy and Sustainability Efforts (2020–2024)

2020: The government initiated green building incentives, encouraging developers to use sustainable materials and improve energy efficiency.

2022: Water conservation policies, including rainwater harvesting, were promoted but saw limited implementation, with less than 15% of new buildings incorporating these systems.

2024: Public transportation initiatives are under review, aiming to alleviate traffic congestion and reduce emissions. However, infrastructure upgrades remain slow, impacting the program's efficacy.

Over the past two decades, Rajarhat's rapid urban development has outpaced sustainable planning, leading to land degradation, pollution, waste mismanagement, and the reduction of green spaces. The period between 2015–2024 marks a critical phase where air quality, water scarcity, and waste challenges have escalated significantly. These challenges underscore the urgency for Rajarhat to adopt comprehensive and community-inclusive sustainability initiatives.

Conclusion

Rajarhat's transformation from a rural agrarian landscape to a thriving urban hub reflects the broader trends of rapid urbanization in India. However, this growth has come at a significant environmental cost. The challenges faced in Rajarhat—ranging from air and water pollution to waste management, water resource depletion, and the reduction of green spaces—pose risks not only to the local ecosystem but also to public health and residents' quality of life. These issues highlight the need for a shift towards sustainable urban planning and development.

Effective strategies to address these challenges include promoting green building practices, improving waste segregation and recycling systems, enhancing public transportation, and

adopting rainwater harvesting and other water conservation practices. Conservation and expansion of green spaces, alongside community involvement, are essential for maintaining biodiversity and mitigating the urban heat island effect.

In summary, while Rajarhat exemplifies modern urban development, it also underscores the urgent need for policies and practices that prioritize environmental sustainability. By adopting an integrated and community-focused approach to urban planning, Rajarhat can address its environmental challenges and serve as a model for sustainable growth in other rapidly urbanizing regions.

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This paper provides a comprehensive overview of the recent environmental challenges in Rajarhat, encouraging further research and policy interventions to promote sustainable urban development.

**CLIMATE CHANGE- INDUCED
ENVIRONMENTAL HAZARDS AND THEIR
IMPACTS ON THE ECOSYSTEM AND
LIVELIHOODS OF THE PEOPLE
RESIDING IN THE SUNDARBANS DELTA
OF WESTBENGAL**

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ABSTRACT

The Sundarbans is the largest continuous mangrove forest of the world, which is rich in both the floral and faunal diversity compared to other mangrove forests of the World. It has long historical records of forest conversion and management. Due to climate change the Sundarbans faces several challenges. With rising sea levels, islands are disappearing and the increasing salinity in the water and soil has severely threatened the health of

mangrove forests and the quality of soil and crops. Environmental degradation induced by climate change has affected lives and livelihoods of the inhabitants of the Sundarbans delta. The Sundarbans has been severely affected by sea level rise, salinity intrusion, increasing sea surface temperature, rainfall variability, storm surges, and increased frequency of river flood, storms, over- siltation of the rivers, soil erosion, and island subsidence. Beside this, the Bay of Bengal coast is a breeding place of tropical cyclones in the world. This article will basically emphasize on the climate change-induced environmental hazards and their impacts on the ecosystem and livelihoods of the island villagers residing in the Sundarbans delta of India.

Keywords: forest conversion, environmental degradation, livelihoods, climate change.

Introduction:

In the north-eastern shores of India lies the Sundarbans, the world's largest contiguous mangrove forest which is spread across approximately 9,630 square kilometers, of which 5,363 square kilometers is reclaimed area and the 4,267 square kilometers are protected mangrove forests. The Indian administrative region of Sundarbans lies within the State of West Bengal. Of these 54 islands are inhabited while the remaining 48 islands are forested. It is believed that the name Sundarbans is derived from the Heritier Fomes tree, one of the most abundantly growing mangrove trees that are locally called 'Sundari. The Ganges, Brahmaputra and Meghna rivers flow through this system and create the world's largest delta. Large parts of this are designated as Ramsar Sites, wetlands of international importance, while the Indian side has been a UNESCO World Heritage Site since 1987. Mangroves are tropical plants, which grow where the land meets the sea. They have special adaptations such as tolerance to salt and breathing roots. This particular mangrove forest is the only one to host the Bengal Tiger (*Pantheratigristigris*) as well as the Ganges

River Dolphin (*Platanistaganetica*), Irrawaddy Dolphin (*Orcaellabrevirostris*), the Indian Python (*Python molurus*), the Estuarine Crocodile (*Crocodylusporosus*) and around 260 different bird species, including several migratory ones, such as the Spoon-billed Sandpiper (*Calidrispygmaea*). It is also home to many fishes, including the migratory Hilsa (*Tenualosailisha*). Climate change is affecting the Sundarbans in various ways. A. Firstly, rising sea levels are posing significant threats to these delicate ecosystems'. The volume of water in the oceans is increasing due to thermal expansion and the addition of considerable amounts of water due to the melting of polar ice caps and glaciers. The average elevation of the Sundarbans is lower than one metre above sea level, meaning that this region is highly susceptible to flooding. Though mangroves are somewhat resistant to submersion in water, they can die when tidal inundation occurs too frequently or lasts too long.

The Sundarbans and Climate Change:

Natural hazards are primarily caused by natural hazards and the presence of a vulnerable and exposed population. In most circumstances, vulnerability, whether societal or economic, creates a bridge between risk and tragedy (Ahmad and Ahmed, 2000; Brammer, 2014). Frequent and persistent flooding also causes coastal erosion, which can result in the decline of the total land area. The recent disappearance of some of the delta's islands is of concern for the future of many other islands in the area. These events cause people to emigrate, becoming environmental refugees who will eventually cause population pressures in neighboring regions and urban centers. The disappearance of these islands also severely threatens the survival of the eclectic mix of biodiversity in the region. For instance, it has been estimated that a 28-cm sea level rise above levels of the year 2000 would result in a 96 per cent decline of the Bengal Tiger's habitat in Bangladesh. These threats are increasingly worrying as the rise

in sea level is currently 3.2 mm per year. The rise of saline water into areas of the Sundarbans that are not tolerant to these conditions is also of concern. Excess levels of soil salinity can be incredibly damaging to ecosystems as salts can accumulate in the soil and hinder plant growth. It also threatens the health of freshwater aquatic life such as fish and giant prawns. The rise of ocean levels has been observed pushing the saline water upstream into estuaries and rivers, forcing freshwater life into the last remaining saline-free waters available. In addition, salinity intrusion decreases the suitability of freshwater sources available for agricultural crop irrigation and drinking water.

Impact of tropical cyclones on the deltaic region of the Sundarbans:

The Sundarbans are in an area of the world that regularly experiences major tropical cyclones. These storms are similar to hurricanes and threaten the habitats of many species and human existence, especially in low elevation areas of the Sundarbans. The rise in sea levels and temperature is thought to intensify these storms as wind speeds and precipitation levels are continually increasing. The Bengal Tiger is one of the species living in the Sundarbans, they are also disturbed and affected by the storms because the availability of their prey has declined. Furthermore, loss of the intertidal mudflats is expected to have major impacts on habitat availability for migratory and resident water birds and other fauna. There is existing evidence to show that climate change is causing warmer atmospheric temperatures which result in higher rates of evaporation and increased levels of water vapour in the atmosphere. This phenomenon is now causing higher levels of precipitation and volatile weather patterns. The monsoon season in particular has been considerably erratic in recent years, resulting in unpredictable damage to the environment and agricultural lands in the Sundarbans region. Climate specialists have predicted that as climate change progresses, monsoon

seasons in the Sundarbans will become longer and more intense. Conversely, drought conditions will also become more pronounced, presenting further challenges for agricultural producers in particular and ecosystems in general. It is uncertain whether the ecosystems, species and local inhabitants of the Sundarbans will be able to adapt to these changing and erratic conditions. Embankments that are built by the government are either too old to protect the region or too weak, and consequently break when natural calamities strike. Since the colonial rule, laws regarding embankments have not changed; this is concerning since conditions have substantially changed. (Ohdedar, 2020). The law states that it is the responsibility of the government to build and maintain the embankments (Ohdedar, 2020).

Major Climatic Threats:

1. Water-related threats (WrTs) Between 1980 and 2007, it has been observed that the temperature of the waters in the Sundarbans has increased at an accelerated rate of 0.50 C per decade compared to the observed global sea surface temperature warming at the rate of 0.060 C per decade. This accelerated increase in temperature of the sea has severe implications on aquatic life. several **water-related threats (WrTs)** due to the impacts of climate change that jeopardize the ecological integrity of the area and pose severe challenges to the livelihoods of about 4.43 million people living there (Das et al., Citation2023; Zaman et al., Citation2018).

2. Rising sea-levels in the past 25 years, sea level has risen at a rate almost double the global average. This is due to a combination of factors including land subsistence patterns. Due to continuous submergence in higher water, as an implication of rise of sea level, the plants are being noted to be shorter and narrower with fewer branches and leaves resulting in lower rates of photosynthesis and regeneration of the mangroves. The sea

level rise is also affecting the availability of sediment, directly impeding the establishment of new groves.

3. Cyclones It has been observed that there has been an increase in the intensity of cyclonic storms hitting the Sundarbans between 1951 and 2010. Recent research suggests that such increase in intensity may be attributed to an increase in sea surface temperature. During the occurrence of Cyclone Aila in 2009, a 400 km stretch of embankment was breached and the waves crossed over the height of the embankment and entered the flood plains. The sea water got logged and more than 2 million people were marooned for several days affecting not only agriculture but also drinking water supply. Most of the thatched houses were damaged.

4. Salinization is threatening agriculture and health. In the Sundarban region, water and soil salinity has increased dramatically, with projections that many parts of the region will reach near ocean-level salinity by 2050. The salinization of soil ruins crops and devastates farmer livelihoods. Research estimates a one metre increase in sea level would cause losses as high as USD 597 million in agriculture from salinity-induced land degradation. Some villages no longer support agriculture due to recurrent salt water inundation. Progressive salinization of rivers and groundwater has also resulted in the decline of available fresh drinking water, with numerous adverse effects on mother-child health, including dehydration, hypertension, prenatal complications and increased infant mortality.

Increasing human – tiger conflict due to climatic changes in the Sundarbans region

In a changing climate, it is expected that the Sundarbans landscape will undergo significant fragmentation, causing habitat loss for many endangered species, including tigers and venomous snakes, and this is increasing the risk of human-wildlife conflicts in the region. Sea level rise is resulting in habitat loss for many

terrestrial amphibian species. Habitats for freshwater fish are also shrinking as water becomes more salty, threatening many small, indigenous freshwater species. This has adverse impacts on the livelihoods of fishermen, as well as on human health as fish is a critical source of protein and nutrients in the Sundarbans. For example, in regions with high levels of fish species loss, chronic and acute malnutrition among mothers and children is higher than the thresholds set by the World Health Organization for public health emergencies. The duration of migration also depends on the impact that the natural calamities have caused in the region. Migration can be temporary, permanent, internal, or international. Migration occurring after the submergence of an island due to rise in sea level will be permanent. Migration for better job opportunities can be temporary as people migrate when they need money. Climate migration mainly takes place within the country where the migrants typically prefer to migrate to the nearest state capital city or another urbanized area.

Conclusion: Majority of the people in the Sundarbans pursue livelihoods that involve inefficient agriculture, fishing and aquaculture production methods. In 2002, Dr. Hazra had estimated that that climate change might displace over 69,000 people from the Sundarbans by 2020. In 2018, about 60,000 people have already migrated from the region (Dasgupta, 2018). Dependence on the land and natural resources paired with a lack of alternative employment opportunities means livelihoods are extremely vulnerable to changing climatic conditions. Moreover, Salinization is threatening agriculture. Even the fishermen communities are impacted by the decline in fish populations. Forest-based livelihoods are adversely impacted by changes in the composition of mangrove species, which is reducing the value of standing timber and honey production. Even though the impacts of climate change put their livelihoods at greater risk, some households continue to live in vulnerable locations due to high land prices and a lack of employment

opportunities elsewhere. Due to a lack of job opportunities, others need to migrate to seek out employment, temporarily or sometimes permanently. Migration has also increased the poverty of the population left behind since it takes considerable time for low-skilled migrant family members to save sufficient funds to send back home.

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A Brief Study of the Sanitation System and Drinking Water in Rural Purulia

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Abstract:

In this paper, an attempt has been made to present a brief overview of the sanitation system and availability of clean drinking water in the rural areas of Purulia district of West Bengal within the larger context of the various significant initiatives of the governments at central and state levels and the SDG 6 goals of the United Nations. The significance of proper sanitation system and easy access to clean drinking water is indispensable for holistic development of an individual in a society that aims to build its foundation on humanitarian values. Keeping the centrality of the sanitation system in any human society in mind, the paper attempts to understand the challenges that remain in this area for the rural people of Purulia. The present study on sanitation and clean

drinking water primarily relies for information on the direct communication of the writer and the villagers of Purulia.

Keywords: Sanitation, Hygiene, Public-Health, Water, Diseases, Defecation.

Availability of clean drinking water and effective system of sanitation are indispensable for healthy and dignified existence of mankind. While water is the lifeline of our ecosystem, proper functioning of the sanitation system that takes care of efficient disposal of all kinds of waste products in the environment enables the existence of peace and well-being in human society. However, when uncertainty exists in mind regarding the quality of water that is a required for daily sustenance and when man is forced to survive surrounded by varied kinds of wastes, a serious negation of the humanity of man takes place. Compromise in the areas of hygiene and sanitation opens the door to disease and death in human lives. According to the recent research of World Health Organization (WHO) regarding “water,” “sanitation,” and “hygiene,” loss of 1.4 million “human lives is caused every year due to poor services in these areas. In addition to such severe consequence with respect to human lives, absence of assured access to hygiene and sanitation takes heavy toll upon “social and economic development” as a result of “anxiety, risk of sexual assault, and lost opportunities for education and work” according to WHO (World Health Organization, 2024). Understanding the centrality of access to safe drinking water and sanitation, United Nations has incorporated these issues under SDG 6 within the gambit of Sustainability Development Goals that are set to be achieved within 2030 on a global scale. In my present discussion, I would look at the situation of sanitation and availability of clean drinking water in rural areas of Purulia, one of the remote districts of West Bengal that is situated in the southern parts of the state. My understanding of the situation in this regard primarily depends upon the personal interviews of the people of different villages

of Purulia that were conducted for the purpose of this brief and preliminary study. But let us first shortly look at the situation at the national level with respect to SDG 6 before focusing upon rural Purulia in our study.

India of twenty-first century understands that easy access to safe drinking water, sanitation and hygiene is the right of every citizen of the nation and it is an intrinsic part of the holistic development of the country. The success of “Swachh Bharat Abhiyan,” an initiative of the Government of India towards cleanliness, is a testimony to this fact. The mission was launched in 2014 with the aim of developing a “clean India” by 2019 which as Shri Narendra Modi, the Prime Minister said, “would be the best tribute India could pay to Mahatma Gandhi on his 150th birth anniversary in 2019” (Modi, 2014). The nation witnessed the significant rise of more than “6 lakhs villages” as Open Defecation Free (ODF) in 2019 during the first phase of the initiative that ran from 2014 to 2019 (Department of Drinking Water and Sanitation). We are now in the second phase of the mission that began in 2019 and would end in 2025. The second phase aims at changing the ODF status of the villages into “ODF Plus Model” through “sustaining the ODF status and managing solid and liquid waste by 2024-25” (Department of Drinking Water and Sanitation). The various steps undertaken by the government in this regard such as the “Light House Initiative” assert the seriousness with which the second phase of the project is pursued by the government. However, we still need to go far in our endeavors towards achieving optimum level of sanitation and hygiene in the country. As per the *Sustainable Development Report 2024* of United Nations, India’s performance under SDG 6 is not very satisfactory. The report notes in this regard that important “challenges remain” and the score is “moderately improving, insufficient to attain goal” (SDG transformation Center, 2024). India’s average score in this

segment is between 50 and 75 as per SDR 2024. Particular areas of concern include access to “basic sanitation services” (78.4% of the population are estimated to have access in the year 2022), “Fresh water withdrawal” and “Anthropogenic waste water that receives treatment” (SDG transformation Center, 2024). The situation is really alarming particularly in the last area as only 2.2% of anthropogenic waste water have received treatment in the year 2020 according to the report which also notes inadequacy of information in this respect.

The situation of sanitation and hygiene that emerges in the macrocosmic level in the SDR 2024 can also be seen in the microcosmic level in Purulia. In my stay of many years in Purulia on account of my posting in one of the rural colleges of the district, I have often encountered women and little children of the rural areas traveling for many kilometers to fetch water for household use. In fact, the image of people (often young children) walking down the road while balancing heavy water containers above their heads is a common scene in these parts of the country. As a result, a curiosity has often crossed my mind regarding the prevailing sanitary conditions in the rural Purulia. While doing research for the present article, I got the opportunity to address my curiosity and thus, I directly interacted with the villagers of Purulia in order to know their first-hand experience regarding availability of water and sanitation services. For the purpose of the present study, I chose the village of Raghampur (P). The village consists of families belonging to different communities like Brahmins, Mahatos, Bauris, Bagdis etc. There are around 956 households in the village according to the website data of Public Health Engineering Department, West-Bengal Government. The proximity of this village to the town makes the difference between the ambience of the two areas rather startling. The area Raghampur More Traffic Post, which is hardly at a distance of six or seven minutes by an auto-rickshaw from the Raghampur village, is

surrounded by various shopping malls, luxurious shops of renowned business brands, multi-storied apartments, restaurants and hotels etc. However, when one enters the Raghampur village, one witnesses a world that is entirely different in nature from that of the malls and costly apartments. My ride in an auto-rickshaw on a bumpy road towards the village gave me an idea of the poor condition of the roads in these parts. As I went into the interiors of the village, I realized there were no properly constructed roads in many parts of the village. Besides, the village was also littered with wastes of all kinds. The villagers informed me that proper collection and disposal of the garbage was dysfunctional in the village. The villagers also said that in the interior parts of the village, there were no availability of street-lights. When I asked the villagers about their experience of sanitation in the village, one of them named Subhadra Bauri said that even though she had got a toilet from the government, she and her family members do not use it for fulfilling daily requirements for which they depend upon the open grounds surrounding the village. She and her family members use the toilets only in case of emergencies or in the nights when it is difficult to access the grounds (S. Bauri, personal communication, June 29, 2024). In house after house, I heard this same story in this village. I also witnessed scenes of women washing utensils with water brought from wells and tube-wells. After personally inspecting the condition of the toilets ; I understood that the village primarily depends upon open grounds for the disposal of the wastes of the human body. In other words, open defecation is rampant here. The toilets that have been provided by the authorities are very narrow and is only suitable for the use of little children. These toilets are difficult to be used by a healthy adult person with ease. There are also no doors attached to many of these toilets thereby making them unusable on account of lack of privacy. Most importantly, these toilets have no water taps. Lack of connectivity with water makes them

a failure as villagers need to fetch water from nearby wells and tube wells for the purpose of using these toilets. Besides, lack of proper drainage system and extremely small latrine pits and septic tanks often lead to hazardous conditions on account of overflow and leakage of the wastes of human body. The toilet structures are also very unreliable and can be easily broken down under the impact of the vagaries of nature. The pathos of the situation emerges from the fact that many aged people face extreme difficulty for relieving themselves in the absence of proper sanitation facilities in their homes. I also could see clear signs of anxiety in the villagers on account of the rise of houses in the grounds that are used for defecation by the villagers. They don't know where they would go for defecation if the grounds are occupied for residential purposes. It is a known fact that poor condition of sanitation is the breeding ground of diseases like diarrhoea, cholera, typhoid etc. As a result, tolerance of poor sanitation is equivalent to belittling human lives. The clean drinking water facilities are also negligible in the village. The villagers of the Bauri community informed that they only have a well and few hand pumps to rely upon for drinking water. However, in a district that faces acute crisis of water most of the parts of the year, wells and tube-wells are often dry and people face acute shortage of water in the village. For various household purposes, villagers also use a pond that takes around twenty minutes to reach on foot from the village. Reliance on such kind of sources for daily use of drinking water is really alarming in a district where 1487 samples have been found contaminated out of the total 2634 samples of drinking water tested according to the Public Health Engineering Department, Government of West Bengal.

After understanding the sanitary situation of Raghampur (P) village, I interacted with the villagers of other villages in order to gain a broader insight regarding sanitation and hygiene in rural

Purulia. One of the college-going youths of Bararola village named Samrat Kumar said in this regard:

In my village Bararola, proper sanitation facilities are not much available. Toilets are there in few houses but these toilets have no water connections and proper drainage system. Most of the villagers go to the field for the purpose of defecation. Many of the people have also not got toilets from the government and the toilets that have been got are unsuitable for use. (S. Kumar, personal communication, June 25, 2024)

Laxman Kumar, an educated villager of Chiruhatu village also informed about the poor sanitary conditions of his village. He said:

The name of my village is Chiruhatu. Around twelve hundred people live there. Most of the people are poor and the percentage of the rich people is very low. Most of the villagers do not use toilets. The percentage of people using toilets is meagre and can be said that out of 100% only five percent of people use the toilets. Most of those who have got toilets through grant of the government also go to the fields for toilet purposes. The people are uneducated and there is the lack of awareness among them. It is also true that the toilets they have got do not have all the facilities like availability of water. (L. Kumar, personal communication, June 25, 2024)

The views expressed by these villagers are confirmed through the scenes that are often witnessed in the waterbodies of rural Purulia such as those of the Jiudaru or Rakhbor village where men, women and children are often seen as bathing or washing clothes and utensils in the waters of the pond.

At the end it can be said that it is not that governments at the central and state levels have not given primacy to the issues of sanitation and hygiene. The various initiatives of the Central Government in this regard have already been discussed. The State Government's mission *Nirmal Bangla* that was launched on the

eve of World Toilet Day in 2013 is an important step towards Open Defecation Free Bengal. The mission is now in its second phase. It has done significant works with respect to sanitation such as spreading awareness among people regarding the consequences of open defecation through the voices of Kanyashree girls of twenty blocks in 2022. Also in 2023, in the second phase of the mission, the State Government actively sought the collaboration of all the sectors such as the UNICEF, the private sector, the NGOs etc. for the success of the mission. However, a lot also needs to be done to change the picture that has emerged in our study regarding Rural Purulia. Particular importance has to be given in the proper utilization of government funds and effective implementation of the government programs at the grassroots. It is only when zero-tolerance will be shown to any kind of negligence in these areas, positive change will take place. It is also true that it is difficult to make Purulia completely open defecation free due to factors such as “lack of awareness,” “financial hardship of rural people” and scarcity of “sufficient water” as has been noted in the official website of Purulia Zilla Parishad. But irrespective of all the present hurdles, honest effort will have to be consistently made as the stakes are high and if we give up, precious human lives will continue to be lost in the wake of our failure.

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Marginalization of the Rajbongshi in North Bengal

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Abstract: The Koch Rajbongshis are one of the largest plain tribe of North Bengal originally from the ancient Kamrupa Kamta Kingdom. The Koch dynasty came into existence in the first half of sixteenth century. Under the Coochbehar King Naranarayan it reached to a position of glory but in course of time glorious past did not last long. Although they had a glorious past, but like many other tribes Koch Rajbongshis also have been facing Marginalizing for a long time due to lack of proper knowledge of their history, external threats, partitions, colonial interference, geographical alienation, negligence of the Hindu Bengali refugees and Governments etc. At present they have been striving for protecting their identity through different associations and organizations. Their efforts now have turned into the form of Kamtapur movement in North Bengal. This paper attempts to

understand somewhat Marginalized problem of Koch Rajbangsi people in North Bengal.

Key words: Social, Marginal, Problem, Rajbangsi

Introduction:

While probing into the origin, rise and marginalization of the Rajbongshi many scholars and historical sources find their ethnic linkage with the Koch. The Kalika Purana (tenth century text) marked out the Koch of ancient Pragjyotishpur (the present-day Guwahati city) as a tribe of ancient east India having the ethnic affinity with *Kiratas* (the people of Tibeto-Burman origin) who linguistically belonged to Tibeto-Burman group (Acharyya 1977:318). The Yogini Tantra (eleventh century text), on the other hand, described them as the Kuvachaka (the evil speakers) or non-Aryan people who had migrated from Tibet through the eastern Nepal to Northern Bengal and then to Brahmaputra Valley of lower Assam and Meghalaya before the 10th century (Saraswati 1978:128-30).

Before the rise of Koch kings in 1498 CE, the Khen dynasty ruled in Kamtapur during 1440-1498 CE through three kings; namely, Niladwaj, Chakradwaj and Nilamber. The last Khen ruler Nilamber (1493-1498 CE) was dethroned by the Gauda Sultan, Hussain Shah, in 1498 CE and, thus, Hussain Shah conquered the Kamta Kingdom. But soon Bishu, the son of Haria Mandal (the ruler or leader or the head of the twelve leading Koch families), came into power in the Kamta Kingdom (including lower Assam and North Bengal) by defeating the Gauda Sultan, Hussain Shah, in 1498 CE and assumed the title of Maharaja Biswa Singha. He ruled the entire territory stretching from Kamta in the west to Barnadi in the east. He transferred his capital from Chiknagram (present Khuntaghat Pargana of Goalpara district in Assam) to Cooch Behar (Barman 2009: 75). Since the beginning of the Koch kingdom in 1498 CE, the Rajbongshi have played very significant role in the history of

undivided Bengal. From the 16th century to the middle of the 19th century the Kamtapur Kingdom predominantly represented their politico-cultural identity which, later, emerged as distinct ethnic identity through various socio-cultural and political movements such as the Kshatriya movement and the Hitasadhani Sabha movement during the Koch dynasty rule in North Bengal (Debnath 2009:18). In the 16th century the Koch political supremacy reached its zenith under their great king Malladev alias Naranarayn (1540-1587 CE). However, the power and glory of the Koch Kingdom under the rule of the King Naranaryan was short lived. After the death of his brother, Chila Ray, the disintegration of the regime set in soon and, as a result, in 1581 the Koch Kingdom was divided into two parts; viz., Koch Hajo and Koch Behar or Cooch Behar, greatly weakening the power of the Koch (Boruah 2010: i).

On the other hand, aggressive policies of the Ahoms and the Mughals towards the Koch Kingdom reduced its territorial domain. At the same time, intervention of Bhutan on Cooch Behar eventually compelled the Koch rulers to take help of the East India Company in 1772 CE to expel the Bhutanese military from the state. Therefore, a treaty was concluded in 1773 CE between the Cooch Behar State and the East India Company, by which the Koch Kingdom was compelled to pay half of its revenue to the British Government forever. Through this treaty, East India Company enhanced its influence in the sub-Himalayan Bengal and lower Assam (Barman: 2007).

Though Cooch Behar became a tributary state in 1773 CE, yet the British Raj was not able to introduce any modern reforms for its commercial interests before the beginning of the reign of Maharaja Nripendra Narayan in 1863 CE. Maharaja Harendranarayan (1783-1839 CE) and most of the relatives of the Royal family were against the British interference in the day-to-day affairs of the state. Even the Izaradari system (the deed

licence of revenue collection) introduced by the company in 1790 CE failed to produce any loyal opulent middle class for the company. On the contrary, Maharaja Harendra Narayan and the indigenous officials of the state began to express their anti-British feelings. Resultantly, the state remained as it was before the advent of the company. Western education did not spread and the cultural set up of the natives in the state remained unchanged. In 1872 CE, Izaradari system was replaced by Jotedari system which produced an opulent and progressive middle class. Henceforth, Cooch Behar established direct cultural link with Calcutta. During this period, almost all the administrative posts were occupied by the upper caste Bengalis from South Bengal. With the coming of the British, there occurred major dislocation of the socio-economic life of rural population in North Bengal. Establishment of tea gardens increased the pressure on land. Services and professions were monopolised by the upper caste Hindus and Muslims. On the other hand, the new avenues for social mobility opened up through commercialisation of agriculture, introduction of Railways and spread of education were very limited. This contradictory process of development generated social tension in the Rajbongshi community, which was expressed in the Kshatriya movement. One of the reasons for the growth of the Kshatriya movement was the introduction of the practice of untouchability by the migrant Bengalis. Before the advent of the company there was no caste system in the Rajbongshi community and both the Jotedars and the Adhiyars belonged to the same group. Jotedars were cultivators as well. No doubt, there was economic division in the community but no caste division. It was with the establishment of the company's rule in North Bengal that upper caste Bengalis began to penetrate and they treated the Rajbongshi as Sudras (Sen 2010: 27-28). The Brahmins and other upper caste Hindus of North Bengal did not drink water touched by Rajbongshis during the British

period of India as they were treated as a lower caste in the traditional caste hierarchy. The caste hierarchy had created a psychological hiatus between the Rajbongshi and the Bengali Hindu and, therefore, in the colonial period itself the Rajbongshi wanted to change their social status in the caste hierarchy and they claimed for the Kshatriya status. But the upper caste Hindus never considered Rajbongshis as Kshatriyas, which raised a psychological cold war between the upper caste Hindu and the Rajbongshi in the North Bengal since the British period. This ethno-caste antagonism eventually got aggravated by the economic and educational disparities (Ghosh 2007:88-89).

The upper caste Hindus like Brahmins paid no attention to the problems of the rural poor, particularly those who belonged to the low castes. As a result, by the end of the 19th century the Rajbongshi were marginalized socially and economically to low social status in the caste hierarchy. Their marginalization from jobs in the caste society or otherwise generated a feeling of inferiority in relation to the caste Hindus. This situation compelled them to take collective action in the form of a movement to redeem the situation. To achieve social equality with the high caste Hindus they put forth their claim for Kshatriya status challenging the apathetic attitude, hatred and hegemony of the caste Hindus in the society (Barman 1980: 8-11). This is how the tribe-caste interactions in the British period set in the process of sanskritization among Rajbongshis in North Bengal. Suniti Kumar Chatterjee (1974) is of the opinion that the Rajbongshi are the sanskritised Koch (mostly the Mongoloid) who discarded their original Tibeto-Burman speech and adopted the northern dialect of Bengali as their language from the 7th century onwards. It referred to the fact that the Koch and the Rajbongshi belonged to the same ethnic group, but the educated Rajbongshi did not subscribe to this argument and, rather, they proudly called themselves the Rajbongshi-Kshatriya (Chatterjee 1974). In this

context, a mythological tale about the Koch kings reveals their Hindu religious connectivity which is as follows:

The sons of Sahasrarjune, a king of Haihay dynasty of Moon race, being afraid of Parshuram, 'the destroyer of the Kshatriyas', left their country and took shelter at Chikina hill of lower Assam, particularly among the Meches. They gradually assimilated with the tribal communities. But one Mech chief Haria Mandal's wife, name Hira, had an intercourse with Lord Shiva for which a child was born who became famous as Biswa Singha (Barman 2007: 67).

After the foundation of Koch kingdom in the beginning of the sixteenth century, the Koch gave up some of their old tribal traditions like beef eating by adopting the non-tribal culture, particularly of the Hindu, and adopted a new name 'Rajbongshi' (the royal lineage). The Rajbongshi were also identified as the Koch by the census officials in the British India. But the educated Rajbongshis took umbrage against the census considering them a tribe or low caste as they believed to be Kshatriyas (Debnath 2009: 187). In the census report of 1891 CE, Koch, Paliya and Rajbongshi, all the three, were categorized as Koch. But subsequently the Koch were recorded as Rajbongshi in the Census of 1901, the Rajbongshi as Kshatriya in 1911 and the Paliya as Rajbongshi and Kshatriya in the census reports of 1911 and 1921 respectively. Thus, the census operations could not decide the identity of these three groups. Therefore, the Rajbongshi in North Bengal were quite unsatisfied with the census reports for including them in the community of the Koch (De 2007: vi). The educated Rajbongshi claimed that they were the Kshatriya and not the Koch while the Bengali scholars argued that the Rajbongshi were none other than the Koch and that they were not the Kshatriya; some scholars even labelled them *Bahe*, in somewhat derogatory sense. This controversy created social tension in North Bengal by the end of the 19th century. When the

census report of 1891 showed the Rajbongshi as Koch, a large number of the Rajbongshi Zamindars and Jotedars protested against the report. Dissatisfied with the census report and disgruntled over the speeches of Bengalis in 1891 the Rajbongshi were mobilized into the Kshatriya movement to be recognized as the Rajbongshi-Kshatriya. The Kshatriya movement emerged in the Rangpur district of today's Bangladesh and gradually spread in the entire North Bengal. Most of the leaders of the movement were from the Cooch Behar Princely State and the Goalpara district of Assam. Thus, the movement emerged out of the background of the social, political and economic changes that took place during the British rule (Barma 2007:18). The Rajbongshi Kshatriya Samity formed in 1910, a central organization of the Rajbongshi community which was essentially a social organization, took up the command of the movement for reform of the community in its social and religious life. But from the beginning of the second decade of the twentieth century the Rajbongshi began to change their outlook and decided to take part in politics also. As a result of this change, the Kshatriya Samity had fielded up candidates in the Legislative Council elections between 1920 and 1929 and the Legislative Assembly of Bengal elections of 1937 and 1946. The Samity fielded up candidates against the national organizations like the All-India Congress Committee and the Communist Party. Even after the elections they formed their own group or party in the Assembly; viz., Independent Scheduled Caste Party. They considered the Congress Party of Bengal as the organization of the caste Hindus of Bengal. So, a kind of separatist feeling operated behind this attitude of the Samity towards the caste Hindus of Bengal. They maintained separate political identity in the assembly and already by forming the Kshatriya Samity. Thus, before Independence the social and political separation of the Rajbongshi was complete ideologically and practically (Ghosh 1987: 1-3).

From the foregoing discussion it appears that marginalization was a factor causing the Kshatriya movement of the Rajbongshi who were originally the Koch, a tribe, inhabiting the ancient Pragjyotishpur, who had migrated to the Brahmaputra Valley in lower Assam before 10th century. After the foundation of the Koch kingdom in the beginning of the sixteenth century by Biswa Singha they adopted some Hindu traditions by giving up some of their old traditions and adopted the name Rajbongshi. However, gradually, the Britishers established control over the Cooch Behar State as in 1773 CE it became a tribute paying state of the East India company. In the colonial period the Rajbongshi were marginalized by the Brahmins and others upper caste Hindus who treated them as a low caste in the traditional caste hierarchy: they were not allowed to enter Hindu temples and therefore they had to offer prayers outside a temple. Thus, the social status of the Rajbongshi was very low in the traditional caste hierarchy. As a result, the educated Rajbongshis protested before the Census Superintendent and claimed for Kshatriya status when the census report of 1891 returned them as the Koch. Later on, the demand was organised into the Kshatriya movement under the leadership of Harmahon Khajanchi, the Zamindar of Rangpur (now in Bangladesh) and Panchanan Barma, the first intellectual of the Rajbongshi community. To bring social reforms in their community the leaders formed a social organization, Kshatriya Samity, also. Thus, the Kshatriya movement was the first response to their on-going marginalization in the North Bengal society in the colonial period.

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**Soil Characteristics of Haridwar District,
Uttarakhand- A Geographical Analysis for
Productive Land Use
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Abstract: The soil is an important component of biosphere, which supports the human society with supply of food, fodder, fuel etc. Soil is the crucial determinant of land use pattern of an area. The Present paper is concerned with soil characteristics of Haridwar district, Uttarakhand- a geographical analysis for productive land use. In the entire plain areas of Haridwar district alluvial soil is predominantly found, which is favourable to holding water and producing good crops. In comparison with this, in northern hilly areas coarse sandy soils with a mixture of boulders pieces or pebbles are found which are not suitable for agriculture. In the entire land of southern

portion, part of fertile Ganga-Yamuna Doab is utilized for intensive agriculture mainly paddy, sugarcane, oilseeds, etc. The northern hilly terrain is utilized mainly for forest areas of Rajaji National Park. Soil erosion and gully development are hampering agricultural productivity, natural vegetation especially in Rajaji national forest. Every year, during monsoon due to excessive surface run-off heavy destruction of agricultural production and natural forest occurs by valley erosion. Effective engineering measures can be implemented to minimize the soil erosion problem of the area.

Keywords: Soil characteristics, productive landuse, soil erosion, Pedon study.

Introduction: The soil is an important component of biosphere. It supports the human society with supply of food, fodder, fuel etc. There is a deep relationship between soil and vegetation of an area. Hence, development of agriculture, distribution and nature of forest areas largely depend on characteristics of soil. Soil is the uppermost layer of the land surface that plants use and depend on for nutrients, water, and physical support. It includes both mineral matter and organic matter. Soils can vary greatly from continent to continent, region to region, and even from field to field. This is because they are influenced by several factors that can be varied widely from place to place. In Haridwar district of Uttarakhand, sub -montane soil, Tarai soil are observed. The southern part of the area is under Ganga-Yamuna Doab. Hence, soil is very much fertile for agriculture. In most part of Siwaliks the surface soil is a thin deposit. The soil of tarai is everywhere moist alluvial deposit. In Bhabar zone, the soil is light and as a rule shallow, resting on a deep stratum of stone and boulder.

Study area:

The study area is situated in upper Ganga basin. Northern portion of the area includes young folded Tertiary Himalayan Mountain and southern part falls under Ganga-Yamuna Doab. The study area falls under three tahesils namely i) Haridwar ii) Roorkee iii) Laksar including six blocks namely 1) Bhagwanpur, 2) Roorkee, and 3) Narsan, 4) Bahadrabad, 5) Laksar, and 6) Khanpur. The

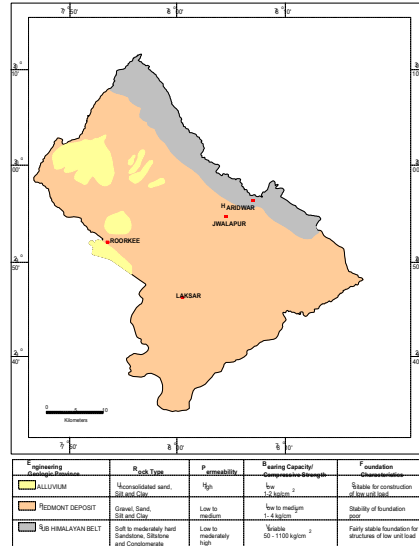


Fig:1: Major soil types in Haridwar district. (Source: DRM, GSI)

study area extends (Fig-1) from 29°35'37"N to 30°13'29"N latitude and 77° 52' 52"E to 78° 21' 57"E longitude.

Objective: The objective of the paper is to study the soil characteristics in Haridwar district Uttarakhand. The southern part of the area falls under Ganga-Yamuna Doab. Undoubtedly, the area has great potential of productive land use. Hence, the area has been selected as a study area in the research work.

Soil classification of the area: Based on physiographic characteristics the study area is divided into siwalik, bhabar and tarai zones. That is why, broadly the soil of the study area is classified (Fig-1) into three categories: 1) Bottom hill soils, 2) Tarai soil, 3) Alluvial soil

1) Bottom hill or Submontane soils: Below the alpine meadows lie the vast undulating mountain tracts of the Middle and Lesser Himalayas and few parts of Outer Himalaya having soils grouped as submontane and brown hill soils. Some of these

soils are given to grassing and stock raising. Most of the favorable hill slopes have been terraced for arable farming and human habitation.

2) Brown hill soils: At a somewhat lower level, occur the brown hill soils which are of podzolic nature. These are usually sandy soils and are of grey brown colour, with patches of red and yellow, here and there. The water in the streams in this soil zone are also of pristine quality; and due to their torrential character, the water is highly aerated in general. But in some areas the streams run through limestone and calcareous soils, as in Dehradun.

3) Alluvial soil: At the base of the Himalaya extends the vast alluvial plain of the Ganga. The alluvial fill covers more than 52 per cent of the basin. The alluvial deposits of the basin not only cover the great Gangetic trough but also extend over a sizable portion of the Peninsular foreland in the form of a layer less than 3 metres thick. The entire alluvial formation is endowed with rich soil nutrients. Apart from these, there are some other important types of soils, like;

Bhabar soils: Bhabar soils comprising loose detrital permeable matter (Ustorthents) and coarser sediments deposited in the sub-Himalayan foothills and intermontane valleys (duns) of Dehra Dun, Saharanpur, Bijnor, and Naini Tal districts. This belt serves as the groundwater re-charge zone ; and any form of pollution in water in this zone is likely to affect the water which is usually oozing out in the neighboring alluvial regions lower down, especially in the Tarai soil belt.

Tarai soils: Tarai soils occur below the Bhabar belt are usually waterlogged (Haplaquents). The ground and surface waters here are charged with organic materials. In the study area the vast Tarai area is intensively utilized for agriculture.

The older alluvial or Bangar soils: The older alluvial or Bangar soils (Paleustalfs) are fairly mature soils with well-

developed pro-files which are subjected to continuous leaching operation. These soils occupy the inter-fluvial alluvial terraces lying well above the annual flood levels in the upper Gangetic plain. The older alluvial soils usually comprise well drained reddish-yellow, silty, sandy, and clayey, suited to cultivation of a large variety of crops, especially wheat, rice, millets, pulses, and sugarcane.

Younger alluvial soils: The sediments recently deposited on the river beds and on the flood-plain belts of the Ganga and its tributaries comprise the younger alluvial (Khadar).

Soil characteristics of Rajaji national forest:

Due to wide variations in topography, intensity of erosion, parent material and other factors, the soils show wide variations in many characteristics especially texture, depth, stoniness, colour, drainage, moisture status, organic matter content and cation exchange capacity. Dr. J.S. P. Yadav (1963) has given detailed description of the soil profiles in the Doon Valley. Broadly the following three belts may be distinguished as far as broad soil classification is concerned.

- (i) The Himalayan belt
- (ii) The Siwalik belt.
- (iii) The boulder belt occupying the valley.

The Himalayan belt: The Himalayan belt contains only a small bit of the tract dealt with and consists of quartzite, schists and slate with a little limestone. The soil in this portion is usually very shallow and poor.

The Siwalik belt: The Siwalik belt consists of sandstones and conglomerates which are often soft and friable. Bands of clay are interbedded with these sandstones and conglomerates, giving cohesion to the soil and thereby improving its physical qualities. The soil resulting from the Siwalik sandstone is sandy loam, sometimes with a large proportion of clay. In higher regions with steep slopes, the soil is very shallow and dry. Consequently,

the vegetation as a whole is more xerophytic. It is however deep on northerly aspects and on lower slopes. The best soils (Which are also most eminently suited for sal) occur on the lowest slopes where the proportion of clay is larger and the drainage is adequate.

The boulder belt occupying the valley: The boulder belt is characterized by underlying beds of boulders and gravel of great thickness. Thin bands of clay are also intruded in these deposits causing swamps where they crop out. The soil overlying the bouldery mass varies substantially both in depth and richness. It is generally sandy and poor with varying proportions of clay locally. Because of great thickness of underlying boulders, the permanent level of water is quite deep.

Pedon study of some collected soil samples: Pedon study provides an understanding of how soil properties relate to optimal agricultural production, forest, range, and wetland management and land use pattern. Physical and chemical properties of soil are very important by which its fertility can be measured. The present researcher collected 21 soil samples from the different parts of the area during field survey in 2007 for the study of the physical and chemical properties of soil . Twenty-one villages have been selected randomly, which are located mainly in the extended area. The author thinks that the number of samples are sufficient to illustrate soil characteristics of the study area. The parameters of soil which have been tested in the laboratory are soil colour, soil texture, pH, organic matter, water holding capacity, moisture, electrical conductivity, Carbon, Nitrogen ratio, quantity of Calcium, Magnesium, Sodium, Potassium, etc. The above-mentioned parameters are very crucial for understanding about the soil fertility and productivity of the area under study.

Physico-chemical parameters of soil samples from two different sites(Jamalpur khrud village, Kangri village) have been showed (Table-1).

A soil sample was collected from **JamalpurKhrud village** and it has been tested in laboratory. It is grey in colour, characterized with Loamy texture. The percentage of sand, silt

and clay are 40.3, 41.4 and 18.3 respectively. The soil is slight alkaline in nature (pH-7.88). Available nitrogen is 278 mg/kg. Available phosphorus is 94.6 mg/kg. Available potassium is 225 mg/kg. The water holding capacity of the soil is 62.1%. Organic carbon is 1.60%. The quantity of calcium is 10 meq/100g magnesium is 1.80 meq/100g and potassium is 0.66 meq/100g. The amount of sodium in the soil is 0.66 meq/100g.

Table: 1: Physico-chemical parameters of different soil samples				
Results				
Sl. No.	Parameters	Unit	(Jamalpur khrud)	(Kangri)
1.	Colour	-	Brown	Light Brown
2.	Soil Texture	-	Loamy Sand	Sandy Loam
a)	Sand	%	86.3	48.6
b)	Silt	%	11.2	44.7
c)	Clay	%	2.5	6.7
3.	Moisture content	%	9.5	2.2
4.	Water Holding Capacity	%	37.4	42.6
5.	pH (1:5 ratio)	-	8.41	7.62
6.	Electrical Conductivity	ms/cm	0.173	0.077
7.	Organic Carbon	%	0.18	0.61
8.	Organic Matter	%	0.31	1.05
9.	Total Nitrogen (as N)	%	0.017	0.057
10.	Available Nitrogen	mg/kg	58	165
11.	Available Phosphorus (P)	mg/kg	85.4	28.5
12.	Available Potassium (K)	mg/kg	313	170
13.	Carbon Nitrogen Ratio (C:N)	Wt. Basis	10.6	10.7
14.	Calcium	meq/10 0g	5.60	6.00
15.	Magnesium	meq/10 0g	1.20	1.60
16.	Sodium	meq/10 0g	0.59	0.63
17.	Potassium	meq/10 0g	0.80	0.43
18.	Total Bases	meq/10 og	8.19	8.66
19.	Available Iron (DTPA Extract)	mg/kg	33.1	54.4
20.	Available Copper (DTPA Extract)	mg/kg	1.71	1.74
21.	Available Zinc (DTPA Extract)	mg/kg	3.96	1.38
22.	Available Manganese (DTPA Extract)	mg/kg	18.7	85.6

Physico-chemical parameters of soil sample-Kangri village:

A soil sample was collected from Kangri village and it has been tested in laboratory. It is light brown in colour, characterized with sandy loamy texture. The percentage of sand, silt and clay are 48.6, 44.7 and 6.7 respectively. The soil is slight alkaline in nature (pH-7.62). Available nitrogen is 165 mg/kg. Available phosphorus is 28.5 mg/kg. Available potassium is 170 mg/kg. The water holding capacity of the soil is 42.6%. Organic carbon is 0.61%. The quantity of calcium is 6.00 meq/100g, magnesium is 1.60 meq/100g and potassium is 0.43 meq/100g. The amount of sodium in the soil is 0.63 meq/100g.

Productive land use: According to the land use data of 2001 about 0.9 per cent area of the district is under cultivated barren land. About 11.3 per cent area is under other than agricultural land. Net sown area covers about 53.3 percent of Haridwar district. About 0.1 per cent area is under orchards garden. rice, wheat, sugarcane, oilseeds are the main agricultural crops of the study area. About 26.86% area of the district is forest covered. 29sq.km area is under dense forest, 333sq.km is under moderate dense forest and 272 sq.km is under the open forest. Total 634 sq.km is forested area (SFR, 2001).

Physiography has a great control on the development of land use pattern of an area. Depending on altitude, climate and soil characteristics different agricultural crops are cultivated in the area. The area falls under Agro-climatic



Fig:2: Erosive characteristics of soil in the Rajaji National Forest (Source: October, 2010)



Fig:3: Collection of soil samples and identification of soil horizon (Source: field survey; June, 2006)

zones 'A' of the state (on basis of altitude from sea level). Physiographically, the area is characterized with Plains, Tarai, Siwalik hills, valleys having agricultural diversity like; Paddy, Wheat, Sugarcane, Maize, Mango, Litchi, Pulses, Oilseeds, Soybean etc.

Horticulture: Though the area is very enriched in agricultural resources, at present agriculture system of the area is facing various problems like soil erosion, water logging condition,

growing pressure of population and settlement area, etc. Therefore, a more profitable alternative use of the cultivable land is necessary. Horticulture can be the best profitable alternative. In the Bhabar and Tarai (100–300m) zone mango, guava, citrus, banana, papaya etc. are very common fruits. About 19.4 per cent of total mango of Uttarakhand is produced in district Haridwar.

Vegetables: Generally during off-season most of the vegetables are grown. The main vegetables produced in the area potato, peas, beans, tomato, gobi, capsicum, etc. Tomato, capsicum, cabbage, peas, cauliflower, etc have an important role in the production and export as well.

Impact of serious soil and gully erosion on productive land use:

Soil erosion and gully development are hampering natural vegetation in Rajaji national forest (fig;3). Every year, during monsoon due to excessive surface run-off heavy destruction of natural forest occurs specially by valley erosion. Sheet erosion also occurs in the forest areas. Due to heavy soil erosion and heavy floods, huge number of green trees standing along the banks of raos are uprooted and fall down in rivers' beds, which is also carried away by flood water in near by villages situated in southern fringe of Rajaji National Park.

Near Bilkeswar temple, soil erosion in the form of rill and gully is observed. This gully erosion is characterized in mudstone surface. In this area, fluvial and tectonic processes are very much responsible for soil erosion.

In Shyampur village, along the Haridwar – Najibabad road accelerated soil erosion is found. After heavy rainfall the eroded materials are deposited nearby low-lying agricultural

fields. The same features are very common near the Tatwala village and the adjacent areas.

Near the Jhilmil Jhil wetland areas rill and gully erosion are noticed. Mainly in hillslope areas due to steeper slope channel erosion develops with the surface-runoff. In this areas, active fluvial erosion has developed mesa, and buttes like features over shale.

Soil and gully erosion hampers the road system mainly the village areas. In Shyampur village, Kangri village the road condition has become very bad due to soil erosion. Hence the transport condition of the villages is not good.

Discussion and findings: Geomorphologically, the vast southern part of Siwalik is under alluvial fan and tarai formation, that is why sandy nature of soil is found in the area. Based on the result of collected twenty-one soil samples it has been found that average percentage of sand in soil is 52.39, silt is 36.79 and clay is 11.80. The laboratory report of the above mentioned two soil samples of Jamalpur khrud and Kangri village indicate loamy Sand and sandy loam respectively. Undoubtedly the soil characteristics and availability of water resource have provided favourable environment of agricultural practices over vast tarai region. Soil on summit and ridge is moderately shallow and excessively drained. Soil on side slope is coarse loamy. In fluvial valley the soil is deep well drained fine loamy. On the upper piedmont plain of the study area deep well drained coarse loamy and fine loamy soil are found. On lower piedmont plain dry well drained coarse loamy calcareous soil is found. In recent alluvial plain there is fine silty calcareous type of soil. Over active flood plain, there is deep excessive drained soil on very gentle slope with sandy surface. Soil in Laksar area is basically sandy in nature.

Due to vast riverine deposition in the area sandy nature of soil is found.

The area has great potential of enriched agricultural practices of different crops, vegetables and fruits. At the same times the productive land use pattern is hampered with serious soil erosion problem of the sandy type of soil. Along the bank of the rivers inside the Rajaji national forest, development of rills and gully is very prominent. Problem of soil erosion in the Rajaji National Park area is assuming a serious dimension day by day. Unstable gravel structure and the formation of new ravines at many places are very common features of the park area. Even a small quantity of rainfall leads to heavy soil erosion carrying large quantity of sediments comprising of pebbles and boulders down below. This in fact is the characteristic features of the catchment area of above raos or local rivers. These pebbles and, boulders are deposited in the agricultural fields, rendering the fields unsuitable for cultivation.

Conclusion:

From the above comprehensive study, it can be said that Haridwar district has enriched fertile soil resources and great potential of agricultural resources which have made productive land use pattern mainly in the southern part of the area. The area having agricultural diversity like paddy, wheat, sugarcane, maize, mango, litchi, pulses, oilseeds, soybean etc. In the study area mango, guava, citrus, banana, papaya etc. are very common fruits. The area also produces vegetables like potato, peas, beans, tomato, gobi, capsicum, etc. tomato, capsicum, cabbage, peas, cauliflower, etc. have an important role in the production and export as well. Physico-chemical characteristics of soil of Jamalpur Khrud and Kangri villages have been illustrated in the work.

Unfortunately, soil erosion and gully development are hampering the soil resource, which have negative impact on agricultural productivity of the area. Serious soil erosion and ravination are causing destruction of natural vegetation in Rajaji national forest.

In order to protect soil resources degradation researchers should focus on Engineering method mainly consists of slope stabilization structures on steep slopes for revegetation, grade stabilization structures in the drainage channels for debris retention and safe disposal of runoff, stream bank protection measures. The required measures can minimize the soil degradation problem of the area so that potential of productive land use can be enhanced.

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Significance of Green Buildings and Sustainable Architecture

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"Time present and time past
Are both perhaps present in time future,
And time future contained in time past.

If all time is eternally present
All time is unredeemable.

.....

Point to one end, which is always present.”

..... **T.S. Eliot**

Abstract:

In this 21st Century era where Technology plays a vital role in shaping future generations and ecosystems achieving the Net ZERO concept as per Paris Climate Accord COP 26 around the world Green Buildings and Sustainable Architecture will enhance sustainable lives around the planet. Our Detailed analysis will revolve around the world scenario, into the climate change perspective and successful adoption of technology which are into New and Traditional Methods.

Our planet facing increasing environmental challenges, and we Human Beings must play a critical role in reducing carbon emissions and conserving natural resources. The green buildings concept aims to comprehensively minimize the negative impact and maximize the positive impact a building has on its natural environment and human occupants.

Green building (also known as green construction, sustainable building, or eco-friendly building) refers to both a structure and the application of environmentally responsible processes and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition.

Our research paper will revolve around several aspects concerning the **concept of Green Building and sustainable architecture, Sustainable design, the need for sustainable architecture, Methods for achieving sustainable architecture, Elements and principles of sustainable architecture, green building projects in India, Benefits of**

green Building, Indian green Building Council (IGBC's Mission on Net Zero) and Effects on natural resources.

We analysed, researched performing primary research, secondary research, and grassroots-level survey feedback through our project work, which we want to share among the masses using the platform to provide a glimpse to our fellow countrymen and help them to realize and bring them in a conscious state of mind regarding this subject.

Keywords: Green Buildings, Sustainable Architecture, Sustainable Design, Indian green Building Council.

Introduction: According to IPCC Sixth Assessment Report, in the last 170 years, humans have caused the global temperature to increase to the highest level in the last 2,000 years. In 2020 the temperature was 1.2 °C above the pre-industrial era. In September 2023 the temperature was 1.75 °C above pre-industrial level and during the entire year of 2023 is expected to be 1.4 °C above it. **“1.5°C Global Temperature Rise Still Possible, But Not for Long, Secretary-General Warns Climate Promise 2025 Launch, Urging Clear, Ambitious Emission Reduction Targets”**. Following are UN Secretary-General António Guterres' remarks at the United Nations Development Programme (UNDP) Climate Promise 2025 Launch, held in the Economic and Social Council chamber in New York on: 23 April 2024. In our paper, we will talk about the Green Building and Sustainable Architecture concept, which have an enormous potential to be essential for CO₂ Emission Reduction/mitigation globally in the future.

Background: Back in the 1960s, American Architect Paul Proposed a new concept of ecological architecture, in 1987, the United Nations Environment Program published the “Our

Common Future” report, which established the idea of sustainable development which led to the remarkable year 1992, when “United Nations Conference on Environment and Development” promoted the idea of sustainable development, green buildings gradually became the direction of development.

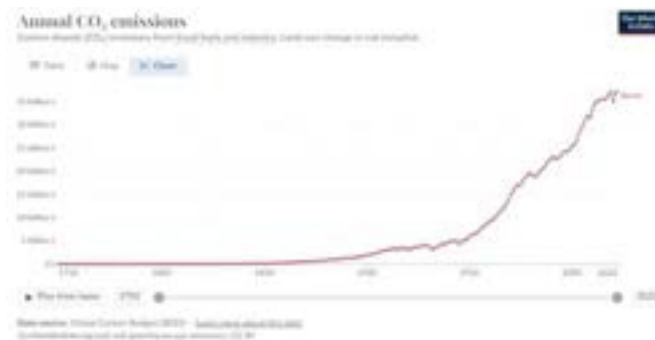
According to data from the United Nations (UN), in 2050 around 68% of humanity will live in cities. These represent only 3% of the planet’s surface but consume 78% of energy and produce 60% of greenhouse gas emissions. For this reason, **in 2016 the UN itself improved the New Urban Agenda to advise countries on their urbanization processes** and make cities more habitable, inclusive, healthy, resilient, and sustainable.

Green buildings with sustainable architecture can lead us more to sustainability for efficient urban planning, sustainable buildings will lead to minimizing energy, water consumption with an effort to decarbonization and shall be a key part of sustainable urban development that seeks to combat climate change effectively.

Focus of the Article:

Global Climate Change happening and it’s obvious through a rise in temperature globally, the primary factors or drivers for this change are Carbon Dioxide and greenhouse Gas emissions. Carbon dioxide from burning fossil fuels such as coal, oil, and natural gas. It accounts for more than half of warming. Methane (CH₄) emissions have almost the same short-term impact. Nitrous oxide (N₂O) and fluorinated gases (F-gases) three groupsof fluorinated gases, they are: Sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), Hydrogen, Black carbon, nitrogen trifluoride (NF₃) which play a lesser role in comparison.

Annual CO2 emissions Period image:



Source: <https://ourworldindata.org/co2-emissions>

This data makes us concerned - an alarm for our existence and for future generations, are we going to live sustainably on Planet Earth? This question should not be a Challenge only for “World Leaders and Thought Leaders”, but should be an awakening process for all human beings on Earth. This critical situation needs to be precisely inoculated into the mindset among masses among continents among age groups among every individual and this data could make them realize the real situation concerning their existence. The saying “What gets measured, gets better” is well-known. This well-known saying or phrase was created four decades ago by the renowned management consultant Peter F. Drucker, in his book *The Effective Executive*. One of the most important solutions on a global scale to reduce greenhouse gas emissions is the construction of green buildings with sustainable architecture. The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII) was formed in the year 2001. The vision of the council is, “To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025”.

Illustration Of Green Buildings and Sustainable Architecture: Green building involves the implementation of strategies and techniques that prioritize the environment and the efficient use of resources at every stage of a building's lifespan, including site selection, design, construction, operation, maintenance, renovation, dismantling and removal. This practice broadens and enhances the traditional considerations of economy, usefulness, longevity, convenience and comfort in building design.

Sustainable architecture goes beyond the idea of environmentally friendly construction by embracing a more inclusive and interconnected approach. This method includes not just reducing environmental effect but also incorporating social and economic factors. The aim of sustainable construction is to build structures that not only prioritize being environmentally friendly but also encompassed social equality and economic feasibility. This involves considering the lasting impacts of construction on the nearby ecosystem, community, and economy. Sustainable construction methods include utilizing renewable energy sources, integrating recycled and locally obtained materials, advocating for social fairness, and maximizing the efficient utilization of resources. Sustainable buildings play a crucial role in sustainable urban development efforts aimed at addressing climate change by reducing energy and water usage that are leading the way in responsible urban planning.

Some of the important aspect which is needed to be considered for Green Building and Sustainable Architecture which can be a guide for all towards future planning and execution of projects

Design, Construction, Operation, Maintenance, Renovation,
Deconstruction

Consumption: Energy, Water, Materials, Natural Resources

Environmental Effects: Waste, Air pollution, Water pollution,
Indoor pollution, Heat islands, Storm water runoff, Noise

Ultimate Effects: Harm to Human, Health Environment,
Degradation Loss of Resources

To decrease pollution, it is crucial to decrease energy usage, rely on renewable energy sources, and enhance energy efficiency. For instance, certain individuals employ photovoltaic panels to generate solar power directly on their premises. Others use passive solar building design techniques that place building components such as windows, walls, awnings, and landscaping in such a way as to optimize the advantages of shaded areas for cooling during summers and the capture of solar heat during winters. The idea behind day lighting is to strategically position windows so that they optimize the use of natural light indoors and minimize the need for artificial lighting. Solar-powered water heating reduces the amount of money spent on energy consumption during utilization of Geyser, or Steam or Heat Pumps other machineries etc. Another crucial aspect to consider is advanced building controls, which can be utilized in either newly constructed or already built structures to enhance their energy efficiency. Scientists and Technocrats have created methods and Technologies that expose every detail of energy usage and generation in buildings, particularly in the field of advanced building controls.

Plants and trees have now become integral components of sustainable construction methods. These structures are utilized to construct a type of rooftop that aids in rainwater management, offers insulation for buildings, and helps to lower the temperature of urban air, among other advantages.

In addition to its positive impact on the environment, smart technology also plays a crucial role in improving the well-being and comfort of residents. Smart systems are able to cater to individual preferences through personalized settings and automation. It designs a balanced and peaceful living space that is customized to cater to the requirements of residents. These intelligent systems promote a healthier indoor environment that is good for both productivity and well-being by controlling indoor air quality and maximizing natural light. In addition, the ability to monitor from a distance allows homeowners to evaluate and enhance the quality of the air inside their homes. Thus, reducing the likelihood of health hazards linked to inadequate airflow or contaminants. By placing emphasis on the well-being of the people inside, environmentally friendly buildings with intelligent technology promote comprehensive sustainability and design principles that focus on human needs. Choosing environmentally-friendly practices in building is not just a choice, but a promise for the generations to come.

Why do we calculate the carbon footprint? It is employed for the purpose of comprehending the extent to which a state, company, product, or individual is contributing to the phenomenon of global warming. This enables the monitoring of adherence to global agreements aimed at addressing climate change and

improves the accuracy of forecasting future trends in global warming.

Methods for performing Carbon Footprint Calculation:

There isn't one specific approach to measure carbon footprint. It is a complicated evaluation that considers numerous elements, and it can be conducted at various levels.

Typically, instead of being directly calculated, the carbon footprint is estimated. Whether it pertains to a country, a corporation, or an individual, the carbon footprint is roughly determined using guidelines established by the scientific community and international norms.

It is important to comprehend the differences between green buildings and sustainable buildings in order to make well-informed choices that support our shared objectives of a more sustainable and environmentally conscious future as the need for sustainable construction practices increases.

Each of us has an impact on our planet. Consider your carbon footprint as the individual effect you have on the environment. In more technical language, your carbon footprint refers to the quantity of greenhouse gas emissions you generate, measured in terms of carbon dioxide units.

We all can reduce our carbon footprint by making small sacrifices or taking measures like recycling, embracing clean energy, mode of travel, and reducing consumption by recycling and reusing or buying carbon offsets etc.

Future Research Directions: Possible future research opportunities that were discovered include examining how climatic conditions can impact the efficiency of green building assessment

tools object-oriented approach involves enhancing or substituting structural drawings with a virtual, three-dimensional digital representation of a building or even intricate locations with multiple structures to effectively communicate the designer's vision to the on-site team. Addressing the specific needs of different population groups, and ensuring that designs are sustainable for future needs.

Conclusion:

Green buildings with sustainable architecture can lead us more to sustainability for efficient urban planning. One of the most important solutions on a global scale to reduce greenhouse gas emissions is the construction of green buildings with sustainable architecture. This approach to urban planning can lead to decreased energy and material consumption and contribute to a roadmap for decarbonisation and reducing carbon footprints.

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‘মেঘপাতাল’ : পশ্চিমাঞ্চলের চড়াই-উতরাই জীবনধারা

রূপম প্রামাণিক

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সারসংক্ষেপ

কিম্বর রায়ের ‘মেঘপাতাল’ উপন্যাসে হাতির জীবন আর মানুষের জীবন অঙ্গঙ্গীভাবে জড়িয়ে গেছে। বন কেটে সাফ করে দেওয়ায় হাতির খাবারে টান পড়ে, তাই তারা ঢুকে পড়ে লোকালয়ে। লোকালয়ে ঢুকে পড়ে নষ্ট করে ক্ষেতের ফসল, খাবারে টান পড়ে মানুষের। দলমা থেকে নেমে আসা হাতির দল বাঁকুড়া, পুন্ডলিয়া হয়ে ঢুকে পড়ে হুগলী, বর্ধমানে। তাদের জঙ্গলে ফেরাবার জন্য ডাকতে হয় ছলা পার্টির সর্দার পচা মাহাতকে, জীবিকার প্রয়োজনে হাতির পায়ের তলায় পিশে মরাই যাদের ভবিতব্য। আর আসে সাবু। নাম-কুল-গোব্রহীন সাবুকেই পছন্দ হয় হাতিদের। সাবু বোঝে মানুষ বড়াই জটিল। তাই উপন্যাসের শেষে দেখতে পাই হাতির দলের সঙ্গে সাবু জঙ্গলে চলে যায়। হাতির লোকালয়ে চলে আসা, আবার হাতিকে বনে পাঠানোর এই বৃত্তে ঢুকে পড়ে সাল-মছল-পিয়ালের জঙ্গল, যা স্থানিক সম্পদরূপে পশ্চিমবঙ্গের পশ্চিমাঞ্চলকেই চিনতে সাহায্য করে। এখানকার

জনজাতির জীবন-জীবিকা, মুখের কথ্য ভাষা, সেই ভাষায় করা গান— এ সবই আঞ্চলিকতার স্মারক হয়ে ওঠে। অঞ্চলের ছাপ থাকলেই যে কোনও কাহিনি আঞ্চলিক পদবাচ্য হবে এমন ভাবটা ভুলই হবে। এই উপন্যাসে মানব মনের মূল সুরটি ‘বহিরাবেষ্টনের প্রভাবে অনন্য রাগিনীতে ঝঙ্কত’ হয়ে উঠেছে। তাই এই উপন্যাস আঞ্চলিকতার প্রধান শর্তটি পালন করেছে। আর আছে সুবিমল, আবিদ হোসেন, দর্ভপাণির মত শহুরে মানুষ যাদের দৃষ্টি দিয়ে লেখক উপন্যাসের বিষয়বস্তু পাঠকের সামনে তুলে ধরেন। এই চরিত্রগুলির বিপরীতে উঠে আসে জঙ্গলমহলের গরিব মানুষের জীবনধারা। এছাড়া এই উপন্যাসের বড় সম্পদ হল পুরাকথার পুনঃনির্মাণ এবং হাতির বিচিত্র জীবনযাত্রা সম্পর্কে লেখকের পরিশ্রমী মনন।

সূচক শব্দ

মেঘপাতাল, বিশারদ, আমলা, কুনকি হাতি, অগ্নিপুরণ, জাতক, গজশাস্ত্র, ছলা পাটি

ক.

কিন্নর রায়ের (১৯৫৩) আসল নাম দীপঙ্কর রায়। ১৯৯০সালে ‘কাছেই নরক’ ও ‘প্রকৃতিপাঠ’ উপন্যাস দিয়ে ঔপন্যাসিক কিন্নরের পথ চলা শুরু। দেশভ্রমণ তথা নতুন নতুন মানসভ্রমণের মধ্য দিয়েই সাহিত্য রচনার আকর খুঁজে পান কিন্নর। একনিষ্ঠ লেখক ও বিভিন্ন পত্র-পত্রিকার সাথে যুক্ত থাকার সুবাদে কিন্নরের লেখায় রয়েছে বিষয় বৈচিত্রের ঘনঘটা এবং সূক্ষ্ম পর্যবেক্ষণশক্তির সাযুজ্য।

উত্তরবঙ্গের ডুয়ার্স, তিস্তা সংলগ্ন অঞ্চল নিয়ে যেমন বহু উপন্যাস লেখা হয়েছে বা দক্ষিণবঙ্গের সুন্দরবন নিয়ে যেমন উপন্যাসের সম্ভার সৃষ্টি হয়েছে; পশ্চিমাঞ্চলের আদিবাসী জনজাতির কথা যেন ব্রাত্যই রয়ে গেছে বাংলা উপন্যাসের ভাণ্ডারে। এই ধারায় যে অল্প কয়েকটি উপন্যাস লেখা হয়েছে তার মধ্যে উল্লেখযোগ্য সুবোধ ঘোষের ‘শতকিয়া’(১৯৫৮), মহাশ্বেতা দেবীর ‘অরণ্যের অধিকার’(১৯৭৭), ‘চোটি মুন্ডা এবং তার তীর’(১৯৮০), ভগীরথ মিশ্রের ‘চারণভূমি’(১৯৯৪), তপন বন্দোপাধ্যায়ের ‘মহলবনীর সেরেধ’(১৯৯৫)। আমাদের আলোচ্য এই ধারার উপন্যাস কিন্নর রায়ের

‘মেঘপাতাল’(১৯৯৫)। ওই বৎসরই ‘মেঘপাতাল’ উপন্যাসের জন্য ‘তারাশঙ্কর’ পুরস্কার পান কিম্বর রায়।

উপন্যাসের শুরুতে লেখক আমাদের জানাচ্ছেন মেঘপাতাল শব্দটির অর্থ আকাশ। ওড়িশা বর্ডারে সুবর্ণরেখার কাছে মানুষ আকাশকে মেঘপাতাল বলে। উপন্যাসের ২২ নং পৃষ্ঠায় লেখক মেঘপাতাল শব্দটির রূপক অর্থ পাঠকের সামনে তুলে ধরেন। জ্যোৎস্নায় হাতির পালকে দেখে তাঁর মেঘপাতালের ঐরাবত বলে মনে হয়।

“মন্ত্রী দেখলেন। দর্ভপাণিও। সঙ্গে গ্রামবাসীরা। আর সুবিমল সে তো একটু আগেই দেখেছে, জ্যোৎস্না লাগা মেঘপাতালের ঐরাবত যেন। পর পর গা লাগিয়ে দাঁড়িয়ে।”^{১১} জ্যোৎস্নায় মেঘের নানান আকৃতিতে যেমন নানান প্রতিকৃতি ফুটে ওঠে, তেমনই জ্যোৎস্নার আলো পড়ে হাতির দলকে আকাশে তৈরি হওয়া হাতির প্রতিকৃতির মত মনে হচ্ছে। উপন্যাসের ৭২ নম্বর পৃষ্ঠায় মেঘপাতাল শব্দের অন্য মানে আমরা পাই। এখানে সুবিমলের লেখা গল্পে নায়ক নবীন দেখে--

“নবীন দেখতে পাচ্ছিল তার সামনে দিয়ে হাতিরা জঙ্গলে চলে যাচ্ছে। তাদের মেঘরঙ বর্ষার মেঘ তো এরকমই হয়ে থাকে, পিঠের দিকে তাকিয়ে নবীনের অনেককাল আগে শোনা ‘মেঘপাতাল’ শব্দটি মনে পড়ে গেল।”^{১২} অর্থাৎ, হাতির পিঠের ছাই রঙ আকাশের কালো মেঘকে মনে করছে।

খ.

উপন্যাসের শুরুতে দেখতে পাই হাতির দল ধনেখালির বেইতার মাঠে দাঁড়িয়ে আছে। দলমার দামালরা বাঁকুড়া, পুরুলিয়া পেরিয়ে হুগলীতে চলে এসেছে। প্রশাসন প্রমাদ গোণে একবার নদী পেরোতে পারলেই দামালরা কলকাতায় ঢুকে পড়বে। তার আগেই ওদের ফেরানো দরকার। এই পরিকল্পনায় সামিল হলেন পুলিশ সুপার আবিদ হোসেন, ওয়াইল্ড লাইফ ওয়ার্ডেন সুবিমল রায়, হস্তী বিশারদ দর্ভপাণি ও স্থানীয় এক মন্ত্রী। উপস্থিত বুদ্ধি দিয়ে মন্ত্রী ঠিক করলেন দিল্লি রোডে লরি দাঁড় করিয়ে একসঙ্গে তাদের আলো জ্বালিয়ে, হর্ণ বাজিয়ে হাতিদের পথ অবরোধ করতে হবে। কথামত কাজ। হাতেনাতে ফল। হাতি পিছু ফিরতে শুরু করল। এবার প্রশাসনের উদ্যোগ বাঁকুড়া থেকে

ছলা পার্টি এনে বা উত্তরবঙ্গ থেকে কুনকি হাতি এনে হাতির দলকে আবার দলমায় ফেরত পাঠানো। প্রশাসনের সঙ্গে সহযোগিতার হাত বাড়িয়ে দিয়েছে স্থানীয় বাসিন্দারা। দামালদের যে যার নিজের গ্রাম পার করে দিয়ে চলে যাচ্ছে।

রাজ্যের ওয়াশিংটন লাইফ ওয়ার্ডেন সুবিমল রাইয়ের কণ্ঠস্বরে এ উপন্যাসের অনেকখানি শুনতে পাওয়া যায়। হাতির সত্য কাহিনি গল্প হয়ে উঠতে চায় সুবিমলের কলমে। সুবিমলের স্ত্রী আছে, পুত্র আছে। তবুও যেন খুশি নয় সে। আমাদের মনে পড়বে

‘জানি তবু জানি

নারীর হৃদয় প্রেম শিশু গৃহ নয় সবখানি;’

কিন্তু নিষ্ঠার সঙ্গে কর্তব্যে তার কোনও কার্পণ্য নেই। তাই ডি.এম. থেকে ওয়ার্ডেন হয়েছে সে। তার পরিশীলিত মন নবীন ও নন্দীনিকে নিয়ে গল্প লিখতে চায়। সেই গল্পে উঠে আসে ফান্দিদের কথা, সাহানিয়া বিবির কথা। উপন্যাসে আর এক চরিত্র দর্ভপাণি প্রথম দর্শনে হাসির খোরাক হয়ে ওঠে আমাদের কাছে। চেনা যায়গায় স্নায়ু ঠিক না রাখতে পেরে পড়ে যায় সে। হস্তী বিশারদ এই মানুষটি জানে কুনকি হাতি দিয়ে কীভাবে হাতির দলকে চালিত করা যায়, ছলা পার্টি দিয়ে কীভাবে হাতির দল তাড়ান যায়। এই মানুষটিই আবার একা একাই ঘুরে বেড়ান পাহাড়ি রাস্তার অজানা পথ ধরে। ভ্রমণ পিপাসু মানুষটির স্মৃতিতে ভর করে উঠে আসে ভ্রমণের নানান চিত্র। আর আসে চন্দ্রা, দর্ভপাণির প্রাক্তন স্ত্রী। ইতিহাস, রাজনীতি সচেতন ও ভৌগলিক জ্ঞানে ঋদ্ধ মানুষটির চেতনায় ভাস্বর হয়ে ওঠে বিচিত্র বিষয়। এ প্রসঙ্গে লেখক দেখিয়ে দেন নাগরিক সমাজের সম্পর্কহীনতার বিপরীতে হাতিদের সংঘবদ্ধতার জীবন। সুবিমল লেখে অবৈধ প্রেমের গল্প, আর দর্ভপাণি প্রেমহীন বিবাহবিচ্ছিন্নতার শরিক। উপন্যাসে আমরা পাই এক মন্ত্রীকে। স্থানীয় হওয়ার সুবাদে এলাকার নাড়ি-নক্ষত্র তার জানা। তাই আমলারা থাকতেও তার পরিকল্পনায় হাতি তাড়ানোর রণকৌশল ফলপ্রসূ হয়। দ্বায়িত্ব জ্ঞানসম্পন্ন এই ব্যক্তিত্বটি মুখ্যমন্ত্রীর কাছে কী রিপোর্ট দেবে তাও স্থির করে ফেলেন। এই তিন জনের উপর নির্ভর করেই গ্রামের মানুষরা

হাতি খেদানোর কাজে নামে। বাস্তবে আমলাদের সঙ্গে সংবাদ মাধ্যমের যে যোগাযোগ থাকে সাংবাদিক প্রদীপ চরিত্রের মধ্য দিয়ে উপন্যাসে লেখক তা তুলে ধরেন। তার খবরের উপর ভিত্তি করে লেখক আমাদের অনেকটাই এগিয়ে দেন বাস্তব জগতের দিকে।

প্রদীপের জিজ্ঞাসু মন বাঁকুড়া থেকে ছলা পার্টি এলে তাদের সম্বন্ধে জানার চেষ্টা করে। প্রদীপের প্রশ্নের উত্তরে আমরা জানতে পারি ছলা পার্টির প্রতি জনের রোজ কত, মশাল জ্বালাতে প্রতিদিন কত কেরোসিন খরচ হয়, কত টাকার বাজি প্রতিদিন পোড়ানো হয়। ছলা পার্টির সর্দার পচা মাহাত। ফসলের সময়টাই পচার সিজন। হাতি মা হলে বিতাড়ন বন্ধ থাকে। তখন পেটে টান পড়ে পচাদের। হাতির পায়ের তলায় পিষে মরাই পচাদের ভবিতব্য। পচার স্বপ্নে আসে শাল-মহুল আর বীরসা মুন্ডা। কুনকি হাতি দিয়ে হাতি তাড়ানোয় বিশ্বাস নেই পচার। তার মতে এটা পয়সার অপচয়। সকলের বিশ্বাস পচার হাতে যাদুকাঠি আছে, যার ভয়ে হাতি পালায়। কিন্তু পচা জানে ওটা লহার রড, প্রাণের ঝুঁকি নিয়ে হাতির পায়ের তলা দিয়ে গলে গিয়ে খোঁচা মারতে পারলেই হাতি পালায়। পচা কিন্তু তার ছেলের হাতি খেদা করে অনিশ্চিত জীবনের দিকে ঠেলে দিতে চায় না। আর আছে সাবু। সাবুর উপস্থিতি এই উপন্যাসের সম্পদস্বরূপ। সাবুর নাম কে দিয়েছিল সাবু জানত না। হাতিকে সাবু গণেশ দেবতার অন্য রূপ বলে জানে। তাই হাতি দেখে সাবু প্রার্থনা করে তার মায়ের বাত যেন সেরে যায় ও গরুটার যেন বগনা বাছুর হয়। যার নিজের মাথায় ছাদ নেই, সে কিনা পচা মাহাতদের জন্য ত্রিপল চাইতে যায় সুবিমলের কাছে। সবাই যখন বিশ্রাম নিচ্ছে তখন সাবু জঙ্গলের হাতির দলের দিকে এগিয়ে যায়। হাতিরা তাকে কাছের লোক বলে মনে করে। সাবুর কাছে হাতিরা তাদের দুঃখের কথা বলে। বলে, তাদের খাবার নেই, জঙ্গল শেষ হয়ে যাচ্ছে। সাবুই সুবিমলকে পরামর্শ দেয় নন্দীনিকে সাহানিয়া বিবির আদলে গড়তে। মূর্খ সাবুর এমন পরিকল্পনায় অবাক হয় সুবিমল। সাবু বোঝে মানুষের হৃদয়হীনতার বিপরীতে পশুরা অনেক ভাল। তাই সাবু উপন্যাসের শেষে হাতির দলের সঙ্গে বনে চলে যায়। মিথ হয়ে যায় সাবু।

“তারপর একদিন সাবু একছুটে হাতির দলে ঢুকে যায়। মিশে যায়। তার গায়ের গন্ধ হাতিদের বিপদ আসছে এমনটি মনে করিয়ে দে না।

হায়রে মাঠের অলৌকিক জ্যোৎস্না, অন্ধকার এমনও কি হয়!

এরপর তো সাবুর নামেও গান বাঁধা হবে।

ফান্দিরা গাইবে সাবুর নামে পাঁচালি।”^{২৪}

গ.

উপন্যাসের শুরুতে আমরা দেখি হাতিরা দাঁড়িয়ে হুগলীর বেইতার মাঠে। তৎপরবর্তী সময়ে ও ভূমিরূপের পরিবর্তন আমরা খুব একটা দেখতে পাইনা। সমভূমির পটভূমিতে দাঁড়িয়ে একটা উপন্যাস কীভাবে আঞ্চলিক হয়ে উঠল, সেটাই দেখার। উপন্যাসের পটভূমি সমভূমি হলেও গিলবনির জঙ্গল, লেনানদী, চিল্কি গড়ের রাজার হাতি, শাল-মহল-পিয়ালের জঙ্গল— এসবই এক বিশেষ আঞ্চলিকতার বাহক, যা উপন্যাসের বিভিন্ন চরিত্রের মধ্য দিয়ে উঠে আসে। আর আছে পচা মাহাতদের বর্বর গান

“কাঁড়ার পারা মেঘ টুঁসাইনছে

আকাশে

শাদা খরিস হিঁস হিঁসাইছে

বাতাসে

এমন দিনে মরদ গেছে ভজু ডিহির হাটেতে

নানা সোনা আর কাইন্দ্য না”^{২৫}

শুধুমাত্র অঞ্চলের স্থানিক ছাপ থাকলে বা আঞ্চলিক সংস্কৃতির প্রসঙ্গ থাকলেই যে কোনও উপন্যাসকে আঞ্চলিক বলা যাবে, এমন কোনও শর্ত নেই। এই উপন্যাসে মানব মনের মূল সুরটি উপরিউক্ত বহিরাবণের প্রভাবে অনন্য রাগিনীতে বদ্ধ হয়ে উঠেছে। তাই এই উপন্যাসটি আঞ্চলিক পদবাচ্য হয়ে উঠেছে। একটি অঞ্চলের অখণ্ড, নিবিড় পটভূমির সঙ্গে চরিত্র ও কাহিনির ওপর অঞ্চলের প্রাকৃতিক বৈশিষ্ট্যের প্রভাব, আঞ্চলিক হয়েও সর্বজনীন এবং লেখকের গভীর জীবনবোধ আঞ্চলিক উপন্যাসের এই সবকিছু গুণই উপস্থিত আছে আমাদের আলোচ্য ‘মেঘপাতাল’ উপন্যাসে। তাই এই উপন্যাসটি সার্থক আঞ্চলিক উপন্যাস।

ঘ.

ইতিপূর্বে মনুষ্যত্বের প্রাণি নিয়ে লেখা গল্প ‘মহেশ’, ‘কুইন অ্যান’ বা ‘আদরিণী’ পড়েছি আমরা। চলচ্চিত্রে দেখেছি দক্ষিণি পরিচালক থিরুমুগমের ‘হাতি মেরে সাথী’ বা তপন সিনহার ‘সফেদ হাতি’। কিন্তু হাতি নিয়ে একটি সম্পূর্ণ উপন্যাস বাংলা সাহিত্যে এই প্রথম। লেখকের বর্ণনায় উঠে আসে হাতি সম্পর্কিত নানান তথ্য। চিড়িয়াখানার হাতি আর বনের হাতির মধ্যে কি পার্থক্য, আফ্রিকার হাতি কীভাবে সমগ্র পৃথিবীতে ছড়িয়ে পড়েছিল, হাতির দাঁত কেমন, নাদ কেমন, খাবার কী ইত্যাদি প্রসঙ্গ লেখক কাহিনির মাঝে মাঝে তুলে ধরেন। একটি দলে পুরুষ-মহিলা হাতির সংখ্যা কেমন, হাতির প্রকৃতি কেমন, ঘণ্টায় কত কি.মি. দৌড়তে পারে, নিজেদের মধ্যে ঝুঁড়ে ঝুঁড় লাগিয়ে কীভাবে সংযোগ ঘটায় তারা, হাতির দাঁতের কী বৈশিষ্ট্য — এসবও ধরা পড়ে লেখকের ভাবনায়। হাতি নিয়ে কী কী বই লেখা হয়েছে, কী কী সিনেমা হয়েছে, রাজনীতিতে হাতির অবস্থান কোথায়, গর্ভাবস্থায় হাতি কী খায়, অসুখ হলে কী খায়, রাজার হাতির কী গুণ এমনই ভিন্ন ধরনের বিষয় লেখক অনুসন্ধিৎসু পাঠকের সামনে তুলে ধরেন।

মিথ এই উপন্যাসের সম্পদ। লেখক অগ্নিপূরাণ থেকে পালকাপা মূনির কথা তুলে আনেন, যার জন্মের সঙ্গে হাতি সম্পর্কিত। এছাড়াও ‘হস্তি বিদ্যার্ণব’, জাতকের গল্প, দু হাজার বছর ধরে ভারতে চলে আসা গজশাস্ত্র থেকে উদাহরণ টেনে লেখক হাতির মিথ সম্পর্কে পাঠককে অবহিত করেন। ফান্দি ও সাহানিয়া বিবিকে নিয়ে মিথ তৈরি করেন লেখক। আর মিথ হয়ে ওঠে সেই ব্রাহ্মণী, যাকে তার স্বামী ছেড়ে দেওয়ার পর এক হাতি বিয়ে করে সম্মান দিয়েছিল। আর উপন্যাসের চরিত্র সাবু তো লেখকের কলমে মিথ হয়ে ওঠে।

সবশেষে বলতেই হয় বর্ণনা কৌশলে লেখকের নিরাসক্ত ভাব। এই ভাবের সঙ্গে যুক্ত হয়েছে লেখকের ইতিহাস চেতনা। লেখক কিম্বদন্তি রায় অত্যন্ত মানবিক দৃষ্টিভঙ্গী নিয়ে গড়ে তুলেছেন সাবু, পচা মাহাত্ম্যের মত চরিত্রগুলি। তাদের মুখের ভাষা, ভাবনা, গান সবকিছু মিলেমিশে একাকার হয়ে গেছে হাতির ঘটনার সঙ্গে। আর এখানেই এই উপন্যাসের সার্থকতা।

তথ্যসূত্রঃ

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- ৫। তদেব। পৃঃ ৩৬

Deleterious Ecosystem Services of Plants: An Overview towards Sustainable Development

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Abstract: Imparting ecosystem services is an important rationale for trees, and plants in general, for the sake of human well-being. Nonetheless, trees may produce, as a paradox, several harmful bequests due to some general cause-effect associations, if not strategically planted particularly in the high traffic and settlement-areas. Therefore, the panacea-like mantra that ‘tree is life-saving’ needs to be re-visited based on temporal and spatial scales, occasional and permanent occurrences, individual and societal contexts, local and entirety-impacts and so on. Trees could be reasoned for decelerated wind-flow which, in turn, could be responsible for halting and settling of several air-conveyed particles and gaseous pollutants. Trees with larger canopy and leafy branches in the intense residential segments may call for non-availability of adequate and quality-time sunlight for the people and low height trees in nearby areas. And thus,

those trees may be regarded as coldness-sinks particularly in the winter months. In absence of sufficient sunlight all the plants emit CO₂ to the local environs which may, in turn, act as slow poisoning to the neighbouring people (and other animals), if exposed over a substantial period recurrently. Dense low height plants and thick bushes also help in trapping and accumulating various particulate matters including human-harmful pollens nearer to the earth during blossoms. All these phenomena co-operatively lead to making polluting and unhygienic ambient both in urban and rural settlement-expanses. Moreover, some trees worsen the air-quality parameters by emitting volatile organic compounds, reactive hydrocarbons etc., to the adjacent atmosphere. Again, some trees exert many allelopathic and some other physical adverse effects on the nearby plants which, in turn, affect the human being indirectly. Such negating effects of plants are, obviously, featured and increased by the process of some mal-planned human activities. However, this article provides an overview of some disservices of plants on the associated people and local environments as a whole, which will help inform future research and demonstrate plantation-strategy as a social determinant of public health and services towards encouraging inclusive uses of green and grey infrastructures.

Key words: Disservice, pollution, development, positive synergy.

Introduction:

Plants are supposed to be the only known life-machine on the earth that is capable of trapping and harnessing energy for rest of the creatures, including human being, by converting solar energy into chemical energy. In the process of photosynthesis they release life-supporting oxygen in and soak up unfriendly carbon dioxide from the cross-country atmosphere. They have crucial roles in increasing possibilities of rainfall and cooling down

the local hotspots by the process of transpiration etc. Plants are also identified as the potential solutions in attenuating several air pollutants like NO_x , SO_x , NH_3 , solid and liquid $\text{PM}_{2.5}$ etc. inevitably, resulted out of so-called various developmental activities, locally, regionally and globally.

By virtue of these qualities plants are considered to be amongst the most beneficial natural resources on the earth, right from functional to pictorial perspectives, from rural to urban expanses; and this is why the human adopts various remedial plantation-works in different ways, for the sake of beating such pollutions and polluting forces. But despite the excellency of numerous ecosystem services (ESs) (and also some utilitarian values), plants also cause some perceived or realised ecosystem disservices (EDSs) for human well-being as well as overall environment in broad sense. EDS can be defined as the “ecosystem generated functions, processes and attributes that result in perceived or actual negative impacts on human wellbeing” (Shackleton et al. 2016; Lyytimäki and Sipilä 2009; Vaz et al. 2017), and is increasingly being a subject of potential research (Pataki et al. 2011; Swain et al. 2013) and human concern.

Over the decades, social forestry including plant-based landscapes and ecosystems is being a noteworthy arrangement of green setup in urban fabrics (Tiwary et al. 2016; Li et al. 2017; O’ Brien et al. 2017; Pearlmutter et al. 2017), where plantable space is often found very much limited, particularly in the old and existing cities and towns. Transformation of fresh-natural fallow and agricultural lands into new urban and peri-urban expanses have been, to meet up the time’s demands, increasing day by day in addition to growing population and population-density in and around existing urban set ups. Thus, 66% of the world’s population is estimated to live in cities and towns by 2050, compared to 30% in 1950 (UN, 2014). And such alteration of land cover & land use (LCLU) is, in turn and essentially, calling

for more and more artificial plantation in the urbans. This again profoundly affects, in many occasions and to great extents, physical and chemical interactions and symbiotic relationships among the elements of the locale, including human health and wellbeing.

Likewise phenomena are taking place in rural environs too, where new and newer settlements are emerging in addition to rising urban-like features. Rapidly growing trees are being popularly planted in much closed proximity of dwelling houses and even sometimes removing naturally vegetated surfaces, most of them being exotic tall and large-canopy ones. Such tree-plantation is, however, being identified commercially profitable but at the exploitation-costs of hygiene and health of nearby people and local environs very often.

In general, artificial forestation or plantation is regarded as a great mechanism to control the pollutions generated out of more and more industrialization, urbanization, population-growth and many other likewise sources. Thus, various trees are purposefully and habitually planted on the dividers and beside the avenues, roads, streets etc., and also in and around the home-premises in residential areas of urban settlements to surmount environmental pollutions. But vis-a-vis of numerous benefits of urban trees, they are rebelliously responsible for several detriments and drawbacks in the processes of falling leaves, producing pollen-allergenicity (Zong et al. 2020) etc. (that are related to their phenological phases), threats and damages due to breakage of boughs and spreading of roots, altering and slowing down the local wind-flow (Buccolieri et al. 2011), dispersing (Kwa & Salim 2015) and concentrating (Gromke & Ruck 2015) various air-borne pollutants including dust-particles near the street-canopy, emitting some volatile organic compounds (Ahn et al. 2022), reactive hydrocarbons (Paoletti et al. 2004) and so on.

Similarly in rural ranges also, many a people persuade to grow more trees very near to their dwelling houses, may be for the sake of contending air-pollutions and having lucrative economic returns resulted thereof. But such occurrence may, in the long run, invite several side effects from ensnaring heat and coldness, trapping moisture and gaseous pollutants, dust-particles etc., exertion of some allelopathic (Suresh & Vinaya 1987; Bhatt & Todaria 1990; Coder & Warnell 1999 ; Caboun 2006 ; John et al. 2007; Chu 2014) and physical adverse effects (McPherson & Ferrini 2010), and of course life-devastating CO₂ during night (Akbari 2002; Paoletti et al., 2004; Nowak & Heisler 2010; Okobia et al. 2017) when people sleep for regaining energy for the next work-day.

But only almost 40% of total Earth's ice-free terrestrial land area is directly used by humans, with an additional 37% surrounded by human-modified areas (Ellis et al. 2010), and space constraint is now a burning issue since human-land use is predicted to increase rapidly over the next few decades (Tilman et al. 2001). Although change is inevitable and it is also necessary to meet up the emerging needs. Therefore, supplementing or integrating human-engineered endeavours with natural biophysical systems, combined in synergetic manners, can have the optimum results to satisfying such growing needs (Plamer et al. 2015), and it is obligatory to be clear whether net effect of more and more plantation would be beneficial to improve air quality or not, at least at local scales. In this way, proper selection of suitable plant species, strategic selection of plantation-sites, providing due care and treatment for the growing plants, and above all adopting tailored practices, engineering and managerial planning in social plantation etc. can minimise these infelicitous effects in the way

to obtain optimal benefits from such plantation-initiatives. On these perspectives, this article depicts an overview of some malapropos effects of plants those are often over looked and ignored under the supersession of their numerous beneficial attributes.

Methodology:

This work outfollows an expressive approach and not any definite methodology. It delivers and highlights a general appraisal and account of some harmful and undesirable effects of indiscriminate plantation taken up for palpable environmental remediation and ostensible cash-earning as well. Additionally, some portrayal presentations have also been made to help easily validate the claims that may speciously be perceived eccentric to the general notions.

Objectives:

To mitigate environmental delinquents and economic issues, green infrastructures are increasingly been addressed in urban, peri-urban and rural peripheries, and within both organisational and individual capabilities. But owing to various adverse attributes their overall beneficial aspects open up, in many instances, some obvious debates while deploying such enterprises in cluster or discrete manners. However, in this article the author intends to:

- a) allusion some biophysical glitches the trees render, particularly in urban and also in rural settlements as well,
- b) point out increased pollutants-concentration and durability taken place due to wind-flow distortions particularly along the streets and avenues in urban extents,
- c) enumerate the allelopathic effects of some plants,
- d) highlight the biochemical health and hygiene-contaminants emitted by some trees,
- e) culminate and promote urge to account the adversative potentials of plants and tailored and silviculture-practices for

plantation-site selection during accomplishment of urban and country planning and designing, and so on.

Discussion:

Tree plantation, irrespective of their bio-geographical status, is gaining an increasing momentum globally, it being presented as a mitigating panacea for the sake of climate change impacts, poverty alleviation mechanism and so on. But in contrary to this general notion, some emerging researches argue that plantation on the land might not counterpoise the carbon emissions as much as some would presume (Popkin 2019). The researches also suggest that plantation in inapt sites can result in catastrophic consequences for sustainable development, biodiversity conservation and ecosystem functioning (Bond 2016; Bond et al. 2019; Temperton et al. 2019), and even loss in carbons contained in organic soils. Thus, the myth of ‘plantation is good for providing ecosystem and biodiversity services’ is not always true, and proposition of plantation of trees for restoration of tropical and subtropical old-growth grassy biomes is misguided (Silveira et al. 2020), and in many cases enhanced tree-cover is considered to be obviously bizarre in terms of biodiversity conservation and sustained delivery of ecosystems services (Jackson et al. 2005). However, some EDSs of plants and plantations such as environmental, human health hygiene, social and cultural, safety and security, infrastructural conflict etc. are briefly enumerated in this article.

1) Effects of non-native trees:

Persistently increasing population (in terms of both area and density) has been inviting more and more demands and opportunities for plantation and forestation with non-native trees (NNTs) world-wide to provide ecosystem services and biodiversity up keeping etc. (Bauduceau et al. 2015; Riley et al. 2018; Kowarik et al. 2019). This is happening because of their

faster growth-rates and economic returns, more reliability in achieving aimed greening, better aesthetic values, greater flexibility for maintenance-requirements and many other associated household and social amenities (Dickie et al. 2014; Potgieter et al. 2017).

But the challenge is to discriminate non-invasive and invasive NNTs (NINNTs and INNTs), since the INNTs endure some upsetting abilities like modulation of the available resources to other species by causing physical state changes of biotic or abiotic materials (Jones et al. 1994; Mitchell et al. 2007; Ayanu et al. 2015), causing almost irreversible regime shifts in the invaded ecosystem structures and functions, modification of the identity-dynamics of the dominant species leading to rippling across trophic levels by some invasive tree-species (Gaertner et al. 2014; Souza-Alonso et al. 2017; Zavaleta 2000), and directly or indirectly posing extensive damages to the biodiversity and related ecosystem (including local flora and fauna) services worldwide (Rejmánek and Richardson 2013; Krumm and Vítková 2016). The INNTs can also seriously affect the flood, sediment, fire and water-resources regimes, which in turn can invite radical catastrophic effects on the ecosystems and health and livelihood of the people concerned (Paritsis et al. 2018; Davis et al. 2019; Richardson 1998; Le Maitre et al. 2002; van Wilgen and Richardson 2012; Richardson et al. 2014). The disastrous impacts of such INNTs-attacks are also notoriously noteworthy for naturally treeless ecosystems (Jäger et al. 2007; Rundel et al. 2014).

In the context of ‘Global Guidelines’ (eight numbers ‘global guidelines’ were set out for the sustainable use of non-native trees in the 40th Bern Convention in 2019, the 1st international treaty of its type was held at Bern in 1979 to protect both species and habitats for nature conservation) the term ‘non-native’ denotes to ‘geographical origin’ of the species. However, the terms ‘non-

native', 'alien', 'allochthonous', 'non indigenous', 'exotic' and 'introduced' plants/trees carry their meanings synonymously while referring ecosystem, biodiversity, economy, health services/ disservices etc., and 'Convention on Biological Diversity' (CBD). Out of so many non-native species in India some worth mentioning harmful (concerning both environmental and public health) plants are *Parthenium hysterophorus* (English: Bitterweed, Bengali: Parthenium, Gajor Ghas), *Acacia cyclops* (English: Australian coastal wattle, it is a shrub), *Acacia auriculiformis* (English: Earpod wattle, Bengali: Akashmoni/Sonajhuri), *Acacia farnesiana* (English: Needle bush, Bengali: Guye babla), *Eucalyptus sp.* (English and Bengali: Eucalyptus), *Prosopis juliflora* (English: Prosopis, Bengali: Shemi or Jhanr Jhanr), *Leucaena leucocephala* (English: Wild tamarind, Bengali: Subaul).

However, it is the time's demand to harness maximum environmental and socio-economic benefits and opportunities, with minimising the risks and adverse effects, out of all the useful species and from the harmful tree species too, by designing and effecting tailored-practices for selection of plant species & plantation-site and silvicultural management.

2) Concentrated air-pollutants in tree-canyon:

To maintain proper pace with growing population in cities and towns, and urbanisation-like traits in rural extents, outdoor air qualities and their repercussions on public health are increasingly attracting more gravity world-wide (Schwela et al. 2000; Mfula et al. 2005; Fenger 1999). Fossil fuel-vehicular emissions are the most protuberant elements in deteriorating urban air qualities (Xiaomin et al. 2006), and the chair is occupied by organic and non-organic particulate matters (conventionally called $PM_{2.5}$) in rural India (Chatterjee 2019). And the pollutants find more concentrations in the tree-canyons in both urban and rural areas due to distorted wind-directions and lower ventilation by

blockage etc., causing accumulated contaminations at dwelling levels, locally. That is, this phenomenon transpires that the underlying argument of plants' ability to clean air-pollutants through leaf-stomata, interception-mechanism etc. is not true in general (Beckett et al. 2000; Tallis et al. 2011; Lovett 1994).

Local air pollution-level is very often increased by aerodynamic effects of trees, when wind-flow is hindered and ventilation is weakened dramatically (Gromke et al. 2008; Jin et al. 2014). Even in a seasonal study on street canyons in the residential area of central Shanghai, Jin et al. (2014) found that $PM_{2.5}$ concentrations increased up to 30% in six street canyons, as compared to that in no-tree. Salmond et al. (2013) showed that the tree-leaves tend to lessen the skyward transfer of fresh vehicle-emissions, increase the pollution-storage canopy-space and reduce the downward flow of clean air. Thus, contribution of tree-canyon towards increased pollutants may, very often, outweigh the filtering-capacity performed by the processes of photosynthesis, transpiration etc. That is, in many cases, street or avenue-plantation may not be effective to combat air quality-problems, if not done strategically and in planned way. This phenomenon is particularly true in case of settlements rounded by copious and dense trees (especially in rural regions), street canyons with busy traffic etc. But of course, that does not necessarily mean that trees in urban backyards, parks, zone with lesser traffic etc. will have similar effect. Rather effects of road-side trees may be positive if city-averaged air-quality is considered in larger scale (Tallis et al. 2011).

When parallel wind-flow is substantially altered by tree-canyons, below the tree-top wind-velocity may reach even 80% lower than those at the crowns. Such retardations coupled with obstruction exerted by the tree-crowns, bring about lesser ventilation near the earth, which again may lead to more pollutant-

concentration by 20% as compared to tree-free areas (Sabatino et al. 2015). Thus, in the street canyons or at the particular turning or junctions, trees may act as speed-bump of wind-flow and overturning eddy currents formed locally. These dispersed currents consisting of air-pollutants are then largely isolated from the urban boundary layer (UBL) above, and consequently residence-time of air increases in and around the trees (Liu et al. 2005; Cheng et al. 2009; Chan et al. 2001). Such longer residence-time helps in not making the polluted air less diluted, and subsequently contributes to increase local pollution-levels. Of course, the degree of such pollution-concentrations depends on different factors like species, canopy-density, location of the trees, season of year, wind direction etc. If big trees with dense canopies are planted near a narrow street, the canopy may perform as a green roof. It can snare vehicle emissions at street level and stipulate natural air flow, protecting pollution from escaping. As a result, air pollution under the trees may increase at human-reach. Even, somewhere, a single tree in a street corner may shatter the wind flow and set a trend to pollution-dropping into the breathing area of the pedestrians walking by, and a dense hedge can produce a bounce-back effect, trapping pollution on the road ending its spreading. It is, again, very much critical where development is more, since more development means more NO_x , SO_2 , CO_2 and particulate matters with aerodynamic diameter less than $10\mu\text{m}$ (PM_{10}), which cause or substantially exacerbate pulmonary and cardiac diseases (Holgate and Ayres 1998; Pope III et al. 2004).

In general, excepting sources, trees can, as structure, reduce wind-speed and weaken the potentials for vertical exchange of air-mass leading to worsening the air-qualities particularly in the urban spaces during low wind-speed synoptic weather conditions (Sieghardt et al. 2005).

3) Emission of some carnage elements and compounds:

Commotional effects of air pollution on pollination and germination processes of crop-plants are, now a days, increasingly attracting attentions of the bio-scientists including agriculturists and farmers as well. Of course, at the same time, air-carried plant-sourced pollens, spores, orbicules, dinocysts etc., associated with various air-born coarse particulate matters (both organic and non-organic) and kerogen etc., are also increasingly exerting potential adverse effects on human health. Thus, human physical illness and health hazards due to allergenic, asthmatic and rhinitic complications and related behavioural abnormalities like amassing suicidal self-directed violence etc., are consistently increasing over time (Sánchez-Mesa et al. 2005; Caillaud et al. 2015) and are being big concerns to the physicians, physician-scientists, environmental scientists and general people too (Jeon-Slaughter 2016). And additionally, the impacts of climate change have been ensuing the endurance-time of these pollutants (typically beyond the blossoming-seasons of 2/3 months), and thus entangling the delinquencies more complicated and perilous (Sánchez-Mesa et al. 2005; Sheehan et al. 2010; Caillaud et al. 2015). Therefore, paleogeographic and palaeoecological constructions and reconstructions, continually emerging and occurring in the lower levels of atmosphere, are also being considered to be the substantial sources of air pollution particularly for the people residing within very reach of thick flowering plant-canyons and jungles. However, health hazards, out of these pollens, further worsen when concentration of atmospheric CO₂ and degree of temperature increase, since these conditions favour pollen production and potentials allergenicity (Bartra et al. 2007).

Of course, many studies suggest that it is very difficult to attribute such human health hazards to the air-borne plant-pollen

singly, rather they claim it to be a synergetic effect of the presence of other aeroallergens and various biophysical factors like humidity, temperature, person's resistibility and exposure-time, age and anthropological origin etc. (Sheehan et al. 2010; May et al. 2011; Caillaud et al. 2015; Osborne et al. 2017; Dales et al. 2004; Sánchez-Mesa et al. 2005). They also supplement that allergy-persuading potentials of plants significantly vary across various geographies and species (Lin et al. 2002; Dales et al. 2004 and 2008; Loureiro et al. 2005; Díaz et al. 2007; Fuhrman et al. 2007; Darrow et al. 2012; Puiggròs et al. 2015; Cariñanos et al. 2016), and even diurnal, seasonal and annual changes of various weather-parameters (D'Amato et al. 2002). However, pollens of olive (*Olea europaea*), silver birch tree (*Betula pendula*), alder (*Alnus glutinosa*), mediterranean cypress (*Cupressus sempervirens*), blackboard tree (*Alstonia scholaris*), Turkish hazel (*Corylus colurna*), horse chestnut (*Aesculus hippocastanum*) and Japanese cedar (*Cryptomeria japonica*) are amongst the most allergy-sensitive plants (Mrđan et al. 2017). At the same time, there are so many allergen-emitting trees that are popularly used for ornamental purposes, like acer, cupressus, pinus, platanus, quercus and tilia sp. Some trees also contain various toxic and poisonous compounds in their seeds (e.g., *Melia* sp. and *Brachychiton* sp.), leaves and corks (e.g., *Robinia pseudoacacia*) or even the whole bough (e.g., *Taxus baccata*), that also can be hazardous to human health if exposed over a considerable period of time (Tomalak et al. 2011).

Substantial research has also been carried out to explore allergic potencies of air-borne pollens generated by various plants over different states in India. In the survey titled 'All India Coordinated Project on Aeroallergens and Human Health' under the courtesy of the Ministry of Environment and Forests, Government of India, total 18 places were identified, quantified and characterised to study the allergenic properties of the pollens

released by different plants and fungus (Singh 2000; Singh and Kumar 2002), of which some salient allergen-spreading plants (type and season-wise) are depicted in table-1. The study also provided explanations on the relationship between allergic sensitisation and allergen-exposure, and about cross-reactivity among the structurally linked allergy causing pollens.

Study across the globe claims that *Lolium perenne* cross-reacts with *Acacia*, pineapple, *Olea europaea*, *Dactylis glomerata*, *Ligustrum vulgare*, *Cynodon dactylon* and *Pinus radiata* (Baldo et al. 1992; Cornford et al. 1990; Howlett et al. 1982; Mourad et al. 1988; Pike et al. 1997; Roberts et al. 1992), and *Platanus acerifolia* with *Corylus avellana*, *Prunus persica*, *Malus domestica*, *Arachis hypogaea*, *Zea mays*, *Cicer arietinum*,

Table-1: Some Common Allergenic Pollen-releasing Plants in Dulia

Type	Binomial names		
	Spring (Feb-April)	Autumn (Sept-Oct)	Winter (Nov-Jan)
Grass	<i>Cynodon dactylon</i>	<i>Bothriochloa pertusa</i>	<i>Cynodon dactylon</i>
	<i>Dicanthium annulatum</i>	<i>Cenchrus ciliaris</i>	<i>Eragrostis tenella</i>
	<i>Imperata cylindrica</i>	<i>Heteropogon contortus</i>	<i>Phalaris minor</i>
	<i>Paspalum distichum</i>	<i>Pennisetum typhoides</i>	<i>Poa annua</i>
	<i>Poa annua</i>	<i>Sorghum vulgare</i>	
	<i>Polypogon monspeliensis</i>		
Weeds	<i>Cannabis sativa</i>	<i>Amaranthus spinosus</i>	<i>Ageratum conyzoides</i>
	<i>Chenopodium murale</i>	<i>Artemisia scoparia</i>	<i>Argemone mexicana</i>
	<i>Parthenium hysterophorus</i>	<i>Cassia occidentalis</i>	<i>Chenopodium album</i>
	<i>Suaeda frutescens</i>	<i>Ricinus communis</i>	<i>Asphodelus tenuifolius</i>
	<i>Plantago major</i>	<i>Xanthium strumarium</i>	<i>Ricinus communis</i>
	<i>Ailanthus excelsa</i>	<i>Anogeissus pendula</i>	<i>Cassia siamea</i>
Trees	<i>Holoptelea integrifolia</i>	<i>Eucalyptus sp.</i>	<i>Salvadora persica</i>
	<i>Prosopis juliflora</i>	<i>Prosopis juliflora</i>	<i>Mallotus philippensis</i>
	<i>Putranjiva roxburghii</i>	<i>Cedrus deodara</i>	<i>Cedrus deodara</i>

Lactuca virosa, *Musa sp.*, and *Apium sp.* (Miralles et al. 2002; Enrique et al. 2002). A good number of studies have reported to identify cross-reactivity between the air-borne allergic pollens in India too, e.g., *Ricinus communis* (an oil seed abundantly present

in waste land) with *Hevea brasiliensis*, *Mercurialis annua*, *Olea europaea*, *Betula*, *Zygophyllum fabago*, *Putranjiva roxburghii*, and *Ricinus* (seed) (Belchi-Hernandez et al. 1998; Palosuo et al. 2002; Singh et al. 1997a and 1997b) and *Areca catechu* with *Phoenix sylvestris*, *Cocos nucifera* and *Borassus flabelifer* (Chowdhury et al. 1998). However, Singh (2000) and Singh and Kumar (2002) found 59 types of air-borne pollen in West Bengal (highest concentration in the month of May), and some dominant species are *Trema orientalis*, Asteraceae and Chenopodiaceae, Pongamia, *Areca catechu*, Xanthium and Cocos. Some studies have also enumerated association of several sensitive air-borne pollens with some edible fruits, vegetables, foods etc., and alteration of shape, size, sculpture and morphology of some particular aeroallergens (leading to enhanced pollen-allergenicity) when acutely and chronically exposed to atmospheric pollution specially SO_x, NO_x, O₃, heavy metals, fluorides and respirable particulate matters (isolated or adsorped) (Sénéchal, et al. 2015; Kaur et al. 2016 and 2017; Wang et al. 2009; Guedes et al. 2009; Arnima 2001).

Because of aesthetical looks and some other reasons, many people and authorities prefer to plant Tuckeroo (*Cupaniopsis anacardioides*), Sweet/star/red gum (Liquidambar), Peruvian pepper (Schinus), Gingo (*Ginkgo biloba*), Canary island pine (*Pinus canariensis*), Brazilian pepper (*Schinus terebinthifolia*), Monterey pine (*Pinus radiata*), Stone pine (*Pinus pinea*), Aleppo pine (*Pinus halepensis*) etc. near their dwelling houses, along the streets, avenues etc. But these cultivars are identified to have been naturally released (on satisfying some climatic parameters) various volatile organic compounds (VOCs: the atmospheric trace-gases other than CO₂ and CO, like isoprene, isoprenoids, terpenes and monoterpene etc.) (Corchnoy et al. 1992; Leung et al. 2011) that may lead to serious implications for biosphere-atmosphere interactions including formation of

photochemical smog (a hazardous air polluting component) (Niinemets and Peñuelas 2008; Calfapietra et al. 2013).

With some favourable conditions (particularly in hot weather) these biogenic gaseous chemicals get proliferated, and the innocuous isoprene gas reacts with NO_x etc. (sourced from motor vehicle exhausts, industrial emissions, gasoline vapours etc.). Thus, various air-pollutants and some greenhouse gases (like O_3) are formed in the lowest atmosphere in presence of heat & light (Christopher 2005; Corchnoy et al. 1992; Benjamin and Winer 1998; Leung et al. 2011), which in turn leads to increased concentrations of atmospheric acidity and some aerosols (Nowak et al. 2006; Salmond et al. 2016; Sieghardt et al. 2005). Of course, this tropospheric O_3 creates various health hazards to human like stinging eyes, prickling nostrils, severe respiratory problems etc., vis-à-vis extinguishes crop-productivity and enkindles climate-change {though stratospheric ozone-layer helps the Earth in preventing the Sun's harmful ultra violet (UV) rays}. However, presence of O_3 in troposphere has been distinguished to be one of the most widespread harmful pollutants in Europe and North America, and is projected to increase further in the developing countries (Fowler et al. 1999). Interestingly, such formation (VOCs and hence O_3) has been distinguished more in rural expanses as compared to urban air, mainly because— (i) biogenic VOCs, generated in vegetated fields, are found more reactive than anthropogenically formed VOCs, (ii) their synthesis takes significant time and is likely to be formed at distances from the precursor-sources and (iii) in general, more concentration of urban air-pollutants favours return-reactions with NO_x , leading to depletion of tropospheric O_3 (Sieghardt et al. 2005). But on the other side, higher rates of ambient CO_2 -concentration (up to a specific limit) usually help the trees in exerting more pollens, which in turn badly affects human health inducing allergenic diseases in densely populated urban cores (Traidl-Hoffmann, 2003).

Of course, interestingly, the VOCs may not always invite harmful effects, rather depend on variety of the species, weather and climatic parameters, prevalence of other pollutants and so on. For instance, inhaling of VOCs derived from Himalayan cedar (*Cedrus deodara*) has proved to increase relaxation and concentration of blood-oxygen with improvement to the respiratory or circulatory systems, and decrease blood pressure (Song et al. 2016).

Nevertheless, pollens and VOCs released by some plants are, overall, associated with adverse health consequences, though not so consistent across all the living parameters and conditions; and can be alleviated with selection of proper variety and adoption of strategic management practices.

4) Allelopathic effects:

Allelopathy is a biological ability of trees (and plants in general including microorganisms) by which they biochemically interact (suppress: pathetic or incite: sympathetic) amongst themselves (through production and release of some biochemical compounds into the environs) (Der 1938; Rice 1979, 1985). In Greek ‘allelon’ refers to ‘mutual’ or ‘among each other’ and ‘pathos’ denotes ‘suffering’ or ‘feeling’ (Der 1938). The like-wise term applicable to the success-ability of any non-native species over the native species in its novel range is ‘Novel Weapons Hypothesis’ (NWH), that suggests exotic plant’s ability to produce and spread novel metabolites in the form of unique allopatric, defensive or antimicrobial biochemistry to which the native predators possess little resistance (and gets competitive advantages in the new range); though its co-evolved species (in its native range) are quite used to such toxic weapons (Callaway 2004). Such enemy-like characteristics of plants were first recorded by the Greek philosopher Theophrastus in 300 BCE (before Common Era), when he noticed that chick pea plants (*Cicer arietinum*) ‘exhaust’ the soils {while other related plants (legumes) did not}

and extinguish the weeds (Rice 1985). Later on, Gaius Plinius Secundus (popularly called Pliny the Elder: 23/24-79 ACE)), a great Roman naturalist and philosopher & commander, observed that chick pea, barley (*Hordeum vulgare*), fenugreek (*Trigonella foenum-graecum*) and bitter vetch (*Vicia ervilia*) all ‘scorched up’ the corn-fields, and that walnut (supposedly *Juglans regia*) caused headache in human and injury to many other neighbouring plants (Rice 1985; Bragg 2010). Though the word ‘allelopathie’ was first coined in German by the renowned Czech-Australian Botanist Professor Hans Molisch in his last book titled ‘Der Einflusseiner Pflanze auf die andere—Allelopathie’, published in the year 1937 (Der 1938) (and thus is called the ‘Father of Allelopathy’).

However, in wider application, in addition to chemical interferences among the plants, the term ‘allelopathy’ also includes reciprocating chemical communications between microbes & microbes, microbes & plants, plants & insects, plants & herbivores, and even sometimes some bio-physical to-&-from eddling capacity among the plants. Moreover, the term ‘allelopathy’ also embraces the sympathetic and synergetic interrelations among the plants, in addition to their antagonistic activities through chemical reciprocations (sometimes startling and sometimes subtle). And apart from these allelopathic characteristics, plants do also have some physical correlations (competitive or even apathetic) among themselves, while sharing the same and limited resources (viz. space, light, water, CO₂, O₂, nutrients etc.)—both qualities have emerged naturally and works together phenotypically through an intricate ‘ecological process’ (Muller 1969).

Plants usually use their leaves, barks, roots, root exudates, flowers, fruits etc. to bear the allelochemicals (as secondary compounds), which then get spread into the environment (including rhizosphere), through the process of leaching from aerial parts

(including leaves) by rains etc., root exudation, breaking down & decomposition of plant-residues (like leaf litter), volatile emissions etc. (Weir et al. 2004). And thus, can hegemonies their individual performances, community structures and plant invasions in the neighbouring areas. Various observations and researches on allelopathic activities of plants evidence that, when compared to leaching-effects— application of residues calls for more negative results and conditioning of soils with allelopathic plants yields fewer negative outcomes, though negative effects weaken with study-duration and strengthen with increasing concentrations of the leachates/residues. Of course, various studies claim that allelopathic attributions are not so significant on life span, life form and domestication of the causing plants, but upsurge with increasing phylogenetic gaps (e.g., native plants suffer more negatively from alien plants than from innate allelopathic plants).

Black walnut (*Juglans nigra*), Eucalyptus (*eucalyptus sp.*), Sunflower (*Helianthus sp.*), Sorghum (*Sorghum bicolor*), Sesame (*Sesamum indicum*), Alfalfa (*Medicago sativa*), Rice (*Oryza sativa*), Wheat (*Triticum aestivum*), Downy brome (*Bromus tectorum*), Douglas fir (*Pseudotsuga menziesii*) and Barley (*Hordeum vulgare*), English laurel (*Prunus laurocerasus*), Bearberry (*Arctostaphylos uva-ursi*), Sumac (*Rhus coriaria*), Solidago (*Solidago canadensis*) are some common examples of allelopathic plants (Del and Cates 1971; Mallik 2008), while sorgoleone (extracted from *Sorghum bicolor*), catechin (extracted form *Centaurea maculosa*) are the two examples of noxious Phyto allelochemicals (Bais et al. 2002). To get benefit from such plants, several allelochemicals (with different skeletal types) have already been characterized, and their phytotoxic and biological activities are also being documented. However, these are classified in 11 classes viz. (i) toxic gases, (ii) organic acids and aldehydes, (iii) aromatic acids, (iv) simple unsaturated lactones, (v) coumarins, (vi) quinines, (vii)

flavonoids, (viii) tannins, (ix) alkaloids, (x) terpenoids and steroids, and (xi) miscellaneous and unknowns (Einhellig 1986).

Thus, allelopathy might be regarded as a still-evolving intrinsic attacking mechanism of plants that help in surviving and converging their phylogenetically closer kin over their uncanny neighbours. But more interestingly, some plants have been identified to be significantly 'auto toxic', that is, they are well armed with their extracts and/or exudates to impede the life-processes even of their own population growing nearby (but unless affecting their own metabolic processes) (Bais et al. 2002), e.g., Cocksfoot (*Dactylis glomerata*), Reed canary grass (*Phalaris arundinacea*), Birdsfoot trefoil (*Lotus corniculatus*), Red clover (*Trifolium pratense*), White clover (*T. repens*) etc. (Grants and Sallans 1964). Of course, such abilities of plants could have been evolved for the sake of 'competitive survival' of an individual or a population of plant as a whole, and could be termed as 'hegemonic wish' of plants. Though, contrarily, by the processes of adaptation and evolution, some plants have (with some detoxifying mechanisms like conjugation, sequestration or secretion of carbohydrates and oxidation of the phytotoxic compounds) gained abilities to manage and find their ways to regulate the phyto inhibitory properties of some neighbouring plants.

Based on the adapting strategies to their ecological perspectives, animals and plants are divided into 'r' and 'K'-species. The 'r'-series species are adapted to colonisation and early stage of succession by the means of rapidly growing and spreading strategies, though with less competitive capabilities. Whereas, 'K'-series are adapted to stable, late succession or climax vegetation by the means of highly competitive abilities but with less growth and spread-rates. Thus, it could be like that, 'K'-series species have been able to develop allelopathic armament as a part of their competitive mechanisms, and 'r'-

species have devised autotoxicity production-abilities at the cost of their reduced growth-rate (resulted out of increased metabolic load) (Newman 1978), and all these basic instincts have developed only for their (or individual's) own 'survival' under the control of 'Natural Selection'.

5) Conflict with grey infrastructure:

In the context of accelerating peri-urbanisation and urbanisation, and to renovate the environment more favourable, implementation of artificial green chunk or green infrastructure is being increasingly popular world-wide (Escobedo et al. 2019). But in many instances, such green infrastructure (or even standalone tree) is found conflicting with nearby grey (engineered) infrastructures like buildings and systems for water and sanitation, power and communication, walkway and transportation etc. (Hamda 2015). Two most common issues are— (i) shading & concealment of houses, pruning to clear views for traffic signs, guarding & obstructing of conveyance systems (like on roads, rails etc.) & houses, and (ii) littering of homes, drains, roads, cars etc. with fallen leaves (particularly during winters), flowers &/or flower-parts, fruits &/or fruit-parts, branches, bird-shits etc. Fissuring and damaging of building structures and infrastructures (e.g., pavements, pedestrian roads, sidewalks, drains, various underground utility services like sanitation, water & gas pipes, power cables etc.) by substantial extension and growing of roots, uprooting of plants etc. is a perennial problem in urban areas (Nocoll and Armstrong 1998; Koeser et al. 2013; Weissteiner and Rauch 2015; Obradović 2017). And during strong winds & gales, it is discernibly a common challenge to mitigate and overcome disruptions and blockings of traffic flows and rail-transport, damaging of life, property & infrastructures (such as railings, power lines) and loss of life (including domesticated animals) caused by breakdown of trees & large branches, in both rural and urban localities (Hamda 2014). Giving

shadow and falling & deposition of leaves along the sharing-edges of agricultural and horticultural fields and household gardens etc. frequently invite quarrelling and bitter relation among the neighbours, and sometimes lead to occurring of social and law-and-order problems. Thus, incidence of public annoyance and nuisance on tree related issues is, now a days, becoming a major concern for both the academicians and town & country planners (Kirkpatrick et al. 2013; Davies et al. 2017). However, it is being a major focus of the contemporary arboriculture professionals to gain a sustainable compromise between green and grey infrastructure-conflicts, and 'planting right tree in right site' can be a right way out of such skirmish (Vogt et al. 2015), partly being a moving away from the historical trend for large shade trees along the roads and streets (Dean 2005).

6) Some typical social problems:

The aspect of social disservices delivered by the clumps of plants and bushes is very complex and relative in nature, since it comprises of so many elements like people and other animals (like conflicts between them), personal and collective barriers, ecosystems and biodiversity, social and organisational structures etc. Morris et al. (2011) illustrated quantitative and qualitative analysis of twenty research-findings to build up a working typology of social distribution of barriers towards access-needs to tree-groves and woodlands. This exercise included physical, psychological, emotional, personal, socio-cultural and structural barriers arising both on-site (passing through for shortcut-connectivity) and off-site (beside or along the edge) fear-like unsafety and insecurity (e.g., conflict with crime as well as other animals, insects etc.), feeling of unknowingness and ugliness, and so on. Woodland-environ was demonstrated as a potential site for criminal-hiding by Lindgren and Nilsen (2020) and great influencer on perception of fear as well as personal and social

attributes (viz. economic, cultural, social, age and gender strata by Maruthaveeran and Konijnendijk (2014).

Again, physical viewing of neighbours (other people and environmental elements) could be attributed to decreasing local crime and increasing social mixing, and contrarily view-barrier and sight-attenuation may lead to weak neighbouring relationship and psychological life-force. Not only that, view-obstructing trees and bushes help in thieving, robbing, mugging etc., when located at the vicinity of windows, doors, roof-tops etc. Though study on the issue is not so plenty. Kuo and Sullivan (2001) and Gilstad-Hayden et al. (2015) established links between trees and delinquencies for both violent (e.g., murder, rape, robbery and assault) and property crimes (e.g., burglary, theft and arson). Donovan and Prestemon (2012) found that view-hindering smaller trees were calling for increased crime, whereas larger trees endowed less.

Another physical disservice (PDS) of jungles and tree-groves could be of perception of revulsion and crossness by individuals instigated by aesthetic attenuation and incidence of mosquitoes and pests (Pistón et al. 2022).

7) Non-availability of hygienic conditions:

In view of defeating air-pollutions and getting fast economic return, many people are with the opinion of planting trees even where a minuscule space is found, and even in the very affinity of domestic houses. But when the very neighbouring households follow the same alleyway, it could be a typical situation that no piece of house-side lands is left without trees. Consequently, such plantation very nearer to the dwelling houses calls for various unhygienic conditions to the associated people. Many houses and people, therefore, endure beyond the outreach of getting sufficient and quality-time sunlight because of attenuation and obstruction caused by the trees and other leafy plants near-around the dwelling houses (Escobedo et al. 2011; Vos et al. 2013).

Apart from this, hot and damp weather is a major problem in and around those households irrespective of seasons, types of plants & houses etc. The residence-time of dust, smoke etc. also gets longer due to restriction of air ventilation, once such pollutions somehow take place in the areas. The situation goes downhill especially in the winters, when much more sunlight-warming is essentially needed for the pregnant women, newborn babies, aged & ailing persons (particularly the psychiatric ones) (Penckofer et al. 2010). Thus, plantation and growing of trees in unplanned ways and at non-strategic locations & sites may lead to transforming the local environs more unhygienic and unhealthier, rather improving aboding qualities and even pecuniary returns, if accounted as a whole.

8) Misbalancing of CO₂-O₂ in and around the Trees:

Air pollution, in a general sense, is a “system” at work (Gaulding et al. 1968) and is caused by “air pollutants”. However, “air pollutant” can be defined as the presence of one or more contaminants in the natural atmosphere (sourced from anthropogenic, biogenic, or geogenic sources) in an amount and time (short-term and long-term) to damage human, plant, and animal life; commercial or personal goods; and environment quality (Daly and Zannetti 2007; MÜEZZINOGLU 1987). And among them, the “primary pollutant” (that is directly emitted into the atmosphere from the sources) CO₂ has earned protruding attention (especially with global warming issues in terms of concentrations and variabilities) and hence became the most widely studied atmospheric gas in the recent past (MÜEZZINOGLU 1987; Sevik et al. 2015).

Studies show that atmospheric CO₂ increased and then dropped back in every 1,00,000 years’ cycle (on average) over the last 4,00,000 years, and current concentration is around 0.0385% (385 ppm) (Sevik et al. 2015). Of course, such increase is entirely attributed to human-induced sources (80 to

85% fossil fuel burning and 15 to 20% respiration and decomposition of organic matters) (Kayhan 2007 and Sevik et al. 2015). Now, as contaminated air badly exacerbates human health, people find their preference of environs with more plantation and cleaner air as more habitable.

But photosynthesis cannot take place when any of the pre-requisite criteria lacks, though respiration remains continuing and thus, more and more plants and plantations might not reward cleaner air always. Again, such cleaner air-criteria may also vary diurnally and seasonally, and of course on weather-conditions and plant species as well.

For example, Sevik et al. (2014) carried out a study to explore diurnal and seasonal variations of atmospheric CO₂-concentrations at three different sites, florally and structurally— (i) city-centre (with least vegetation and at no windy-no rain conditions), (ii) valley (with medium vegetation but with high wind-current) and (iii) forest (with largest vegetation and at no windy-no rain conditions) areas. The results claimed that in summer CO₂-concentrations (mean) increased in nighttime (as compared to daytime) by ~1%, ~29% and ~55% respectively in city-centre, valley and forest; though the respective figures in winter were calculated to be ~22%, ~8% and ~8%. The study also found that CO₂-concentration in the forest area came down to only 0.0121% (121 ppm) during summer-day. But plants become unable to carry on photosynthesis process when ambient CO₂-concentration fall to ~0.0150% and completely stop when come down to ~0.0100% (Tezcan et al. 2011). Thus, the study clearly enumerates three interesting outcomes— in forest area atmospheric CO₂-concentrations may (i) upsurge substantially at nights, (ii) downsurge sufficiently enough (at least around some individual trees) to largely affect the photosynthesis process leading to fading their liveliness and (iii) chronically make a human suffer from over inhaling of CO₂ (and hence, lower O₂-amount)

if stays and lives in the midst of dense vegetation continuously. Though all those happenings very much depend on age, health-status and variety of species, weather and climatic parameters, latitudes and longitudes, availability of water and nutrients, and so on. However, relation between the number of some particular tree species and CO_2 - O_2 -balance is enumerated in the following paragraphs.

Considering a fast growing deciduous tree viz. Elm, Oak, Poplar, Sycamore or Walnut, it can sequester almost 68.30 kg of carbon per year at the age of 59 years (<https://www.quora.com/Do-trees-consume-oxygen>), and hence it produces 182 kg of oxygen per year (atomic weights of C and O_2 are 12 and 32 respectively). This means, such a tree can produce approximately 0.4986 kg of oxygen per day (during photosynthesis-hour). Again, if it is assumed that half of this amount is consumed in respiration-process, the amount of O_2 a tree can exert per day is about 0.2493 kg.

Now, considering an average adult (when resting) inhales/exhales about 11,000 liter of air per day (Discovery Health 2020), density of air as 1.225 kg/m^3 , % of O_2 in inhaled and exhaled air (by volume) respectively as 20.95 and 13.60 to 16.00 (Dhimi 2015), oxygen consumed by a person per day is estimated to be 0.8287 kg. Hence, by unitary method, the number of such trees required to compensate the requirement of a person is calculated to be about 2.3241. That is, a family of 6 persons must require 19.9446 numbers of tree just to live on. Of course, this is a very rough calculation. And when other human activities are measured, and hours of photosynthesis etc. are taken into account, there is every possibility for many families to lethally starve of life supporting O_2 , if the wind is considered to be standstill, in many rural expanses too.

Like-wise calculation could also be performed with CO_2 . A typical hardwood tree can absorb about 48 pounds (21.7724 kg) of CO_2 in one year (CO_2 meter, 2020), which derives to be

0.0597 kg per day. During their entire lifespan, trees generally give off about half of the CO_2 that they absorb (although this varies to a great extent between different species and categories of plants) (Science line 2020), which computes that a tree can release about 0.0298 kg of CO_2 per day during its respiration.

Similar calculation shows that 6 adult persons together exerts about 3.6504 kg of CO_2 per day. Hence, total number of trees thus required to compensate this amount of CO_2 is about 61.1457 ($= 3.650/0.0597$) {of course, if other factors (including flow of wind etc.) are not considered}. And as a consequence, people could inhale too much over-concentrated CO_2 (heavier than O_2 and air) in some settlements at night, even during day-time too.

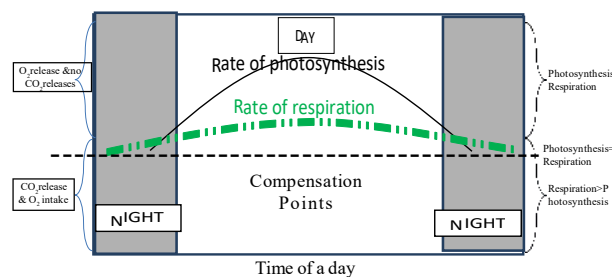


Figure-1: Schematic Diagram Showing Rates of Photosynthesis, Respiration and Compensation Points

Figure-1 transpires that the rates of both photosynthesis and respiration reach their highest peaks at mid-days, photosynthesis goes on only from sunrise to sunset, but respiration continues round the clock and no gas (neither CO_2 nor O_2) is inhaled or exhaled at two points of time in a day-cycle.

That is, many people may chronically suffer from CO_2 enriched inhaled air if they pass their nights in the midst of sufficiently abundant tree-groves for a considerable period continually.

9) Muddling of natural pollination:

Pollination is an essential process in the sexual reproduction of about 85% (ranging from 78% in temperate to 94% in tropical communities) (Ollerton et al. 2011) of 3,52,000 angiosperm species (Paton et al. 2008)), and approximately 3,00,000 animal species contribute in providing pollination services through mutual interactions with flowers' pollens and nectars (Kearns 1998). Approximately 70% of major crop species depend, fully or partly, on animal-mediated pollination (largely by insects) that accounts for 35% of global food production (Klein et al. 2007).

But biotic pollination is declining globally (Potts et al. 2010), e.g., several bee species have been diminishing rashly (Williams and Osborne 2009). And González-Varo et al. (2013) have identified five principal causers to decline of natural pollination viz. climate change (Memmott et al. 2007 and Hegland et al. 2009), landscape alteration (Winfree et al. 2011), species invasions (Moron et al. 2009), agricultural intensification (Kremen et al. 2002 and Tscharntke et al. 2005) and spread of pathogens (Cameron et al. 2011). Pereira et al. (2010) and Potts et al. (2010) have also distinguished anthropogenic activities to be the main influencer in deteriorating such biotic pollination.

Landscape alteration is attributed to change of natural or semi-natural lands to artificial forestation or plantation in addition to habitat-fragmentation. This plantation and fragmentation, in turn, result in significant disruption of diversity and abundance of existing bio-pollinators and consequently fecundity (Aguilar et al. 2006), particularly of habitat and food-specialist insect taxa that find their shelters above the ground (Winfree et al. 2011 and Williams et al. 2010). Apart from this, artificial plantation (replacing existing habitation) takes considerable time to achieve blossoming maturity and thus may remove away the existing pollinators by the period, leading to formation of a time-lag for pollination of the newly planted trees until the fresh pollinators re-appear.

On the other hand, exotic floral invasions (emerging with artificial plantation-schemes) invite exotic habitats including bizarre pollinators, which again act as the invasive predators for local pollinators and pollination-processes (Abe et al. 2008). Again, various non-native entomophilous species are planted in lawns, gardens, horticultures and road-dividers for their attractively ornamental displays. These plants, in many occasions, accommodate themselves well with the local pollination-networks and have the provoking capabilities to entice more and more mediators compared to the co-existing native species. Thus, these exotic flora act as some super generalist-defeaters over the co-existing ones (Aizen 2008 and Morales and Aizen 2002). The non-local floral species may also call in various non-local biopollinators, which again can disrupt the existing pollination-patterns (Montero-Castan and Vila 2012) leading to weakening fecundity and progeny-performance of the native plants through pollen limitation and inbreeding depression (England et al. 2001; Valido et al. 2011 and Gonza'lez-Varo et al. 2010).

Moreover, many jungles and bushes situated interstitially act as the shelters of several pollinating mediators. But in the name of beautification and development these jungles and bushes, both in urban and rural belts, are being cut down, depleted and vanished, and various decorative vegetation are planted. And as a consequence, accommodations and lodging of the insects (including some wild animals) are forced to be at stake, resulting in flagging of natural pollination.

Thus, plantation-works very often call for, directly or indirectly, debilities (or sometimes even annihilations) of natural pollination, which in turn may lead to diminishing productivity and resultant depletion of some angiosperm plant species.

Conclusion and Suggestions:

Our knowhow on the interactions of trees (and vegetation in general) and its environment to the subsequent impacts on

ecosystem services and disservices has been being expanding and evolving. Thus, though plants, by nature, are the ameliorating element for animals including humans, at the same time, it cannot be taken as a panacea because of its conspicuously dichotomised contributions.

It is again beyond doubt that plants furnish a net positive satisfaction to the environment, and hence the paradoxical aspects mentioned in the article do not necessarily mean that further forestation and its preservation should be kept apart. The trees alone are not the problems. Principal foul players are the anthropological activities like burning of fossil fuels etc. Hence, when deciding for social forestation in urban settlements in particular, scientific and technical pros and cons must be studied in depth pertaining to the aspects and to be taken into account as far as practicable, keeping parity with present days' demand for development and specially beautification. Another thing is that the oceanic phytoplankton and weeds are creditable for producing 70% of the Earth's oxygen-supply (Egbert 1994). Hence, when concerned with the health of global oxygen suppliers, special attention is to be given to the global water-ecosystem also, keeping in mind that sufficient plantation on the land alone is practically not feasible to cater the future oxygen demand of human-activities, even of the present.

Apart from the context of this paper, accomplishing tree-plantation enterprise may also bring economic override (Escobedo et al. 2011). For example, maintenance costs for grey and/or green structures may thrive noticeably, especially when the tree-groves are not adapted to local conditions or are not well accepted by the local population. Therefore, adoption of plantation of urban trees should consider availability of above and belowground spaces, local light conditions, microclimate, soil conditions, water supply, vehicular emissions and other stressors, so as to select the specific species. Again, integrated

researches and planning & management can make a trading off the known negative and positive synergies imparted by trees, bushes and jungles. Further, more studies are needed across a range of local, ecological and socio-econo-cultural (considering individual stakeholders and social strata) perspectives, for selecting proper species, suitable site and the expanse as a whole. Collaboration is also needed of all the stakeholders viz. government and non-government organisations, environmental activists and managers, forestry and agroforestry industries, policy and plan makers, local and national forest authorities, supervision and certification bodies, organisations and individuals involved in greening, landscaping and climate change mitigation, and so on.

And all these extensive and collective measures can enable us to do away with the negative interplays in a synergetic manner.

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EVALUATION: A FUNDAMENTAL PARAMETER OF EDUCATIONAL INSTITUTION

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Abstract: In education ‘evaluation’ is a very modern concept. This process is not only modern but also continuous and comprehensive process. Evaluation is playing a critical role in assessing the quality of education, measuring student progress and enhancing institutional effectiveness. By employing both formative and summative evaluation methods, educational institutions can identify strengths, weaknesses, and areas for improvement in their programs and teaching strategies. This process also helps in maintaining accountability and transparency, ensuring that resources are optimally utilized for better educational outcomes. Evaluation and Assessment not merely a mechanism for grading or ranking, it is a holistic process that shapes the growth, quality, and sustainability of educational institutions. It is an indispensable tool for fostering academic excellence and

institutional innovation. The main objective of this paper is to discuss in detail the evaluation process and the relation between evaluation and assessment.

Keywords: Evaluation, Assessment, Formative, Summative, Sustainability

Introduction

“The process of evaluation happens in every aspect of life in one way or another. It is possible to distinguish between good and bad only through evaluation.” (Zimmerman, 2008) “The evaluation process is very important for the general progress of the society. Assessment is the only way to determine a student’s academic performance” (Clark, 2012). The progress and development of any country depends on the education system of that nation.” An essential component of any learning program is evaluation. It enhances learning and instruction for both teachers and students.” (Andrade, H., Brookhart 2020) Education is a systematic process through which a child acquires knowledge, experience, skills and understanding. Education is the key to solving various problems in life. It is the overall development of the child (physical, mental, moral and social). Through education a child develops a deep understanding of life which makes him a civilized, refined, cultured and educated person. We can say that education is an integral part of human life. School is a child’s first encounter with the outside world; School education is important for a child’s overall development as it is where they first gain access to the knowledge needed to meet the demands of modern lifestyles.

Education is a dynamic process that develops the child according to changing circumstances and time. Education is the training of the mind and the assimilation of ideas which leads to dynamism of character and creativity of personality. According to Indian philosophy, education does not mean cramming the brain which leads to stagnation of personality. In fact, the primary

function of education is the holistic development of a child in terms of body, mind and soul.

According to various experts, India's traditional education system has become outdated, and students feel overworked. Children today are hampered by lack of time, as they are expected to work extremely hard in school. Moreover, there are exams at regular intervals, which make children's lives more difficult. The modern world has become stressful, which can have various negative effects on their overall personality traits in the future. Authorities have long debated whether to bring about qualitative change in the lives of young school children. Also, there is a need to change the current system, which focuses on rote learning.

Objectives:

The objectives of the study are as follows-

1. To know the concept of Evaluation of the educational institution
2. To discuss the relation between Evaluation and Assessment
3. To know the concept of Assessment

Methodology:

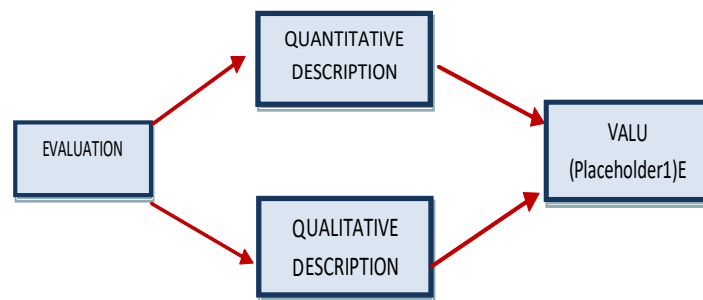
This study is descriptive in nature. So basically, this study has been done based on secondary data like – books, national and international journal, various articles and internet etc.

Concept of Evaluation:

The word Evaluation means to judge the value. Evaluation in the general sense means assigning a qualitative or quantitative value to something. According to D.L. Stufflebeam "Evaluation is a process of delineating, obtaining and providing useful information for judgment decision alternatives". According to Cronbach, "Evaluation is the collection and use of information to make decision about an educational program". From the above definitions it can be said that evaluation is a much more comprehensive and inclusive term than measurement and test. A

test is a set of question measurement is assigning numbers to the results of test according to some specific rules on the other hand evaluation add value judgment. For example, when we say Puja gains 66 numbers in Life Science. It just indicates how much Puja has successfully answered. It does not include any qualitative description i.e.; how good she is in Life science. Evaluation on the other hand includes both quantitative and qualitative along with value judgments.

“Evaluation includes both quantitative and qualitative description plus judgment concerning the desirability of that behavior.” (Gronland)



Purpose of Evaluation: According to Ouguiya (1984), educational evaluation is carried out from time to time for the following purposes:

- To determine the relative effectiveness of the programme in terms of students’ behavioral output; Measurement and Evaluation in Education.
- To make reliable decisions about educational planning.
- To ascertain the worth of time, energy and resources invested in a programme.
- To identify students’ growth or lack of growth in acquiring desirable knowledge, skills, attitudes and societal values.
- To help teachers determine the effectiveness of their teaching techniques and learning materials.

- To help motivate students to want to learn more as they discover their progress or lack of progress in given tasks.
- To encourage students to develop a sense of discipline and systematic study habits
- To provide educational administrators with adequate information about teachers' effectiveness and school need.
- To acquaint parents or guardians with their children's performances.
- To identify problems that might hinder or prevent the achievement of set goals.
- To predict the general trend in the development of the teaching-learning process.
- To ensure an economical and efficient management of scarce resources.
- To provide an objective basis for determining the promotion of students from one class to another as well as the award of certificates
- To provide a just basis for determining at what level of education the possessor of a certificate should enter a career.

Evaluation is based on the following principles:

- **The principle of continuity:** Evaluation is a continuous process, which goes on continuously as long as the student is related to education. Evaluation is an important part of the teaching-learning process.
- **The principle of comprehensiveness:** By comprehensiveness we mean to assess all aspects of the learner's personality. It concerned with the all-round development of the child.
- **The principle of Objectives:** Evaluation should be based on the objectives of education. It should be helpful in finding out that where there is need of redesigning and refraining the learner's behavior.

- **The principle of Learning Experience:** Evaluation is also related to the learning experiences of the learner. In this process, we don't evaluate only the curricular activities of the learner but his co-curricular activities are also evaluated. Both types of activities are helpful in increasing learners' experiences.
- **The principle of Child Centeredness:** Child is in the center, in the process of evaluation. The behavior of the child is the central point for evaluation. It helps a teacher to know the grasping power of a child and usefulness of teaching material.
- **The principle of Application:** During the teaching and learning process the child may learn many things, but it may not be useful in his daily life. He can't apply it, then it is useless to find. It can be known through evaluation. Evaluation judges that student is better to apply his knowledge and understanding in different situations in order to succeed in life.

Relation between Evaluation and Assessment:

Assessment:

The word "Assess" comes from the Latin word "Assidere" which means "to sit by". Through this process the student's progress is checked. In education assessment refers to the process that measures student performance. That is, assessment is a measure of how far the objectives of education have been achieved. On the other hand the meaning of the word 'Asses' is to calculate or to judge the value and quality of something. And Assessment is the act of assessing something.

According to Harlen, Gippes, Broadfoot and Nuttal (1992) "Assessment in education is the process of gathering, interpreting, recording, and using information about pupil's responses to an educational task."

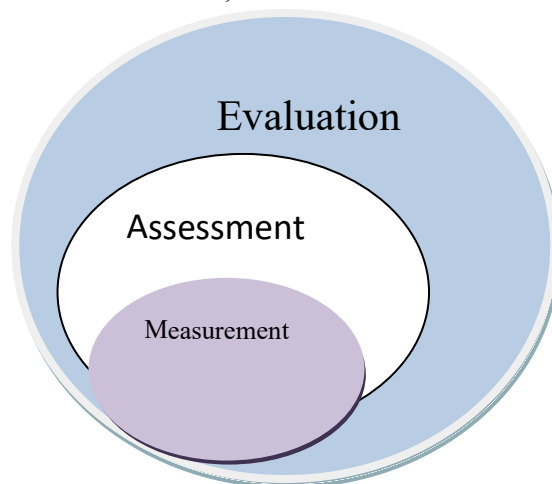
Assessment can be defined as a systematic approach to gathering information that can be used to make inferences about characteristics of people or things (AERA, et.al., 1999)

Objectives of Assessment

- i) To inform about the competence of the learners.
- ii) To inform the students that what kind of subjects they will study in the future will improve their progress
- iii) To determine the subjective weakness of the students.
- iv) Helping teachers in determining teaching method.

Since the word ‘assess’ means to assist the judge. So it seems appropriate in evaluation studies to the process of gathering the data and fashioning them into an interpretable forms; judgment can then be make on the basis of this assessment. It precedes the final decision making stage in evaluation. So both measurement and assessment are needed to make some final decisions about something. Evaluation involves assessment and measurement.

Indeed, the evaluation process involves measurement and assessment. The following diagram illustrates the relationship between measurement, assessment and evaluation.



To know the progress of a student, it is first necessary to measure, then to assess his performance in terms of measurement. Finally, he is evaluated based on the assessment. This evaluation can be quantitative or qualitative.

Assessment has a narrower meaning than evaluation but broader meaning than measurement. After collecting data through measurement, assessment is the primary function of evaluation. After the assessment is completed, the work of evaluation begins. So, the different steps of assessment can actually be called the continuous process of evaluation. In fact, evaluation is done by judging the results of the assessment.

Place of Evaluation in the Curriculum: Evaluation is not only used to assess the student's learning outcome. It is used to evaluate each of the process of the curriculum.

- **Evaluating the objective:** Basically, the process of the curriculum needs to be evaluated right from the objective. Objective is the statement of intent. The essence of stating the objective is to be able to achieve the goal of education. Objective needs to be specific, be relevant, measurable and achievable. Evaluation of the objective is needed in order to estimate the intended statement to know whether it is adequate and relevant to what is has been planned for. Evaluation is used to clarify and modify the objective. Evaluation of objective is needed in order to reveal whether the objective take care of the domain of education which are affective, cognitive and psychomotor as well as relating the statement towards the achievement of the general goals of education. This will help to avoid pitfall. A good curriculum goal has its peculiarities and is multidimensional hence curriculum specialists and interested others should determine and express curriculum goal very cautiously (Olajide, 2018).

- **Evaluating the content:** Evaluation is also important in measuring the content or the subject matter. Content is very important in the process of the curriculum. Content is the body of knowledge that learners should learn for the modification of the learners' behavior. This includes all the educational experiences to be provided for learning to take place. Evaluating the content will be able to determine the depth of this knowledge, the relevance of the knowledge to the society and to the learners. It will reveal the learn ability, feasibility and how significant the content is drawing content need constant reference to the objective of which evaluation is put in place to consider this. Content need evaluation to determine the coverage of the facts and skills to be learnt. If proper attention is not given to the content, it will mar the stated objective and goal not been achievable.

- **Evaluating the learning experience and learning process:** Learning experience refers to any interaction, course, programme or other experience in which learning takes place (Great School Partnership, 2013). It is defined as any specifiable means of controlling and manipulating the sequence of events to produce required behavioral modification in learners (Onasanya, 2018). This is the interpretation of the curriculum. It is the process of assisting the learners to acquire the body of knowledge, facts and values earlier developed in the content of the curriculum. Students learn through the various exposure and encounter in the school, in order to make education relevant and work towards achieving the goals of education.

In view of this, curriculum has to be brought into limelight. The main purpose of stating the learning experience is to impart

knowledge and learners should be given maximum learning opportunities. This demands good interaction. Interaction is the integral part of the learning experience, and to achieve a meaningful learning, the teacher must constantly focus on the stated objective and relate it towards achieving the educational goals.

TYPES OF EVALUTION

There are three types of evaluation. As shown in the chart below-



Conclusion:

Evaluation Process can be used for various purposes in education. The evaluation process facilitates the healthy performance of all types of work related to education. It is possible to judge the progress of students, teaching learning process, curriculum, all round development of students, personal and social needs etc. through education process. So the importance of assessment cannot deny.

Finally, it can be said that the way the exam is currently being used, and evaluation techniques will remain strategic if the basis on which student success is judged does not change and unless changes are made to the basis on which student success is determined then the process of evaluation will remain changed. Not only the Teachers but also the boards of Education need change of perspective. Adequate action should be taken forthwith so that the recommendations of the various commissions relating to evaluation are also discarded.

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Role of Tourism in Achieving Cultural Sustainability

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Abstract

The Sustainability of Culture by means of tourism suggests the preserving of the valuable communities' assets including natural beauty for future generations and for long term economic and social gain. The increasing amount of leisure time of the people, the tourists' changing interest and the increasing life expectancy help the cultural tourism gain the market faster than other segments. Further, cultural tourism is a major component in the recovery of some districts, zones, localities and towns. This Eco-tourism is now one of the fastest growing industry which has a positive effect on the local communities and their livelihoods through their participation in projects and lessening the impact on environment. The present paper seeks to look into

the aspects of Cultural Tourism and the role it has over sustainable Development by focusing both on the positive and negative aspects of the same and in the process bring out the idea how Cultural Tourism is a vent of hope in the present scenario of Sustainable existence.

Keywords: Cultural Sustainability, Responsible Tourism, Local Economy.

INTRODUCTION

Cultural Sustainability relates to sustainable development. According to UNESCO, “culture provides the necessary transformative dimension that ensures the Sustainability of development processes”. Originally Sustainable development was defined through three dimensions—ecological, economical and social dimension. Further the Social dimension has been understood in multiple ways often accentuating Socio-economic assets of development rather than socio cultural capacities. Eventually there has been an interest in defining cultural sustainability as a fourth pillar of sustainable development.

Cultural sustainability refers to the preservation and continuation of cultural heritage and traditional in a way that is consistent with the principle of Sustainability. This includes preservation of cultural sites, artifacts and practices as well as the maintenance of cultural knowledge and skills. The main aim hereby is to ensure that the needs of the future generations are taken into consideration in the preservation and use of Resources hence leading to a more inclusive and resilient communities and Societies. (Fuste- Forne and Ngu Yen, 2018).

Culture enables sustainable development. In this context Sustainable cultural tourism is a vital part of regional and macro regional development strategies.

Tourism is an excellent way to encourage and provide access to cultural heritage but it also brings with it challenges related to overcrowding, cultural appropriation and loss of authenticity. The objective of sustainable cultural tourism is to ensure good conservation practices along with authentic interpretation that supports local economy.

According to the studies made by the World Travels and Tourism Council in 2005, Tourism was one of the greatest industries in the world producing about 6000 billion USD.

Cultural tourism plays the most important role in this regard as it plays a major role in the ascending tourism industry. Cultural tourism gains popularity faster than other tourism segments and clearly faster than the tourism growth rate in this. The cultural tourism as an important specific actuality does not exhaust its raw materials but increases its value significantly.

In the process of cultural tourism, the cultural potential way be changed into a source of various activities throughout the year, including the preservation of the cultural attractions, providing funds for investment, arranging volunteers, finding economic partners to prevent the cultural heritage and deterioration. All of these includes the involvement of the locals and the country population in a way that guarantees the sustainable development

Role of Cultural Tourism:

Cultural tourism diversifies opportunities and new facilities for leisure of the locals as well as stimulation of the residents to travel inside the locality. Increasing access to the culture becomes an active means of broadening the locals. Another major role of cultural tourism is the recovery of some districts, zones localities or towns.

The development of a proper cultural tourism helps to improve the environment quality as the tourists prefer to visit not only culturally attractive areas but also functional clean and unpolluted ones.

Preserving cultural and natural heritage to bring it within the reach of all, to make the culture and civilization of the place to be better known, improving daily life conditions and reducing poverty is what gives meaning to the sustainable tourism development which form a sub context of the term Cultural Sustainable Tourism (SST, 2017) that discusses the complex relations between culture and tourism and how planners, architects as well as main actors of the job can help convey and spread the importance and role of Cultural tourism and how to maintain it.

Role of Cultural Tourism in maintaining Sustainable Development :

The works, including publications, "Making Tourism more Sustainable". A guide For Policy Makers (UNWTO/ UNEP 2005) and "Indicators of Sustainable Development for Tourism Destinations: A Guidebook" (UNWTO, 2004) have fostered participating discussion at local destination level and raised questions about tourism as an essential part of the economic social System and environment.

With the Solid growth of the tourism industry, it is presently committed to play its part in the new Sustainable Development Agenda.

In 2015, World Leaders agreed on a new agenda for the SDGs towards 2030—known as “Transforming One World: the 2030 Agenda for Sustainable Development.” Tourism is included in all the 17 of these Universal goals for new Agenda Some of which are mentioned as follows:

- i) Goal 8 — decent work and clear economic policy.
- ii) Goal 12—responsible consumption and production.
- (iii) Goal 14 —life below water
- (iv) Goal 5 — Tourism can foster Gender equality.
- (v) Goal 11 — Tourism helps to build Sustainable cities and communities.
- (vi) Goal 1 — end poverty.

Besides these, the wholistic nature of the Tourism industry, makes it an effective tool to contribute to all 17 Goals. In doing so, ‘Cultural Tourism’ makes its dedicated contribution to the SDGs and also to the aim of the United Nations in enhancing social progress, peace and human rights.

The year 2017 has been declared as the International Year of Sustainable Tourism for Development in a clear recognition of tourism's contribution to the development agenda and raise awareness of the potential of the sector to lead to economic growth, social inclusion and cultural and environmental preservative. Hence the year became one for the tourism's potential to usher in a better future for people and planet.

Negative Impacts of Cultural Sustainability:

Nevertheless, with all these positive contributions, the industry also faces certain challenges as the tourism sector is not necessarily of the benefit of the community. The tourism may even make the local economy unstable. The risk occurs as the tourism industry increases the cost of living for the locals. The uncontrolled development of the tourism causes environmental problems, local economy destabilization due to the quick change in the population number.

But there can be ways how these negative impacts can be minimized:

(i) The investment of the income from tourism for the local community.

(ii) The locals' proper training and education to enable there to run a business and have a good chance for jobs in the area and to involve in the tourism industry's development. Controlled planning of cultural tourism. With strong relations between the tourism and other economic branches and sectors.

(iii) The tourism and cultural facilities should be as accessible as possible and the visitors should have as many opportunities as possible to spend their money.

Main targets of sustainable tourism include:

(i) Prevention of the natural resources to ensure that tourists are fully informed of the consequences of their actions on the environment and the host community. Such marketing schemes would also include measures to keep the local incomes as high as possible.

Thus it is hence observed that with its manifold socio-economic benefits and broad influence on a diverse

range of sectors, tourism is a valuable part of the global solutions to these global challenges and can be even more so. Tourism therefore is a sector of hope.

Impact on Local Economy

But academic analysis on these issues reveal the idea that by promoting sustainable practices and showcasing local traditions and craftsmanship, cultural tourism initiatives can inspire visitors to adopt more environment friendly behaviours and support local economics beyond direct tourism impact. This in turn contributes to Sustainable economic growth and preservation of natural resources. But it is also important to recognize the role of government and other regulatory bodies in promoting sustainable tourism. This can involve developing policies and regulations that support sustainable tourism practices investing in sustainable tourism infrastructure and services and promoting public awareness and education about the importance of sustainable tourism.

Keeping this sustainable tourism in mind another term that requires special attention hereby is 'Ecotourism as a form of responsible tourism.

According to the International Eco-tourism Society (TIES), eco-tourism is defined as a responsible travel to natural areas that conserves the environment, sustains the well being of local people and involves interpretation and education.

National strategy for Sustainable Tourism was formulated by the Ministry of Tourism (India) in 2022 to mainstream "Sustainability in the Indian tourism sector and ensure more resilient, inclusive, carbon neutral and

resource-efficient tourism while safeguarding natural and cultural resources. In India, there are various tourism dependent states like Uttarakhand, Himachal Pradesh, Kerala who have made policies to promote Sustainable tourism in protecting rich biodiversity and natural wealth.

Conclusion

Hence it can be concluded that cultural and tourism enterprises should fulfill their social responsibilities by integrating a platform that support the development of tourist destinations in their planning. This however, includes alleviation of saturated tourist areas and strengthens of emerging destination.

Understanding this process of tourism commoditisation and its impact on local culture is also economical. It is now fashionable to look at tourism development in the context of Sustainability, alternative tourism, green tourism all of which have particular meaning to different people. Cultural tourism is a consequence branch whose evolution is permanently correlated with the developmental model. Critically enough, the concept of Sustainable tourism industry has often been criticized as vague (Sharpley 2000, , 2011) and means to understand and measure the potential Sustainability of cultural tourism are varied (Contrell et al, 2004, Ko, 2005).

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Cultural Identity: Tradition, Change and Continuity

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Abstract

Culture is the habit and practice that people learn from the time of birth from their family members. It is learned either consciously or unconsciously. The reflection of one's culture lies in the daily lifestyle of the people. It includes the way of dressing style, food habits, arts, beliefs, language, religion, rituals, and so on. Once people are habituated to the above-mentioned things, it becomes difficult to change later on if needed. However, changes are taking place in every culture and every society. Some of the changes bring about a good impact, whereas some are harmful to society. As a result, people are forgetting about one's

own culture and following others' culture to fit themselves in modern society.

Keywords: - Culture, values, food, dresses, habits, people, family, society, community, occupation.

Evolution of Culture

Nothing is static in this world. People change as well as things change according to the needs of the people as well as society. Likewise, culture is also changing day by day to meet the demands of the people as well as the situation.

Cultural change from Indian perspective

India is a land of many religions, with distinct cultural activities. Every culture is unique. There was a time when Brahmins were regarded as the uppermost class in Hindu society and Sudras were in the lowest class. Time has changed. With the hike in the literacy rate, these type of distinctions among people are decreasing. Now people understand and judge everything intellectually and logically. Likewise, there were various areas where changes have taken place.

Structure of Family

There was a time when there existed a joint family including 50 to 100 or even more members. But with the advancement and changes in time nuclear family came into being including hardly 5 to 6 members. Now most parents are working and have one or a maximum of two children. They hardly get time to look after their children. So, value education is lacking among those children.

Community

In the past few days, people have had feelings for others, which is decreasing day by day. Nowadays, people communicate with their neighbours to meet their needs only. They do not have much time to spend with each other. People feel jealous of others in various respects, which makes them cruel and this leads to

conflict among them. People have become self-centred and selfish.

Changes in Language

India is the land of multi-culture. Likewise, it is a land where people of different cultures speak different languages. There are various causes for which the evolution of language has taken place. The first thing is that people learn the first language from their family members in which they are born. Then comes the society where people communicate with different people. A society is a combination of multilingual people. People of distinct languages may not learn another language as well, but at least understand and can convey his or her message in another language by mixing his or her language with another. This is the result of daily communication with multilingual people. Secondly, people are forced to learn another language if they shift from one place to another. For example, from one state to another, or from one country to another, such as from India to America. It becomes a necessity for them to learn the language of a place where they are going to stay permanently or for a long time. Thirdly, in previous days, people, especially women, hardly used to go here and there. So, there was not much necessity to talk to people outside their homes. But now, with change in time, they move around here and there for various reasons, either for education or for vocation. So, people try to adapt to another language to meet their purpose. Fourthly, now people are more literate than before. They know when and where to speak and in what way. Sometimes, language marks the status of a person. For example, in Bengali societies, people who speak well in English are categorized as highly educated persons. However, English is an important language for people to learn if they want to go abroad for either education or profession.

Changes in the food habits of Indian people

India is a country of various religions. Each religion has a unique culture regarding food habits. In the past days, people were habituated to have traditional foods in their daily routine (Win, 2018). But nowadays there is a drastic change in the food habits of most of the people. The reasons behind the change are many. In the present era, people are very busy in their life. The women are also engaged in different types of work. In this busy schedule, some people don't have time to cook food at home or carry homemade food to work centers. As a result, most of them are forced to have street food or fast food to fill their tummies. This need of the time enhanced the people to open more and more roadside kitchens and restaurants to serve the needed people. So, on the one hand, people are benefited from these hotels and restaurants, and on the other hand, the illiterate as well as jobless persons are getting opportunities to make money by serving food to people. Although it is a positive step on the one hand, on the other hand, people who are becoming habituated in eating outside food daily, are suffering from various health issues day by day. This is because it is not healthy to have spicy and oily food in one's daily routine and there are some other factors also associated with street and fast foods. However, there are some educated and health-conscious people as well who maintain a healthy diet in their everyday lives. They carry tiffin and like to have homemade foods in proper time. Not only that, they take proper meals as per the suggestion of the dietician to keep themselves fit.

Changes in dressing style

The dress represents the culture of a particular group or religion. Indians were habituated to wearing traditional dresses, which included sarees among Bengali women, salwar suits among Punjabis, etc. But nowadays, people are becoming modern and

wearing mix-and-match dresses influenced by many factors. The factors include Bollywood films, and serials, which play a vital role in influencing people, especially teenagers to copy and wear Western dress of different types. The reasons behind such changes are many. First, in the case of women, who are working in various fields, they are giving up their traditional dresses and wear Western outfits as they are comfortable in traveling long distances in such dresses. Wearing a sari among women is a time-consuming matter and also is a little bit difficult to handle on busy streets and public transport. So, for that reason, women are also changing their dressing styles. However, in the case of teenagers, Western outfits influence them as they think that they will become modern and smart in those outfits in comparison to their traditional ones (Nagar, 2023). As a result, the culture of every society is changing day by day.

Changes in the field of occupation

In previous days, the literacy rate was not so high. Children of farmers were given training in farming whether they were literate or not, children of business people became business people, children of carpenters became carpenters, children of cobblers became cobblers, and so on. But with the enhancement of the literacy rate, people are looking upward to gain more money as well as prestige in society. It has both a positive and negative impact on society. In modern times, parents are very conscious regarding the education of their children irrespective of socio-economic status. For example, farmers are sending their young ones abroad to get higher education. As a result, they are becoming doctors, engineers, professors, etc. in different fields. This is also true for the maid-servants. Now the children have the option to choose their career according to their choice. Parents are also trying to fulfil the dreams of their wards. People belonging to the middle class take loans from banks or from other sources

with high interest to make their children self-dependent. The positive sides are that people are becoming more literate, they are stepping up in the class hierarchy both socially and economically, etc. But there are some negative sides as well. The number of farmers and other professionals belonging to the lower strata is decreasing day by day. If such a condition goes on and on, then there may come a day when people will suffer from getting cultivated food in their own country and other professionals whom we need in our everyday lives. Not only that, the number of engineering and medical students is increasing every day. This is creating a reason for unemployment as the number of such students is increasing in comparison to the needs of the country and as a result, they remain unemployed for a longer period or a lifetime (Chakravarty, 2024). This is again responsible for tension, depression, mental conflict, etc. among teenagers, which is again responsible for hike in suicide cases. Thus, parents are losing both their earned money and their children. This is the present scenario of the country.

Culture at stake

In this era of competition, people are forgetting their own culture and adopting others' culture. Because of this, cultural changes are taking place in society. Changes are good if the result is good. But all the changes are not good. In the process of modernization, people are losing their values along with their cultures and traditions. One should accept change only to the extent to which it is needed and not beyond that.

Sustainability of Culture

To maintain the culture of a family or society, the foremost duty lies with the family members as well as with the society members. Values should be so imbibed among the juniors that before making or adapting any change, they must not forget their

values. They should remember that culture is their identity which makes them different from others.

Conclusion

Change is the nature of human society. Everything changes with time. People modify everything to suit their needs and demands but while changing something including cultures and traditions, people should choose between the positive and negative impact of it. Change is good to the extent to which it brings a positive impact for all. However, people should not give up their own culture, instead, they should try to preserve it and transfer the best things to the next generation...

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An Exploration of the Factors that hinders Sustainable Development

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Abstract

This paper attempts to discuss the factors that hinders Sustainable Development, more precisely, how they hinder sustainable development and how they can be removed in order to achieve such development. Sustainability means the possibility that human and other forms of life on earth will flourish forever. Sustainable development is that kind of development which should take place, while using and consuming our resources, we should note that we have to satisfy all our needs and at the same time, should not damage our present environment and protect and conserve resources for our future generation. We can achieve such development if we can remove all the factors which hinders

or hampers its development. Some factors which hinder or hampers Sustainable Development are: i) Improper utilization and over consumption of resources and environmental decline, ii) Population growth and Urbanization, iii) Poverty and social disparity iv) War, violence etc. If these factors can be removed then sustainable development can be achieved, to some extent. We should always act by keeping in mind the existence or survival not only of ours but also of our future generation.

Key words: sustainable development, sustainability, factors, hinders, environment, over consumption, inequality, conflict, violence, over population, etc.

INTRODUCTION:

The concept of sustainability and sustainable development have acquired great relevance in scientific research and discussions related to environmental issues, environmental management, our existence in earth, etc and has acquired a paradigm character for development. (Alvarado-Herra et al., 2017¹; Gore, 2015²). Now it is a much popular topic for various seminars, conferences, symposiums etc. In order to preserve and conserve our own existence and also of our future generation, we have to save our environment, which gives the main support to our survival and also of future generation. The word sustains means to maintain, or to persist or to reserve etc.³ Sustainability means the possibility that human and other forms of life on earth will flourish forever. Sustainability is the balance between the environment, equity and economy. Regarding sustainable development, the United Nations programme focusses on economic, social and environmental objectives, as mentioned in the following message of the UN Secretary-General Ban ki - Moon :

“Sustainable Development recognizes that our economic, social and environmental objectives are not competing goals that must be traded off against each other, but are interconnected

objectives that are most effectively pursued together in a holistic manner”.⁴In order to achieve sustainability, one needs to have social progress, economic progress and reduction of environmental degradation. According to Sartori et al. (2014)⁵, sustainability is described as a process and mechanism to achieve the intended sustainable development; while according to Dovers and Handmer (1992)⁶, it is a process of “intentional change and improvement”. Solar panels are one of the most easily recognizable examples of sustainable development. They can be fitted to buildings of any shape or size, and cost less to install than they ever have. Solar panels can provide enough power to make a building completely energy-independent and can even take the form of shingle-sized solar shingles which are interwoven with the rest of a building’s shingles. The method of turning waste into energy is another example of sustainable development. These facilities use combustion to turn non-hazardous waste into steam energy and electricity. To sum it up, sustainable development continuously seeks to achieve social and economic progress in ways which will not exhaust the earth’s finite natural resources. Thus we must develop ways to meet these needs so that our future generations can inherit a healthier and greener planet.

1. The Concept of Sustainable Development:

The concept of Sustainable development was described by the (1987) Brundtland Commission as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”⁷(United Nations General Assembly 1987, 24). Sustainable development is that kind of development which should take place, while using and consuming our resources, we should note that we have to satisfy all our needs and at the same time, should not damage our present environment and protect and conserve resources for our future generation. Sustainable development is a concept that puts human

beings at the heart of concern and decision making. The dimensions that define it correspond to three aspects of human activity: our living environment, our way of life, and our standard of living. Now the question is: what is the main goal of sustainable development? The goal of sustainable development is to transform our world. They are a call to action to end poverty and inequality, protect the planet, and ensure that all people enjoy health, justice and prosperity.⁸ Now the question is: How we can achieve such development? Shortly we can achieve such development if we can remove all factors which hinders or hampers its development.

1.1.The Factors which hinder sustainable development

The next question is: what are the factors which hinders or hampers such development? Some factors which hinders or hampers Sustainable Development, are as follows: i) Improper utilization and over consumption of resources and environmental decline, ii) Population growth and Urbanization, iii) Poverty and social disparity iv) War, violence etc... Let us discuss the factors and its possible solutions.

i) Improper utilization and over consumption of resources and environmental decline:

Whatever natural resources we have, for instance, land, water, trees and plants, energy, foods, fuels etc. should be utilized properly, to the extent it is required. Improper utilization and over consumption lead to spoiling and by destroying those resources we will not gain anything from it. We will use our natural resources just to satisfy our needs. That is, judicious uses of natural resources is the need of the hour. We should keep in mind that we should not buy or use unnecessary things, but only those things which we really need for our survival and upto that quantity that we need for our survival.

We should stop using harmful and polluting things such as plastic items such as plastic bags, polybags, and other carcinogenic materials etc. Make sure whatever is being thrown is being done

so often it has been used and reused to the maximum possible. Garbage is the things that are of no use and we throw them as waste. The waste materials include papers, plastics, rotten food, broken glass pieces, dry leaves etc. The waste materials we produce is thrown in the garbage bins, the garbage is then taken to big garbage dumps and can be classified into: biodegradable waste and non-biodegradable waste. Let us discuss what is biodegradable waste and non-biodegradable waste.

Bio degradable waste: Natural decomposition of organic waste like vegetables peels and left over food, fruit peels, old cloths, papers which can mix and and decompose in the soil, this is known as Bio degradable waste.⁹

Non-biodegradable waste: Waste like chemicals, broken glasses, plastic, polythene bags which do not rot and mix with soil. They remain in the soil for years and cause pollution.¹⁰

Improper waste management can lead to air, land and water pollution. We can keep our surroundings neat and clean by following four things: we can reduce waste by using plastic or metal lunch boxes instead of using aluminum foils. Aluminum foils are non-biodegradable. Napkins made from cloth is good option to replace paper napkins. We can reuse several things instead of throwing away, example- try storing things in the boxes made from cardboard. We can also change used materials into a new product, example, paper, glass, plastic and metals.

The environment is the base of life cycle. It is the most precious gift of nature. But now our environment is in danger. Saving the environment is very important for living a comfortable life. It is the biggest challenge for humans to revert the environment to its real state. But nothing is impossible. As we know that damaged environment risks the expectancy of life. We need to take some steps immediately in order to save the environment and revert it back to its original form. Deforestation needs to be stopped fully because trees are our best friends and they create

a balance between oxygen and carbondioxide. Pollution of all types must be controlled at each level. It is the greatest enemy of the environment. Individuals and government together need to do their duties to control it. Government should enact stringent laws and constitutional provision, so that excess and unnecessary use of natural resources can be stopped. For this we may need alternative technology also, therefore we need appropriate research and development infrastructure and necessary financial resources for that.

We have to save our environment. Environment means our surroundings. Our environment consists of natural resources like soil, water, air etc. Plants and animals are also the part of our environment. It is the most precious gift from God. Knowingly or unknowingly, we are causing a damage to the environment. Earth's temperature is so high today due to environmental pollution and currently, massive deforestation is one of the major causes of environmental pollution. Time has come that we take necessary steps to save our environment. We have to protect our environment and natural resources and keep our earth safe, clean and green. Balance in our eco system improves the quality of life and makes the earth a better place to live. By conserving our resources, planting more and more trees, reducing pollution and recycling wastes, we can protect our environment. If we do not think about the environment, why should environment will think about us.¹¹ Brundtland argued: "The environment does not exist as a sphere separate from human actions, ambitions and needs, and attempts to defend it in isolation from human concerns have given the very word "environment" a connotation of naivety in some political circles." "...the"environment" is where we live; and "development" is what we all do in attempting to improve our lot within that abode. The two are inseparable".¹²

ii) **Population growth and Urbanization:** Over population and Urbanization can place stress on the environment, and natural

resources like water, food and energy are used non-systematically or in a unjustified manner.¹³In situations like this, governments also fails to think strategically or are late to implement adequate adaptive reforms. Due to increasing human population, urbanization and industrialization, environment is getting affected adversely. The ineffective management of natural resources can result in their scarcity and environmental damage, both of which are detrimental to initiatives aimed at encouraging sustainable development. At the same time, if appropriate policies are adopted, an increasing population can also spur economic expansion and result in a larger labor force which is advantageous for sustainable development. And yet it is crucial to ensure that environmental conservation and safeguarding of natural resources go hand in hand with economic progress.

iii) **Poverty and social disparity:** Poverty has significant effects on the sustainable development goals. It is seen as a central barrier to the implementation of the sustainable development goals in developing countries. To remove poverty multi-sectoral interventions and investment in education, infrastructure, environment, financial services and agricultural development are necessary. Eradicating poverty is the first goal in order to achieve sustainable development and it is for the well-being of the humanity. Indeed, poverty is a growing global problem that has existed since time immemorial and has now become a problem not only in developing countries but in developed countries as well.¹⁴

Poverty leads to deforestation through inappropriate use of wood and other resources for cooking, heating, housing and crafts, thus lead to environmental degradation. Insufficient access to education and to information make it difficult for poor people to manage available natural resources in a sustainable and sound manner, and so to provide education is very important.

Not only this, air, water, and soil pollution create health hazards and also damage economic assets. Poor people do not have the proper knowledge or sufficient capital to use environment friendly technologies for cooking. They use inappropriate production technique for cooking etc., which is also responsible for global warming and climate change. They also cause water pollution, for they do not have proper information of proper water management, which damages soils, endangers fisheries, creates health problems etc.

Universal access to basic education and vocational training, community information on sound agricultural methods, waste management, natural resources management, coastal protection, water resources management, fisheries management are all essential in reducing poverty as well as in reducing the effects of poverty on the environment. Measures to stop deforestation and re-forestation programs can secure sustainable development. Local low-cost production of fuel-efficient stoves and heating devices can go a long way in reducing the energy bill of low - income households while protecting the environment.

Social inequality is one of the crucial issues in the world that should be lowered by all possible means to achieve stable sustainability. Social inequality may cause poverty, hunger, gender inequality, conflict among classes, protest of one class against another. Wealth will become accumulated in the hands of some people and this causes economic restlessness and this consequently create riots and unstable society. Marx was one of the thinkers who develop the idea of social inequality in the meanings of economic inequality of the society. According to him in the society the main classes are the capitalists and proletariats who had different economic and political interest. He believed that history is produced as a result of a clash between social classes¹⁵.

Generally, in economics and social sciences, inequality is divided into two main classes such as economic inequality and inequality of opportunity. The economic inequality includes the notions such as income inequality, wealth inequality and inequality of consumption, while the inequality of opportunities includes such sub categories as gender, ethnicity, religion, political and the recent evolving type of inequality is climate inequality. The different forms of inequalities are interrelated and refer to the term “social inequality” in the country. We have to reverse the social inequality to maintain sustainable development. We have to take certain steps and policies worldwide. We have to remember that the perfect equal society is not achievable; however certain actions can decrease the level of inequality. Government can impose various kind of tax to reduce income inequality. Inequality is inevitable; however, the reduction of inequality should be carried out worldwide, by preventing increasing income inequality and redistribution of wealth worldwide.

iv) **War, violence, conflict etc.:** Conflict, violence, and war should be stopped. Underlying all sorts of conflict, violence etc is the false ego. False ego is the false sense of identity. We have false knowledge about ourself. When we have the real knowledge of Brahma or Self, that we all have been created by god equally and we are all part of God and heading towards the same goal, same destination, then all sorts of conflict, violence, egoism would disappear.¹⁶ Generally human mind is conditioned by prejudice, hatred, enmity, jealousy etc. It is the true knowledge of God which can remove all kinds of hatred, enmity, jealousy etc. In such a situation like ours, peace education should be introduced from the start. The state of peace provides man with the pathway to progress in a tension-free atmosphere. Peace can therefore be described as living in harmony, mutual understanding, resolving interpersonal or communal conflicts without degenerating into disharmony and violence. Rooted in a state of peace we make

efforts for healthy coexistence and strive to extend the welfare of the people.¹⁷

These factors should be removed and we must try to overcome them in a consistent way for achieving sustainable development and for the betterment of the society and of nation, as a whole.

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অন্যরকম ভূত : প্রসঙ্গ লীলা মজুমদার
ও শীর্ষেন্দু মুখোপাধ্যায়ের কলম

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গল্প শুনতে সব বয়সের মানুষই ভালবাসে। বিশেষত ভূতের গল্প। সেই ভূতের গল্পের আসরে অন্যধরনের ভূতের গল্প যাঁরা শুনিয়েছেন তাঁদের মধ্যে আছেন উপেন্দ্রকিশোর, লীলা মজুমদার আর অবশ্যই শীর্ষেন্দু মুখোপাধ্যায়। এনাদের কলমে আমরা পেলাম বন্ধু ভূতেদের। সেই ভূতেরা বিভিন্ন ভাবে মানুষকে সাহায্য করতে এগিয়ে আসে। যেমন অন্ধ শিথিয়ে দেয়, গল্প লিখতে সাহায্য করে, খারাপ মানুষদের কবল থেকে রক্ষা করে, এমনকি ভূতের ভয় ভাঙতেও তারাই হাজির। না মানুষ ভূত অর্থাৎ মানুষ নয় যেমন কুকুর ভূতের দেখাও মেলে এই অন্যরকম ভূতেদের মধ্যে। ভূতেদের নিয়ে চিরাচরিত যে ধারণা তার একেবারে উল্টো কথাই বলে এই গল্পগুলো। ভয় ধরানো, ক্ষতি করতে চাওয়া যে ভূতেদের গল্প চলে এসেছে তার থেকে একেবারেই উল্টো স্বভাবের ভূতেদের সঙ্গে পরিচয় হয় পাঠকের এই লেখকদের সৃষ্টি সৌজন্যে। ভূতেদের আচরণে মানবিকতার যে গুণগুলি আরোপ করা হয়েছে, বর্তমানে অনেক মানুষও সেই গুণগুলি থেকে বঞ্চিত।

সূচক শব্দ :

অন্যরকম ভূত, নান্দনিক বোধ, গবেষণার রীতি, ভূতের রাজা, দৃষ্টিকোণ, উপকারি ভূত, ভালমানুষ, ভগবান, বন্ধুত্বপূর্ণ, ছায়ামানুষ।

মূল প্রবন্ধ: গল্প শুনতে আমরা সকলেই ভালোবাসি। তা সে যে বয়সেরই হই না কেন? আর তা যদি হয় ভূতের গল্প তাহলে তো কথাই নেই। গল্প শোনার আসরে ভূতের গল্পের কদর বোধহয় সবচেয়ে বেশি।

এখানে মূল বিষয়ে প্রবেশের আগে একটু বলে নিই, গবেষণার রীতি পদ্ধতির যে নিয়মগুলো আছে সাহিত্যের ক্ষেত্রে তার প্রয়োগ অন্যান্য বিষয়ের সঙ্গে সবটা না মিললেও বেশ কিছু নিয়ম এক, আবার সাহিত্য বলেই হয়তো বিচার পদ্ধতি ও পদ্ধতিগত বিভাগগুলি অন্যরকম। এখানে আমি শুধু মূল পদ্ধতিগুলির সঙ্গে একটু পরিচয় করিয়ে দেব। মেথড ও মেথডলজির যে চর্চা প্রচলিত তার মধ্যে সাহিত্যের ক্ষেত্রে খুবই গুরুত্বপূর্ণ হল ক্রিটিকাল অ্যানালিসিস, ডিসকোর্স অ্যানালিসিস ও তুলনামূলক সাহিত্য সমালোচনা। মূলত কোয়ালিটিটিভ মেথড নিয়ে কাজ হলেও অনেক ক্ষেত্রেই কোয়ান্টিটিভ মেথড ও কোয়ালিটিটিভ মেথডের মিশ্রণে মিক্সড মেথডও প্রযুক্ত হয়।

সমালোচনার যে রীতি প্রযুক্ত হয় সাহিত্যে তা অবশ্যই এক গবেষণাধর্মী রচনা। প্রকৃত সাহিত্য সমালোচক বিজ্ঞানসম্মতভাবে সাহিত্যের সমালোচনার কাজে ব্রতী হন। সেখানে রসের বিচার, আঙ্গিকের বিচার, ভাষার বিচার প্রভৃতির আলোকে তা সম্পন্ন হয়। সমালোচনার যে নানা রীতি আছে সে সম্পর্কে ধ্যানধারণা দিতে গিয়ে সাহিত্য সমালোচনার ইতিহাসের দিকপাল ব্যক্তিত্ব অসিতকুমার বন্দ্যোপাধ্যায় তাঁর 'সমালোচনার কথা' গ্রন্থে গবেষণা এই বিশেষ দিকটির প্রতি আলোকপাত করে যে রীতিপদ্ধতির কথা জানিয়েছেন সেগুলি হল —

- ১) ব্যক্তিপন্থী সমালোচনা
- ২) আপেক্ষিক সমালোচনা
- ৩) বৈধী সমালোচনা
- ৪) ভাষামূলক সমালোচনা

- ৫) যুক্তিপন্থী সমালোচনা
- ৬) তুলনামূলক সমালোচনা
- ৭) ঐতিহাসিক সমালোচনা
- ৮) জীবনীমূলক সমালোচনা

- এছাড়াও বিভিন্ন দৃষ্টিভঙ্গী আছে সমালোচনার ক্ষেত্রে যার বিস্তারিত আলোচনা এখানে করা গেল না।

এবার মূল বক্তব্য বিষয়ে ফিরে আসা যাক। গবেষণার ক্ষেত্র হিসাবে আমি প্রথমে বেছেছি ভূতের গল্প। তারপর অন্যরকম ভূত নিয়ে কাজ করব সেটা নির্দিষ্ট করে সেখান থেকে নির্বাচিত করা হয়েছে বিশেষ বিশেষ কয়েকজন লেখককে যাঁদের গল্প নিয়ে আমি কাজ করতে পারি। আবার তাঁদের অনেকগুলি গল্প থেকে বেছে নিয়েছি বিশেষ কিছু গল্প। এখানে নির্দিষ্ট লেখকদের গল্প নির্বাচন করে তাঁদের নিয়ে কাজ করতে গিয়ে গল্প বাছাই ও গল্পের মধ্যে থেকে যে নিদর্শন তুলে বিশ্লেষণ করা হয়েছে অন্য রকম ভূতের অবস্থান নির্ণয় করতে গিয়ে সেখানে অবশ্যই sampling methods কাজ করেছে। এরপর যখন কীভাবে ও কেন তারা অন্যরকম হয়ে উঠল তা দেখানে হচ্ছে সেখানে ক্রিটিক্যাল এনালিসিস করতে হয়েছে।

এরপর আমরা সরাসরি গল্পে প্রবেশ করি — প্রথমেই বলি ভূতের রাজার কথা। গল্প পাঠক এমন একজনও খুঁজে পাওয়া ভার যিনি উপেন্দ্রকিশোর রায়চৌধুরীর ‘গুপী গাইন বাঘা বাইন’ পড়েননি। এক ধাক্কায় সবাইকেই কিশোর বেলার নিয়ে যেতে পারে এই গল্প। এই গল্পে গুপী-বাঘা যে ভূতের রাজার দেখা পেল সে সব দিক থেকেই ‘রাজা’। কেননা অসাধারণ তিনটি বর সে দিয়ে গেল ১) গান শোনানো ২) যে কোন খাবার খাওয়া ৩) যেখানে খুশি বেড়াতে যেতে পারা। আর কি চাই? সবকিছু প্রয়োজনই তো মিটে গেল। সাধারণ মানুষের চাহিদার দিকে যদি খেয়াল করি দেখবো চাহিদা তাদের খুব বেশি নয় - দুবেলা দুমুঠো খেতে পাওয়া। তারপর খাওয়াপারার সমাধান হলে, বাঙালি মাত্রই বেড়াতে যেতে ভালবাসে — তা সেই বেড়ানোর সমস্যারও সমাধান হল কিন্তু সব থেকে বড় চাহিদা বোধহয় নান্দনিক বোধ। গানবাজনা মানুষকে অনেক দুঃখ কষ্ট ভুলিয়ে দিতে পারে। অনেক অভাব

অভিযোগকে পেছনে ফেলে দিতে পারে। মনের খোরাক সেটি — আর গল্পে তাই সেটি এক নম্বর। আহা, আমরা যদি এমন ভূতের রাজার দেখা পেতাম।

এরপরে আমরা চলে আসবো লীলা মজুমদারের গল্পে। অসাধারণ কিছু ভূতের গল্পের স্রষ্টা তিনি। বাংলা সাহিত্যে ভূত নিয়ে কোনো লেখালিখি করতে গেলে তাঁকে মাথায় রাখতেই হবে। তাঁর ভূতেরা সবাই বেশ উপকারী, সং ও রীতিমতো কাজের। এখানে একটা কথা বলে রাখা ভাল লীলা মজুমদারের গল্পে ও শীর্ষে দু'মুখোপাখ্যায়ের গল্পে আমরা একটা মিল লক্ষ্য করি যে ভূতেরা বেশ অঙ্ক টঙ্ক বুঝতেও সাহায্য করে। আমাদের দিন গেছে, কিন্তু আমাদের ছেলেপুলেদের জন্যও যদি এমন ভূতেরা দেখা পেতাম!!! তা লীলা মজুমদারের ভূতেরা যে কোনো বিপদে আপদে পাশে থাকে, ভরসা দেয়, কাজকর্ম করে দেয়, চোর ধরে দেয় ও অবশ্যই অঙ্ক শিখিয়ে দেয়।

যেমন আমরা দেখি ‘আহিরিটোলার বাড়ি’ গল্পে। প্রি-টেস্টে অঙ্কে পনেরো পেয়ে বাড়ি ছাড়তে বাধ্য হয় এক কিশোর। তারপর সে মনের দুঃখে ঘুরতে ঘুরতে গিয়ে ওঠে পূর্বপুরুষের প্রাসাদোপম বাড়িতে। সেখানে আলাপ হয় জমিদারি পোশাক পরা এক বৃদ্ধের সঙ্গে। ভাল ভাল খাওয়া-দাওয়া আর ঘুমের পর তাকে আঁক শেখাতে আসেন কুট্টিবাবু নামে এক মজাদার মানুষ — “কুট্টিবাবুর বই দরকার হয় না, সব মাথার মধ্যে ঠাসা।”

সেখানে ভাল আঁক কষার জন্য জমিদার শিবেন্দ্র নারায়ণ মস্ত এক সোনার মোহরও তাকে দেয়। তারপর হঠাৎ চিৎকার চৈচামেচি শুনে দৌড়ে দরজা খুলে দেখে তাকে নিয়ে এসেছে বাড়ির সবাই — আর মুহূর্তের মধ্যে সেই রাজপ্রাসাদ হয়ে গেছে জীর্ণ পোড়ো বাড়ি। সে জানতে পারে শিবেন্দ্র নারায়ণ তার বাবার ঠাকুরদার ঠাকুরদা। কিশোরটির হাতে তখন উপহার পাওয়া মোহর আর মনে ফিরে পাওয়া আত্মবিশ্বাস, সে শুধু বলে ওঠে — “চলো টেস্টে আমি অঙ্কে ভাল নম্বর পাব দেখো।”

লীলা মজুমদারের গল্পে এইভাবে বারবার সাহায্য করেছে ভূতেরা। আর একটি মজার গল্প হল “পেনেটিতে।” সেখানে গুপের বন্ধু তিনজন মাঝি গোছের লোক। বুড়ো শিবু আর তার দুই ভাইপো সিজি আর গুজি।

গুপের সঙ্গে ঝগড়া হয়েছে স্কুলের তিনটি ছেলে জগু, ভুটে আর নেলো। গুপে তাদের ভয় দেখাবে বলে শিবুদের ভূত সাজানোর প্ল্যান করে। শিবুরা সানন্দে রাজি। জগু, ভুটে আর নেলো আসার পর পরিকল্পনা মতো শিবুরা চাদর মুড়ি দিয়ে ওঁ ওঁ শব্দ করে ভয় দেখাতে থাকে। ডানপিটে জগুরা তাদের জড়িয়ে ধরতে গেলে তারা উঠে যায় — গুপে অবাক হয়ে দেখে ভূতদেরই সে আসলে ভূত সাজতে বলেছিল।

আর একটি মজার গল্প হল “তেপাস্তরের পারের বাড়ি”- ভূতেরা নাকি হরিনাম বা রামনাম থেকে দূরে থাকে! ওসব আদ্যিকালের ধ্যানধারণা। এই বিশেষ গল্পটিতে দেখা যায় ভাল কাজে বাড়িটি ব্যবহার হবে শুনে ভূত নেই এটি প্রমাণ করতে একদল বাচ্চা ভূত গোটা বাড়ির দেয়াল ভর্তি করে হরিনাম লিখে দিয়েছিল।

‘খাগায় নমঃ’ গল্পটিতে আমরা দেখি ভূতের দেওয়া পালকের কলম দিয়ে গল্প লিখে বিখ্যাত হবার কথা। তবে সেই গল্পগুলোর সবকটিই ছিল রক্ত জল করা ভূতের গল্প।

শুধু মানুষের কথা বললে ‘তোজো’ ভীষণ রাগ করবে। সে এক ভয়ঙ্কর কুকুর ভূত। বড়দের সে মোটেই পছন্দ করে না, কিন্তু ছোটদের সে প্রাণ দিয়ে ভালবাসে। তোজোর মর্মস্পর্শী কাহিনি আমরা ‘তোজো’ নামক গল্পটিতে পাই।

মোটকথা এই গল্পগুলোতে লেখিকা ছোটদের মনস্তত্ত্বকে খুবই কৌশলে তুলে ধরেছেন। তাদের চাহিদা আকাঙ্ক্ষা, মান-অভিমান এমন কি তাদের বড়দের প্রতি যে বিশেষ চিন্তাভাবনা সেগুলিও একেবারে ছোটদের দৃষ্টিকোণ থেকে দেখিয়েছেন। শিশুমন সম্পর্কে পুঙ্খানুপুঙ্খ খবর না রাখলে যা সম্ভব নয়। আবার বড়দের মনস্তত্ত্বকে তাদের সমস্যাকে তুলে ধরেছে এমন দুটি গল্প হল ‘আলোছায়া’ আর ‘সোনালি-রূপালি’। ‘আলোছায়া’ গল্পে আমরা পাই ‘কৃষ্ণকলি’ নামের এক নারীভূতকে, যে মানুষ থাকা অবস্থায় তার অপূর্ব সৌন্দর্যের ব্যবহার করে ছিনিমিনি খেলেছে একের পর এক পুরুষ হৃদয় নিয়ে, তারপর নিজে যখন একজনকে ভালবেসেছে সেই ভালোবাসার মানুষ করেছে প্রতারণা, আর কৃষ্ণকলি করেছে আত্মহত্যা।

এই বিশেষ ধরনের উপকারি ভূতের ছড়াছড়ি লীলা মজুমদারের গল্পে। এমন সৎ, নির্লোভ মানুষ হয়না সচরাচর; হলে ভূতই হয়। এদের তাই ভূত বলে দূরে সরিয়ে রাখলে ধর্মে সহিবে না। তবে এদের দেখা পেতে গেলে ভালমানুষ হতে হবে। এদের ভালবাসতে হবে নাহলে এদের দেখা পাওয়া যাবে না।

আমার এর পরের আলোচনা আর এক বিখ্যাত দিকপাল লেখক শীর্ষেন্দু মুখোপাধ্যায়ের ভূতদের নিয়ে। লীলা মজুমদার যে সব ভূতদের গল্পের ধারা শুরু করেছিলেন তার সার্থক উত্তরাধিকারী যদি কেউ থেকে থাকেন তা তিনি অবশ্যই শীর্ষেন্দু মুখোপাধ্যায়। ভাবে, ভাবায় ও ভালোবাসায় তিনি দুর্দান্ত সব ভূতদের পরিচয় করিয়ে দিয়েছেন পাঠকের সঙ্গে। তেমনি একটি সর্বজনপ্রিয় উপন্যাস গৌসাইবাগানের ভূত — আচ্ছা অঙ্কে আমরা কে না ভয় পাই বলুন তো। বিশেষত ছেলেবেলায় অঙ্কে বাঘের চেয়ে বেশি বিপদজনক বলে আমার অন্তত মনে হত। তা বুড়ুন যখন অঙ্কে তেরো পায় তখন তার মনের অবস্থা কী হয় তা আমরা অনেকেই বোধহয় জানি। আর গৌসাইবাগানের ভূতের সহায়তায় সেই বুড়ুন স্বাভাবিকভাবেই অঙ্কের ভয়কে জয় করতে কিভাবে সক্ষম হয় তারই মজাদার গল্প এটি।

শীর্ষেন্দুর গল্পের ক্ষেত্রে তো বটেই, আমার মতে বাংলা সাহিত্যের মধ্যেই বিখ্যাত একটি গল্প হল ‘গন্ধটা খুব সন্দেহজনক’। উত্তর বাংলার ‘দোমোহনী’ একটা চমৎকার জায়গা। গল্প কথকের মায়ের মামারবাড়ি সেখানে। মায়ের ছেলেবেলার গল্প এটি। সেই দোমোহনী ছোট জায়গা, লোকজন কম। কিন্তু কখনো কোনো কাজের লোকের সমস্যা হয় না। সাহায্য করার লোক কম পড়লেই কোথা থেকে যেন লোক জোগাড় হয়ে যায়। তা যে ঘরের নানাবিধ কাজই হোক, বাইরের ফাইফরমাশ খাটার লোক হোক কি লুডো, ফুটবল খেলার সঙ্গীর দরকার হোক, একবার ‘এই কে আছিস?’ বলে হাঁক দিলেই কেউ না কেউ এসে হাজির হয়ে যায়। তা সেখানে এলেন মায়ের দাদামশায়ের বাবা যিনি আবার বেশ ধার্মিক ব্যক্তি। তিনি চারিদিকে যেন কেমন আঁশটে আঁশটে গন্ধ পান আর বলতে থাকেন ‘গন্ধটা খুব সন্দেহজনক’ কিন্তু কিছুই ধরতে বা বুঝতে পারেন না। ফুটবল খেলার মাঠে যখন খেলোয়াড় গোনা হয় দেখা যায় ঠিক আছে। যখন খেলা শুরু হয় বোঝা যায় বেশি লোক

খেলছে। জনৈক সমাদ্দার মশাই স্বগতোক্তি করেন ‘আজ ওরা একটু বাড়াবাড়ি করে ফেলেছে।’ দাদামশাই-এর বাবা এরপর থেকে অচেনা লোক দেখলে গা হাত পা টিপে, গন্ধ শুঁকে শুঁকে নিশ্চিত হয়ে তারপর বিশ্বাস করতে পারতেন। তা একদিন বাজার করে ফেরার সময় তাঁর হাত থেকে সিঙি মাছ লাফিয়ে পালালে সেই মাছ এসে তুলে দিল যে লোকটি তিনি তাকেও ধরলেন, যখন সব মাত্র বলেছেন, ‘এতো ভাল কথা নয়, গন্ধটা খুব সন্দেহজনক।’ এরপরের অংশটা লেখকের জবানীতে তুলে ধরবার লোভ সামলানো গেল না— ‘লোকটা কিন্তু ঘাবড়ালো না। হঠাৎ একটু ঝুঁকে দাদামশায়ের-বাবার গা শুঁকে সেও বলল, এ তো ভাল কথা নয়। গন্ধটা বেশ সন্দেহজনক। আপনি কে বলুন তো, অ্যাঁ, কে?’ এই বলে লোকটা হাসতে হাসতে বাতাসে অদৃশ্য হয়ে গেল। দাদামশাইয়ের বাবা আর গন্ধের কথা বলতেন না। একটা ভূত তাঁর গা শুঁকে ঐ কথা বলে গেছে ভাবা যায়?

আর একটি গল্প হল ‘চকদিঘির তেনারা’। শীতল তপাদার চকদিঘি গ্রামে প্রাইমারি স্কুলে শিক্ষকতার চাকরি পেয়ে যেদিন গ্রামে পৌঁছয়, সেদিন সম্বন্ধে পেরিয়ে গেছে। অন্ধকার ও কুয়াশায় রাস্তা কিছুই দেখা যাচ্ছে না। বিপদের মুখে দাঁড়িয়ে এরপর যতবার শীতল তপাদার গৃহদেবতা মদনমোহনের নাম নিতে যাচ্ছে, ‘ম’ শব্দটি উচ্চারণের সঙ্গে সঙ্গে হাজির হচ্ছে বিভিন্ন সহায়তাকারী লোক। যেমন ‘নীলমণি’ খাসনবিশ, পঞ্চগনন হালুই, নরহরি পতিতুন্দ, পীতাম্বর মিস্ত্রি। এরা সকলেই খানিকটা খানিকটা করে রাস্তা এগিয়ে দিচ্ছে আর চকদিঘি সম্পর্কে ভয়ানক ভয়ানক তথ্য দিয়ে যাচ্ছে। যেমন এখানকার হাটে ছুরি, ভোজালি, তলোয়ার, বন্দুক সস্তায় কিনতে পাওয়া যায়। এখানে মারা যাবার বিভিন্ন রাস্তা খোলা আছে গহীন পুকুর, সাপ, বাঘ, কুমির ইত্যাদি ইত্যাদি। শেষমেষ অনেক রাস্তা ঘোরাঘুরি করে হতোদ্যম ও বিরক্ত শীতল তপাদার যখন গোটা ব্যাপারটিতে বেশ রহস্যের গন্ধ পেল তখন সে বেঁকে বসল। পীতাম্বর নামক লোকটি নিরুপায় হয়ে তাকে জানাল যে এসব কিছুই করা হয়েছে নতুন মাস্টারমশাইকে বাঁচানোর জন্য। জনৈক মুগাঙ্কবাবু তার ছেলের জন্য এই চাকরিটি ভেবে রেখেছিলেন। সেখানে শীতল তপাদার এসে যাওয়ায় তাকে খুন করবার জন্য লোকও ঠিক করে

রাখেন তিনি। তা খুনেরা যেখানে অপেক্ষা করছিল সেই পথ এড়িয়ে, ঘুরপথে তাকে নিয়ে এসেছে এই লোকেরা। শীতল তপাদার বুঝতে পারে না ভগবানের নাম নিতে যে সব ভূতেরা এসে সাহায্য করে গেল, প্রাণ বাঁচিয়ে গেল তারা কি সত্যিই ভূত না ভগবান! অন্তত যারা সাহায্য করতে এগিয়ে এসেছিল তাদের নামগুলির দিকে নজর করলে অন্যরকমই মনে হয়।

টেলিফোন বলে একটি গল্পে ফোন তুললেই তার ডিজিটের উচ্চারণ শোনা যেত বারবার। বোঝা যেত না কেন বা কে এই নম্বরগুলো বলছে। পরে দেখা গেল একটি বিশেষ দিনের ইঙ্গিত রয়েছে তার মধ্যে। সেদিনটা সচেতন থাকায় ভয়ানক বিপদের হাত থেকে রক্ষা পেলেন ভদ্রলোক। পরে জানতে পারলেন এই বাড়িতে বিশেষ একজন কেউ থাকে। সেই রক্ষা করে এই ধরনের নানা ইঙ্গিত দিয়ে এই বাড়িতে যারা বসবাস করে তাদের।

এই বিশেষ ভূতদের নিয়ে আলোচনায় শেষ পর্যায়ে আর একজন ভূতের কথা না উল্লেখ করলে এটি অসম্পূর্ণ থেকে যাবে। সে হল ‘লুলু’। ত্রৈলোক্যনাথের হাতে সৃষ্ট এই ‘লুলু’ই হল এই ধারার প্রথম ভূত যে বেশ অন্যরকম।

শেষ পর্যায়ে এসে লক্ষ করা গেল ভূত মানেই ভয়ের নয়। বরঞ্চ মানুষের থেকে অনেক বেশি সাহায্য ভূতেরা করে। এক্ষেত্রে বলা যায় তারা বেশ কাজেরও দক্ষ তো বটেই, এমনকি এদের ভালমানুষ ভূত বলাই যায়। মোটামুটি ভাবে যে এই অন্যরকম ভূতদের চরিত্র বৈশিষ্ট্য বিশ্লেষণ করে দেখা গেল যে এরা

- ১। অন্ধ শিথিয়ে দেয়, কষে দেয়, ভয়টা কাটিয়ে দেয়।
- ২। এই সমাজেই বাস ছায়ামানুষদেরও, তাদের ভয় পাবার কিছু নেই।
- ৩। বন্ধুত্বপূর্ণ সাহায্যের হাত সবসময় বাড়িয়ে দেয়।
- ৪। বড়দের শেখানো যে ছায়ামানুষেরা উপকারী, তাদের অবজ্ঞা কোরো না।

৫। ভগবানের নাম উচ্চারণ করতে এরা ভয় তো পায়ই না, উল্টে ভগবানের নামেই তারা পরিচিতিও দেয়। অর্থাৎ ভগবান ও ভূত প্রায় একই, কাউকেই সহজে পাওয়া যায় না। পেলে দুজনেই ভালো করার চেষ্টা করে।

৬। ভাল খেলার সঙ্গী হতে পারে। ইত্যাদি।

এই যে বৈশিষ্ট্যগুলো উঠে এল তা থেকে বোধহয় এই সিদ্ধান্তে আসা যায় যে ভূতেদের চরিত্রের বেশ কিছু বদল ঘটেছে। ভূত বলে কি মানুষ নয়? তবে ত্রৈলোক্যনাথ থেকে উপেন্দ্রকিশোর, লীলা মজুমদার হয়ে শীর্ষেন্দু পর্যন্ত বাংলা সাহিত্যে এই যে অনারকম ভূতেদের ধারাটি আমরা এতদিন ধরে উপভোগ করে এসেছি পরবর্তীকালে ঠিক এই স্বাদটিকে বজায় রেখে কেউ এই ধারাটি এগিয়ে নিয়ে যাচ্ছেন বলে জানা নেই। যদি তাই হয়, যদি বিশেষ ধরনের এই ভূতেদের ধারা নিয়ে কেউ না ভাবেন তাহলে বোধহয় ভূতের ভবিষ্যৎ বলে কিছু থাকবে না। মোটামুটি অন্ধকার বলেই ধরে নিতে হবে। হয়ত সেই অন্ধকার থেকেই আবার কেউ হাত তুলে বলে উঠবে—

“আমি এখানে”। দেখা যাক, এমনটা হয় কিনা, সেটা তো ভবিষ্যৎই বলবে।

গ্রন্থসূচী :

- ১। অসিত কুমার বন্দ্যোপাধ্যায়, “সমালোচনার কথা”, মডার্ন বুক এজেন্সী প্রাইভেট লিমিটেড, চতুর্থ পরিবর্ধিত সংস্করণ, পুনর্মুদ্রণ ২০১৮ - ২০১৯।
- ২। লীলা মজুমদার, “সব ভুতুড়ে”, আনন্দ পাবলিশার্স, প্রথম সংস্করণ, চতুর্দশ মুদ্রণ, মার্চ ২০১২।
- ৩। শীর্ষেন্দু মুখোপাধ্যায়, “ভৌতিক ও রহস্য গল্প সংগ্রহ” প্রিয়া বুক হাউস, প্রথম প্রকাশ, চতুর্থ সংস্করণ, কলকাতা বইমেলা ২০২২।
- ৪। শীর্ষেন্দু মুখোপাধ্যায়, “এক কুড়ি এক ডজন” পত্র ভারতী, প্রথম প্রকাশ, দ্বিতীয় মুদ্রণ ২০১৭।

পরিবেশ নীতিবিদ্যা : মানুষ, মনুষ্যেতর প্রাণী ও পরিবেশের অধিকার

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সারসংক্ষেপ

সমগ্র বিশ্বজগতে মানুষ সহ অন্যান্য জীবকুলের প্রাণ ধারণের জন্য পরিবেশের ভূমিকা অনস্বীকার্য। মানুষ সহ সমগ্র জীব কুলের বিবর্তন ও পরিবর্তন ঘটে পরিবেশকে কেন্দ্র করেই। বর্তমান সময়ে সবচেয়ে বেশি আলোচিত, ব্যবহৃত ও জনপ্রিয় শব্দ হলো অধিকার বা রাইট। এই প্রবন্ধে যে বিষয়টি তুলে ধরা হবে তা হলো মনুষ্যেতর প্রাণী ও পরিবেশের অধিকার বোধ। পরিবেশবিদদের বক্তব্য হল অধিকার বললেই কেন শুধুমাত্র মানুষের অধিকারের কথা ভাবা হয়? মনুষ্যেতর প্রাণী, উদ্ভিদ ও পরিবেশের অধিকারের কথা বলা হয় না কেন? পরিবেশ কি কোন আইনের অধিকার থাকা উচিত? ১৯৫০ সালের সময় কাল থেকে নীতিবিদ্যার পাশাপাশি এক অভিনব নীতিবিদ্যার (পরিবেশ নীতিবিদ্যার) উন্মেষ হয়েছে। পরিবেশ নীতিবিদ্যার গুরুত্ব অন্যান্য নীতিবিদ্যার

(ব্যবসা নীতিবিদ্যা, চিকিৎসানীতিবিদ্যা, পেশাগত নীতিবিদ্যা, ইত্যাদির) তুলনায় অনেক বেশি। কারণ পরিবেশ না বাঁচলে মানুষ ও মনুষ্যতর প্রাণী বাঁচবে না। পরিবেশের কোন অধিকার নেই বলে অনেকেই দাবি করেন। তারা আসলে নৈতিক অধিকারের কথাই বলেন। পরিবেশ নীতিবিদ্যাই মনুষ্যকেন্দ্রিক নীতিবিদ্যার ছন্দপতন ঘটিয়ে, মনুষ্যতর জীব, উদ্ভিদ কুল, প্রাণহীন বস্তু, জমির নৈতিক অধিকারের, প্রতি মানুষের দায়বদ্ধতার কথা বলে।

সূচক শব্দ : পরিবেশ, মানুষ, মনুষ্যতর প্রাণী, উদ্ভিদ, অধিকার, সমগ্র বিশ্বজগতে মানুষ সহ অন্যান্য জীবকুলের প্রাণ ধারণের জন্য পরিবেশের ভূমিকা অনস্বীকার্য। এই পরিবেশের মধ্য দিয়েই সমগ্র প্রাণীকুল (উদ্ভিদ) লালিত -পালিত ও পরিপুষ্ট হয়। মানুষ পৃথিবীর সর্বশ্রেষ্ঠ জীব। তাদের দৈহিক ও মানসিক বিকাশের জন্য পরিবেশের উপাদানসমূহ গুরুত্বপূর্ণ ভূমিকা পালন করে। মানুষ সহ সমগ্র জীবকুলের বিবর্তন ও পরিবর্তন ঘটে পরিবেশকে কেন্দ্র করেই। বর্তমান সময়ে সবচেয়ে বেশি আলোচিত, ব্যবহৃত ও জনপ্রিয় শব্দ হলো অধিকার বা রাইট। এই প্রবন্ধে যে বিষয়টি তুলে ধরা হবে তা হলো অধিকার বোধ। এখন প্রশ্ন হল মানুষের কী কী অধিকার থাকা উচিত বা অনুচিত সে বিষয়ে যুক্তি তর্কের শেষ নেই। তাই পরিবেশবিদরাও পরিবেশের অধিকারের প্রসঙ্গ তুলে ধরেছেন, তাদের বক্তব্য হল কেবলমাত্র মানুষের অধিকারের কথা বা কেন বলা হয়? অন্যান্য জীবজন্তুর অধিকার বা গাছপালার অধিকারের কথা কেন বলা হয় না? পরিবেশের অধিকার আছে প্রসঙ্গটি স্বীকার করলে কি কোন সমস্যা তৈরি হতে পারে? পরিবেশ কি কোন নৈতিক অধিকার বা আইনের অধিকার থাকা উচিত? উক্ত প্রবন্ধে এই বিষয়গুলি তুলে ধরা হবে।

নীতিবিদ্যা হচ্ছে সমাজে বসবাসকারী মানুষের স্বৈচ্ছাকৃত আচরণের ন্যায়-অন্যায়, ভালোত্ব-মন্দত্ব, মঙ্গল-অমঙ্গল উচিৎ-অনুচিৎ ইত্যাদির যথাযথ মূল্যায়ন ও সুবিচার আলোচনা। নীতিবিদ্যার একটি গুরুত্বপূর্ণ শাখা হল ব্যবহারিক নীতিবিদ্যা। নীতিবিদ্যার যে শাখা বিতর্কিত সামাজিক সমস্যার সমাধানে অন্যায় প্রসঙ্গে বিচারমূলক আলোচনা করে তাকে ফলিত বা

ব্যবহারিক নীতিবিদ্যা বলে। আর তার আলোচ্য বিষয়গুলির মধ্যে অন্যতম হল পরিবেশ নীতিবিদ্যা। সাম্প্রতিক কালে (১৯৫০ সালের সময় কাল থেকে) নীতিবিদ্যার পাশাপাশি এক অভিনব নীতিবিদ্যার উন্মেষ হয়েছে। কারণ পরিবেশ না বাটলে মানুষ ও মনুষ্যতর প্রাণী বাঁচবে না। তাই পরিবেশ নীতিবিদ্যার গুরুত্ব ব্যবসা নীতিবিদ্যা, চিকিৎসা নীতিবিদ্যা, পেশাগত নীতিবিদ্যা, ইত্যাদির তুলনায় অনেক বেশি। শুধু দার্শনিকরাই পরিবেশ নিয়ে ভাবেন না, এখন সমাজতাত্ত্বিক, বৈজ্ঞানিক, অর্থনীতিবিদ ও সাধারণ মানুষ সকলেই ভাবছেন এবং অপরকে ভাবাচ্ছেন।

আমাদের প্রকৃতির অস্তিত্বের বিষয়ে উদাসীন থাকা উচিত নয়, এই শিক্ষাই দেয় পরিবেশ নীতিবিদ্যা। পরিবেশের প্রতি সকল মানুষের কিছু নৈতিক দায়িত্ব আছে একথা অস্বীকার করার উপায় নেই। এর পরিধি অধিক থেকে অধিকতর ব্যাপক। সমস্ত প্রাণীকুল উদ্ভিদকুল এমনকি নদী নালা পাহাড় পর্বত এর অন্তর্গত। পরিবেশ নীতিবিদ্যার সংজ্ঞা দিতে গিয়ে রলসন বলেন যে,- 'Environmental ethics is a systematic account of values carried by natural world coupled with an enquiry into duties towards animal, plants and species.'^১ সোমনাথ চক্রবর্তী পরিবেশ নীতিবিদ্যার সংজ্ঞা দিতে গিয়ে বলেন — “মানুষের সঙ্গে প্রকৃতির বিক্রিয়া, সেই বিক্রিয়ার পটভূমি এবং ফলাফল - এইসব বিষয়কে কেন্দ্র করে উদ্ভূত নীতি সূত্রগুলো যে বিদ্যার আলোচ্য হয় সেই বিদ্যাকে ইনভারমেন্টাল এথিক্স বলে।^২ মানুষের সঙ্গে প্রাকৃতিক পরিবেশের নৈতিক সম্পর্ক নিয়ে নীতিবিদ্যার যে শাখা আলোচনা করে তাকেই পরিবেশ নীতিবিদ্যা বলা হয়। এভাবেও পরিবেশ নীতিবিদ্যার সংজ্ঞা দেওয়া যেতে পারে।

পিটার সিঙ্গারের একটি উদ্ধৃতি নিয়ে আলোচনা করলে পরিবেশ নীতিবিদ্যার বিষয়টি সহজেই বোঝানো যেতে পারে — “A. river tumbles through forested ravines and rocky gorges towards the sea. The state Hydro-electricity Commission sees the falling water as untapped energy. Building a dam across one of the gorges would provide 3 years of employment for a thousand people— and Longer-term employee mint for twenty or thirty. The dam would

store enough water to ensure that the state could economically meet its energy needs for the next decade. This would encourage the establishment of energy-intensive industry thus further contributing to employment and economic growth.

The rough terrain of the river valley makes it accessible only to the reasonably fit, but it is nevertheless a favoured spot for bush-walking. The river itself attracts the more daring whitewater rafters. Deep in the sheltered valleys are stands of rare Huon Pine, many of the trees being over a thousand years old. The Valleys and gorges are home to many birds and animals, including an endangered species marsupial mouse that has seldom been found outside the valley. There may be other rare plants and animals as well, but no one knows, for scientists are yet to investigate the region fully.”^৬

অর্থাৎ একটি পার্বত্য নদী বৃক্ষলতাপাতায় আচ্ছন্ন সরু উপত্যকা ও গিরিখাত এর মধ্য দিয়ে সমুদ্রের দিকে তীব্র গতিতে প্রবাহিত হয়ে চলেছে। এই বিষয়টি জনবিদ্যুৎ পরিষদে নজরে এলে, তারা গিরিখাতের মধ্যে নদীর মুখটি বন্ধ করে বাঁধ নির্মাণের পরিকল্পনা করে। সেটি নির্মাণ করতে গেলে দেশের কিছুটা বেকার সমস্যার সমাধান হয়। প্রায় ১০০০ মানুষের স্বল্প মেয়াদী তিন বছরের জন্য এবং ২০-৩০ জনকে দীর্ঘমেয়াদী চাকরিতে নিয়োগ করা যাবে। বাঁধটির জলশক্তি থেকে বিদ্যুৎ উৎপন্ন করে বিদ্যুতের চাহিদা কিছুটা মেটানো সম্ভব হবে। এভাবে, গিরিখাতে পার্বত্য নদীটিকে বাঁধ দিয়ে বিদ্যুৎ উৎপাদন করতে পারলে, দেশের অর্থনৈতিক অবস্থাকে নানাভাবে উন্নত করা সম্ভব হয় -বিদ্যুৎ নির্ভর বড় বড় শিল্প সংস্থা ও কলকারখানায় অনেক মানুষের কর্মসংস্থান হয়।

বৃক্ষ তরুলতা আচ্ছন্ন উপত্যকা ও গিরিখাত অনেক দুর্গম স্থান পর্যটন বিলাসীদের এক অতি আকর্ষণীয় অঞ্চল। খরস্রোতা পার্বত্য নদীটি অনেক দুঃসাহসী ভ্রমণ পিপাসুদের এক অতি উৎকৃষ্ট নৌকা বিলাসের স্থান। নদী উপত্যকার গভীরে রয়েছে বেশ কিছু দুর্লভ Huon Pine গাছ, এগুলি বহু বছরের পুরানো। এই গিরিখাতটি অনেক পশুপাখির অনেক বিরল প্রজাতির

নিশ্চিত আশ্রয়স্থল। তাদের মধ্যে রয়েছে Marsupial Mouse (ক্যাস্টারুর মত হাঁদুর)। বাদের উপত্যকার বাইরে খুব কমই দেখতে পাওয়া যায়। এমন অনেক বিরল প্রজাতির বৃক্ষ তরুলতায় আচ্ছন্ন যা অনেক অনুসন্ধিৎসু বিজ্ঞানীর গবেষণার বিষয়।

উপরিউক্ত দুটি দিকের মূল্যায়নের মানদণ্ডে পার্বত্য নদীর গতিপথ রোধ করে বাঁধ নির্মাণ কি সঙ্গত অথবা অসঙ্গত তা নিয়ে পিটার সিঙ্গার প্রশ্ন তুলেছেন। এই বিষয়টি ছাড়াও অনুরূপ আরো অনেক বিষয়ের উল্লেখ করা যায়। বনাঞ্চল ধ্বংস করে কলকারখানা নির্মাণ যার বর্জ্য পদার্থ নিকটবর্তী জলাশয়কে দূষিত করে; অথবা অভয়ারণ্যের পাশে কোন খনি বা খাদানের খনন কাজ শুরু করা, যা সেই অঞ্চলের বায়ুকে দূষিত করে পশু পাখিদের জীবন বিপন্ন করে। বাঁধ নির্মাণ, কলকারখানা নির্মাণ অথবা খনি খনন ইত্যাদির ফলে অর্থনৈতিক উন্নতি হলেও ক্ষতির পরিমাণও একদম উপেক্ষা করা যায় না। যেমন ওজোন-স্তরের (ozone layer) ক্ষতিসাধন, বায়ুস্তরের উষ্ণতা বৃদ্ধি, যা পশু পাখি ও উদ্ভিদের জীবনের সঙ্গে সঙ্গে মানুষের জীবনেও ভয়াবহ বিপদের সংকেত।

অধিকার বলতে বোঝায়, কোন কিছু লাভ করা বা কোন কাজ সুষ্ঠু ভাবে সম্পন্ন করার দাবিকে অধিকার বলে। অধিকার বললেই মানবাধিকারকেই বোঝায় অর্থাৎ মানুষের অধিকারকে বোঝায়। যখন সমাজে দাসপ্রথা প্রচলন ছিল তখন কিছু মানুষ অর্থের বা শক্তির জোরে দাসদের ক্রয় করতেন, দাসদের কোন অধিকার ছিল না। আর একটি উদাহরণ দেওয়া যেতে পারে, যখন ভারতীয় সমাজে নিম্ন বর্ণের শূদ্ররা ব্রাহ্মণদের দ্বারা অত্যাচারিত হতো। এই জাতীয় কাজকে সকলেই বর্ণবিদ্বেষ বলে নিন্দা করতেন। এর ফলে মানবাধিকার প্রসঙ্গ উঠে আসে। কিন্তু বর্তমান সময়ে মানুষ যখন বুদ্ধির জোরে বা প্রযুক্তিবিদ্যার সাহায্যে মনুষ্যত্বের প্রাণী বা উদ্ভিদের ওপর অধিকার প্রয়োগ করছেন, তখন এটিকেও এক ধরনের বিদ্বেষ বলে গণ্য করা যেতে পারে।

এবার আসা যাক পরিবেশের নৈতিক অধিকার প্রসঙ্গে। পরিবেশের কোন অধিকার নেই বলে অনেকেই দাবি করেন। তারা আসলে নৈতিক অধিকারের কথাই বলেন। পরিবেশের অধিকারের বিরুদ্ধে যে যুক্তি দেওয়া

হল তা হল আমরা তো পরিবেশের অধিকারের কথা চিন্তাই করতে পারি না। পরিবেশবাদীরা বা পরিবেশ প্রেমীরা বলেন যে, মানুষের নৈতিক অধিকার স্বীকার করলে পরিবেশের নৈতিক অধিকার স্বীকার করতে হবে। কারণ যখন নৈতিক অধিকারের কথা বলা হয় তখন কোন কিছুর উপর যথার্থ দাবির কথাই বলা হয়। সেই দাবি কোন বস্তুর ভোগ বা ব্যবহারের দাবি হতে পারে। যথার্থ দাবি কোন আইনের দ্বারা নিরূপিত হতে পারে না, বরং নৈতিক দায়বদ্ধতা সমাজের সকলের মধ্যে জন্মায়। যদি কখনো কারও নৈতিক অধিকার কেউ খর্ব করার চেষ্টা করে তখন অন্যরা তার নৈতিক অধিকার অক্ষুন্ন রাখার দাবি করতে পারেন। সকলেই তার দাবির সহমত পোষণ করবেন।^{১৩}

মনুষ্যকেন্দ্রিক পরিবেশ নীতিবিদ্যার কাজ হল এমনভাবে পরিকল্পনা করতে হবে যাতে মানুষের জীবনের উপর কোন অশুভ শক্তির প্রভাব না পড়ে সেদিকে নজর দেওয়া। পরিবেশপ্রেমীদের ধারণা হল বনজঙ্গল ধ্বংস করে খনিজ পদার্থ উত্তোলন করা হলে বন্য পশুর দুঃখ যন্ত্রণা বাড়বে, প্রকৃতির ভারসাম্য নষ্ট হবে, অনেক প্রজাতির বিলোপ হবে, ঋতু পরিবর্তন ও প্রাকৃতিক দুর্যোগ দেখা দেবে। এমনকি মানুষের সুখ শান্তি ব্যাপকভাবে ব্যাহত হবে। সুতরাং নীতিবিজ্ঞানীদের উচিত, মানুষের চিন্তাবিনোদনের জন্য পরিবেশকে এমনভাবে ব্যবহার করা যাতে উপরিউক্ত বিষয়গুলির ভারসাম্য বজায় রাখা যায়। এইভাবে মানুষের স্বার্থ বিবেচনা করে যে নীতিবিদ্যার জন্ম দেওয়া হয় তাকে বলা যেতে পারে নৃ-কেন্দ্রিক নীতিবিদ্যা (Anthropocentric Ethics)। আর অ-নৃ কেন্দ্রিক নীতিবিদ্যায় বলা হয় যে পরিবেশের নিজস্ব মূল্য আছে তাই পরিবেশকে নিঃস্বার্থভাবে রক্ষা করা উচিত। আবার holistic ethics এ বলা হয় যে খাদ্যের জন্য প্রাণী হত্যা বা স্বীকার করার অনুমতি দেওয়া যেতে পারে তবে সমগ্র প্রজাতি যেন বিলুপ্ত না হয়।^{১৪} নীতিবিদ্যা মাত্রই জীবনের প্রতি শ্রদ্ধাশীল আর আমরা জীবনের প্রতি শ্রদ্ধাশীল বলতে মানুষের জীবনের প্রতি শ্রদ্ধাশীল হওয়াকেই বুঝি। আমাদের যা কিছু অধিকার দায়িত্ব ও কর্তব্যবোধ সবই যেন মানুষের কল্যাণকে ঘিরে। পরিবেশ নীতিবিদ্যাই মনুষ্যকেন্দ্রিক নীতিবিদ্যার ছন্দপতন ঘটিয়ে, প্রশ্ন তোলে মনুষ্যতর জীবের নৈতিক অধিকারের, তাদের প্রতি মানুষের দায়বদ্ধতার কথা।

মনুষ্যতর প্রাণীদের জীবনেও যে অধিকার থাকতে পারে সেটা বোঝা যায় যখন মেরি উইলস্টোন ক্রাফ নামে এক মহিলা নারীদের অধিকার প্রতিষ্ঠায় সরব হয়ে বই লেখেন, তখন কেমব্রিজের অধ্যাপক টমাস টেলর তাকে ব্যঙ্গ করে বলেছিলেন যে, তাহলে তো কুকুর বিড়ালের ও অধিকারের কথাও বলতে হয়।^{১*} এখানে নারী জাতিকে তিনি অসম্মান করেননি তার উদ্দেশ্য ছিল নারী-পুরুষের নৈতিক অধিকার থাকলে, পশু পাখিরও নৈতিক অধিকার আছে বিষয়টি তুলে ধরা। প্রাণীর নৈতিক অধিকারের কথা উপলব্ধি করেছিলেন তার মধ্যে অন্যতম হলেন Jeremy Bentham। তিনি তাঁর “An Introduction to the Principal of Moral and Legislation” গ্রন্থে বিষয়টি সমতা রক্ষার নীতির (Principle of equality) দ্বারা সুন্দরভাবে তুলে ধরেন। তিনি বলেন, সকলের স্বার্থকে সমান মর্যাদা দিতে হবে। মানুষ ও মনুষ্যতর প্রাণীর স্বার্থ সমভাবে বিবেচিত হওয়া উচিত। মানুষের যেমন যাতনা বোধের ক্ষমতা আছে মনুষ্যতর প্রাণীরও সেই ক্ষমতা আছে। মানুষকে খাঁচায় বন্দি করা যদি অন্যায় হয় তবে পাখির ক্ষেত্রেও তা সমান ভাবে প্রযোজ্য। কেননা বন্দী দশার যন্ত্রণা শুধু পাখির নয়, মানুষেরও প্রাপ্য। মানুষকে শিকল পরিয়ে রাখা যদি ন্যায় না হয় তাহলে হাতির ক্ষেত্রেও তা সমানভাবে প্রযোজ্য। কেননা শিকলের বাঁধন মানুষকে যতটা যন্ত্রণা দেয় হাতিকেও সমপরিমাণ যন্ত্রণা দেয়। নিরপরাধ ব্যক্তিকে হত্যা করা যদি অন্যায় হয় তবে মুরগিটিকে জবাই করাও সমভাবে অন্যায়। কারণ মানুষটি যদি যন্ত্রণায় ছটফট করে, তবে মুরগিটিও তাই করে। বেছাম আসলে সমতা রক্ষার নীতির দ্বারা মনুষ্যতর প্রাণীর অধিকারের কথায় তুলে ধরেন।

বেছামের যুক্তিতে সহমত প্রকাশ পিটার সিন্সার তার ‘Practical Ethics’ গ্রন্থে বলেন, যদি একটি সত্তা কষ্ট ভোগ করে তাহলে সেই কষ্ট ভোগকে বিবেচনায় না নিয়ে আসার কোনো নৈতিকতা থাকে না। সত্তাটির প্রকৃতি যাই হোক না কেন সমতা রক্ষা নীতি অনুসারে অন্য সত্তার কষ্ট ভোগের মতোই এই সত্তাকেও সমানভাবে বিবেচনা করতে হবে।^১

মনুষ্যতর প্রাণী মানুষের মতো চিন্তাশীল নয়। তবে তাদের মানুষের মতো সুখ-দুঃখের অনুভূতি রয়েছে। তা সত্ত্বেও মানুষেরা মনুষ্যতর প্রাণীদের

প্রতি এমন নির্মম আচরণ করে থাকে, যা কোনমতেই কাম্য নয়। আমেরিকায় একটি পরিসংখ্যানে দেখা গেছে যে, প্রতিবছর ৫ বিলিয়ন পশু জবাই করা হয়। এছাড়াও সমগ্র পৃথিবীতে ২০০ মিলিয়ন পশু ব্যবহার করা হয় বিভিন্ন পরীক্ষা নিরীক্ষার চালানোর জন্য।^{১৮} পারমানবিক বোমা পরীক্ষা করার জন্য সমুদ্রে নিক্ষেপ করা হচ্ছে। তার ফলে সমুদ্রে বসবাসকারী প্রাণী ও মাছ ক্ষতিগ্রস্ত হচ্ছে। এমনকি এর ফলে সমুদ্রের জলও বিষাক্ত হচ্ছে এবং সেই মাছ খেয়ে মানুষেরাও ক্ষতিগ্রস্ত হচ্ছে। আমেরিকান দার্শনিক Tom Regan তাঁর ‘The Case for Animal Rights’ গ্রন্থে বলেন যে, পশুদের অধিকার আইনগত নয়, কারণ বিভিন্ন দেশে বিভিন্ন আইন থাকতে পারে। তাদের অধিকার হল নৈতিক অধিকার। জাতি, ধর্ম, বর্ণ, লিঙ্গ নির্বিশেষে সকল জীবনধারী প্রাণীর জন্যই সমান। তিনি বলেন যে, পশুর অধিকার বলতে কোন ভোটাদিকার নয় বা শুনানির অধিকার নয়। তাদের অধিকার বলতে বোঝায়, আমাদের উচিত তাদের প্রতি সহানুভূতিশীল হওয়া, কোন রকম কষ্টদায়ক আচরণ না করা।

পৃথিবীতে মানুষ ও পশু পাখি ছাড়াও আরো অসংখ্য জীব আছে যাদের আমরা অণুজীব বা নিম্ন প্রজাতির জীব বলে থাকি। বেছাম মানুষ ও পশু পাখির অধিকারের কথা সমতা রক্ষার নীতি দ্বারা প্রতিষ্ঠিত করেছিলেন। কিন্তু তারপরও পরিবেশের একটি বিরাট অংশ, যেমন নিম্ন প্রজাতির জীব বা অনুজীব, উদ্ভিদ কুল, জড়জগত নৈতিক অধিকার থেকে বঞ্চিত থেকে গেল এ কথা বলাই যায়। মানুষের জীবনের মত নিম্ন প্রজাতির জীবের যে স্বংত মূল্য আছে একথা অস্বীকার করার উপায় নেই। এই সমস্ত ছোট ছোট জীব পরিবেশের ভারসাম্য রক্ষার সাথে সাথে মানুষ ও পশু পাখির অনেক উপকারে লাগে।

আমরা কারণে অকারণে পরিবেশের বসবাসকারী অনুজীবদের অনবরত ধ্বংস করে চলেছি। হাঁটতে হাঁটতে বা খেলাছলে নিম্ন প্রজাতির জীবের নিরাপদ আশ্রয়টুকু ভেঙে ফেলতে দ্বিধা করি না আবর্জনার স্তুপে আগুন ধরিয়ে দেওয়া হয়। এর ফলে অসংখ্য অনুজীবের প্রাণ নষ্ট হয়। এই সকল কাজকে কি মানবিক বলা যায়? তাদের জীবনের কি কোন নৈতিক মূল্য নেই? এদের প্রতি মানুষের কি কোন নৈতিক দায়িত্ব বা কর্তব্য নেই?

এবার আসা যাক অনুজীবের জীবনের নৈতিক মূল্য প্রসঙ্গে। নীতিবিদ্যায় ‘মূল্য’ শব্দটির দুটি অর্থ আছে। স্বকীয় মূল্য (Intrinsic Value) এবং পরকীয় মূল্য (Extrinsic Value)। যা নিজে নিজেই মূল্যবান তাকে স্বকীয় মূল্য বলে। ব্যবহারিক নীতিবিদ্যায় কেবলমাত্র সুখ বা আনন্দই স্বতঃমূল্যবান। কেননা মানুষ সুখের জন্য সুখ কামনা করে। আর যে বস্তুর মূল্য অন্য কোন কিছুর ওপর নির্ভর করে তাকে পরতঃমূল্য বা পরকীয় মূল্য বলা হয়। অর্থের মূল্য হল পরতঃমূল্য। কেননা অর্থকে মানুষ কামনা করে অর্থের জন্য নয় তার দ্বারা অন্য যেসব বস্তু পাওয়া যায় তার জন্য। অনুজীবের স্বতঃমূল্য আছে। কারণ তারা স্বেচ্ছায় চলাফেরা করতে পারে, বংশবৃদ্ধি করতে সক্ষম, দৈহিক বিকাশ ঘটে, বিপদ থেকে বাঁচার চেষ্টা করে, জন্ম মৃত্যু আছে। অনুজীবের এই সমস্ত বৈশিষ্ট্য আছে বলে এদের নিজস্ব স্বতঃমূল্য আছে। পরিবেশে একসঙ্গে বসবাসকারী প্রতিটি জীবরা একে অপরের সঙ্গে পারস্পরিক বন্ধনে আবদ্ধ। প্রতিটি অনুজীব মানুষের কল্যাণে সহযোগিতা করে। ব্যাকটেরিয়া, ভাইরাস এবং জীবাণু পর্যন্ত কল্যাণ করে মানুষের। কিছু অপকারী ভাইরাস, ব্যাকটেরিয়া থাকলেও বাস্তুসংস্থানের জন্য মঙ্গলজনক ও কল্যাণকর। সুতরাং নৈতিক কর্তা হিসাবে মানুষের উচিত এই সমস্ত অনুজীবের শত মূল্য স্বীকার করা এবং তাদের প্রতি নৈতিক দায়িত্ব ও কর্তব্য পালন করা।^৯

প্রাণীজগতের মত উদ্ভিদ জগতও পরিবেশ নীতিবিদ্যার একটি অংশ। প্রশ্ন হল মানুষের কাছে মনুষ্যত্বের প্রাণী যদি সুবিচার, সহানুভূতি এইসব দাবি করতে পারে, তবে উদ্ভিদকূলই বা কেন সেই দাবি করতে পারবে না? কিন্তু বিনা কারণে উদ্ভিদকূলকে মানুষ কেন সহানুভূতি দেখাতে যাবে? উদ্ভিদকূলের যে চিন্তাশক্তি আছে তার কোন প্রমাণ নেই। যদি উদ্ভিদের চিন্তাশক্তি থাকতো তবে তাদের প্রতি সহানুভূতির বা সুবিচারের কথা ভাবা যেত। উদ্ভিদকূল মানুষের সহানুভূতি পাওয়ার জন্য উদগ্রীব, এই কথাও নিশ্চিত ভাবে বলার উপায় নেই। এ প্রসঙ্গে আমেরিকার একজন আইনজ্ঞ ক্রিস্টোফার ডেভিড স্টোন বলেন যে, উদ্ভিদের নৈতিক অধিকার না থাকলেও তাদের আইনগত অধিকার আছে একটি উদাহরণের সাহায্যে বিষয়টি বোঝানো যাক। ধরা যাক জড়বৃদ্ধি সম্পন্ন একটি মানুষ, যে বিচার প্রার্থনা করতে না

পারলেও তার অভিভাবক তার প্রতিনিধি হয়ে আদালতে আবেদন করতে পারেন। অথবা বলা যেতে পারে সড়ক দুর্ঘটনায় কোন ব্যক্তি মারা গেলে তার পরিবারের কেউ তার হয়ে আইনি লড়াই লড়তে পারে। ঠিক একইভাবে একটি ট্রাস্ট গঠন করা যেতে পারে, যে উদ্ভিদ কুলের অভিভাবক হিসাবে কাজ করবে। বা বলা যেতে পারে উদ্ভিদের স্বার্থ রক্ষার জন্য তার প্রতিনিধি রূপে কাজ করবে উপরে উক্ত আলোচনা থেকে এ কথা বলা যেতেই পারে উদ্ভিদকুলের নৈতিক অধিকার আছে এই প্রশ্ন সম্পূর্ণরূপে অবাস্তব নয়।

এই পরিবেশে মানুষ, মনুষ্যতর প্রাণী, উদ্ভিদকুল ছাড়াও আছে কিছু প্রাণহীন বস্তু যেমন, পাহাড়-পর্বত নুড়ি— পাথর, নদ-নদী, বালু-রাশি প্রভৃতি। এই সমস্ত প্রাণহীন বস্তুর না আছে চেতনা শক্তি, না আছে নড়াচড়া করার ক্ষমতা। পরিবেশ নীতিবিদ্যা অনুসারে এই প্রাণহীন জড় বস্তুর নৈতিক মূল্য ও অধিকার রয়েছে। ধরা যাক কোন একটি মরুভূমিতে পারমাণবিক বোমা নিক্ষেপ করা হলো এর ফলে সেখানকার প্রাণহীন জড়বস্তু ধ্বংস হলো। এই সমস্ত প্রাণহীন বস্তুর অক্ষত থাকার কি কোন অধিকার নেই? সাধারণ মানুষের দৃষ্টিকোণ থেকে এগুলোর তেমন কোন গুরুত্ব আছে বলে মনে না হলেও, পরিবেশ নীতিবিদ্যার দিক থেকে এগুলি অন্যায় কাজ বলেই বিবেচিত হবে।^{১০}

পরিবেশ নীতিবিদ্যার একটি গুরুত্বপূর্ণ অংশ হল জমি বা ভূমি। ‘ভূমি নীতিবিদ্যা’ শব্দটি প্রথম ব্যবহার করেন ১৯৪৭ সালে Leopold তাঁর “The Land Ethics” প্রবন্ধে, সেই জন্য তাকে ভূমি-নীতিবিদ্যার জনক বলা হয়। এই প্রবন্ধে তিনি বলেন- ‘And The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively: the land.’^{১১} - তার জমি নীতিবিদ্যার প্রধান উপকরণগুলি হল মাটি, জল, উদ্ভিদ ও জীব জন্তু। এই এ সমস্ত উপাদানকে তিনি বলেছেন ভূমি বা জমি। তিনি যে ভূমি নীতিবিদ্যার কথা বলেছেন, সেখানে তাদের অধিকারের প্রসঙ্গই মূলত তুলে ধরেছেন। Leopold আরো বলেন, মানুষ যেন নিজেকে জমির মালিক না ভেবে এক সাধারণ সদস্য হিসাবেই ভাবে। Leopold এর ভূমি নীতিবিদ্যার ধারণার দুটো দিক মানুষকে

অনেক বেশি প্রভাবিত করেছেন- মানুষ যদি ভূমির ক্ষতি করে, তবে প্রকারান্তরে সে নিজেদেরই ক্ষতি করবে। কেননা মানুষের জীবনধারণ প্রক্রিয়া আবর্তিত হয় ভূমিকে কেন্দ্র করে। তাই নিজেদের প্রয়োজনের কথা বিবেচনা করেই ভূমির প্রতি যত্নবান হওয়া উচিত। দ্বিতীয় দিকটি হল ভূমির যেহেতু স্বতঃমূল্য আছে, সেই কারণেই ভূমির রক্ষণাবেক্ষণের দিক থেকেও মানুষকে যত্নবান হতে বাধ্য করে। সুতরাং বলাই যাই পরিবেশের ভারসাম্য রক্ষার্থে ভূমির গুরুত্ব অপরিসীম।

উপরের আলোচনা থেকে একথা বলা যায় যে, পরিবেশ নীতিবিদ্যা কেবল মানুষের অধিকার রক্ষার কথাই বলে না, মানুষ ছাড়াও মনুষ্যতর প্রাণী, অণুজীব, বৃক্ষ- তরুলতা, ভূমি, এমনকি প্রাণীর বস্তুর অধিকার রক্ষার কথাও বলে থাকে। বর্তমান সময়ে পরিবেশ নানা প্রকার সমস্যায় জর্জরিত। এই পরিস্থিতি থেকে পরিবেশকে রক্ষা করার জন্য সমাজের তথা পৃথিবীর সকল সচেতন মানুষের এগিয়ে আসা উচিত। পরিবেশকে সঠিক ভাবে ব্যবহার করলে পৃথিবীর সকল মানুষ লাভবান হবে। এমনকি বর্তমান প্রজন্মের সাথে সাথে ভবিষ্যৎ প্রজন্মও লাভবান হবে। ভবিষ্যৎ প্রজন্মের প্রতিও মানুষের নৈতিক দায়িত্ব রয়েছে। তাইতো বিশ্ব পরিবেশ নিয়ে মানুষের সতর্কতার খবর সংবাদপত্র, ইলেকট্রিক মিডিয়া, সোশ্যাল মিডিয়ায়, নানাভাবে প্রকাশ করা হয়। বিদ্যালয়, মহাবিদ্যালয়, বিশ্ববিদ্যালয়েও পরিবেশ বিদ্যা অবশ্য পাঠ্য। কেননা বর্তমান সময়ে যখন পৃথিবীর জলে- স্থলে- প্রাকৃতিক ভারসাম্য বিপন্ন, দূষণের উগ্রতায় মৃত্যুর হাতছানি তখন আমাদের মনে হয় বিশ্বকবি রবীন্দ্রনাথ ঠাকুরের সেই আবেদন -

“দাও ফিরে সে অরণ্য, লও এ নগর
লও যত লৌহ লোষ্ট্র কাষ্ঠ ও প্রস্তর
হে নব সভ্যতা।”

তথ্যসূত্র

- ১। প্রায়োগিক নীতিবিদ্যা, এ. এস. এম. আব্দুল খালেক, অনন্যা প্রকাশন, তৃতীয় মুদ্রন(২০০৯), পৃ-৩২৪
- ২। কথাই কর্মে এথিকস, সোমনাথ চক্রবর্তী, প্রোগ্রেসিভ পাবলিশার্স, প্রথম প্রকাশ(২০০২), পৃ-২৪৬
- ৩। Practical Ethics— Peter Singer— Cambridge University Press— Second Edition— P-264.
- ৪। পরিবেশ ও নীতিবিদ্যা, নির্মাল্য নারায়ন চক্রবর্তী, পশ্চিমবঙ্গ রাজ্য পুস্তক পর্বৎ(২০১৯), পৃ-৪০
- ৫। নীতিবিদ্যা ও ফলিত নীতিবিদ্যা, দিল্লীত গুপ্ত, সোমা বুক এজেন্সী, পৃ-১৭৩
- ৬। কথাই কর্মে এথিকস, সোমনাথ চক্রবর্তী, প্রোগ্রেসিভ পাবলিশার্স, প্রথম প্রকাশ (২০০২), পৃ-২৫৫
- ৭। পিটার সিঙ্গার অনুসরণে ব্যবহারিক নীতিবিদ্যা, সম্পাদনায় ডঃ এ. কে. এম. সালাহউদ্দিন, গ্রন্থ কুটির, প্রথম প্রকাশ (২০১৫), পৃ-৭৯
- ৮। প্রায়োগিক নীতিবিদ্যা, এ. এস. এম. আব্দুল খালেক, অনন্যা প্রকাশন, তৃতীয় মুদ্রন(২০০৯), পৃ-৩৫২
- ৯। পূর্ববৎ, পৃ-৩৪৬
- ১০। পূর্ববৎ, পৃ-৩৩৭
- ১১। The Land Ethics—Aldo Leopold—A Stand County Almanac (১৯৪৯), P-2

দক্ষিণ চব্বিশ পরগনা জেলার মান্য লোকসংস্কারের উৎস

শাস্বতী মন্ডল

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অতিথি আপ্যায়ন, পাপ-পুণ্য।

বিপুল। এই পৃথিবীর অধিকর্তা মানুষ। সূক্ষ্ম বুদ্ধির অধিকারী হওয়ায় প্রকৃতির
সঙ্গে অভিযোজনে সে পৃথিবীর আর সব জীবকে হারিয়ে দিয়েছে। জন্মলগ্ন
থেকে নতুন নতুন কর্ম প্রচেষ্টার মধ্যে দিয়ে সে তার সৃজনশীল শক্তির পরিচয়
দিয়ে আসছে। প্রয়োজনের তাগিদে বিভিন্ন আবিষ্কারের মধ্যে দিয়ে মানুষের
আত্মবিকাশ এবং ক্রমবিবর্তন ঘটেছে। এই প্রয়োজনের তাগিদ ই তাকে
সমস্ত রকম বিদ্যা চর্চায় অনুপ্রাণিত ও উৎসাহিত করেছে। আপন সৃষ্টি কর্মের
বংশ পরম্পরাক্রমে এই অর্জিত আচরণ বিধিকে আমরা সংস্কৃতি/কালচার
নাম দিতে পারি, যা পৃথিবীর সমস্ত মানুষের জীবন সংগ্রাম ও মানস চিন্তার
চলমান ও রূপান্তরশীল প্রবাহের মধ্যে দিয়ে জীবন্ত রূপ লাভ করে। এর

গতি কখনো দ্রুত, কখনো মধুর, কিন্তু থেমে থাকে না। মানব সৃজনে এই বিশেষ দিকই হলো সংস্কৃতি, অর্থাৎ মানুষের সমস্ত প্রকার ভাবনা - চিন্তার ও কর্মের প্রকাশ রবীন্দ্রনাথ ঠাকুরের ভাষায় ‘মানুষের হয়ে ওঠার ইতিহাসই সংস্কৃতি’।

মানুষ সমাজবদ্ধ জীব, সমাজে বাস করতে গেলে কতকগুলি নিয়মকানুন, আচার- আচরণ, রীতি - নীতি, প্রথা, বিশ্বাস মেনে চলতে হয়। সুষ্ঠু, সুন্দর, সুশৃঙ্খল জীবনযাপনের জন্য প্রয়োজন অনুযায়ী মানুষ এইগুলি তৈরি করেছে। আবার জীবনযাত্রার নানা পর্যায়ে বিভিন্ন পরিস্থিতি ও পরিবেশে যে সমস্ত সমস্যার উদ্ভব ঘটেছে সেগুলির মোকাবিলা করার জন্য ওই পরিস্থিতি এবং পরিবেশ অনুযায়ী কিছু কিছু সমাধানও সৃষ্টি হয়েছে। কালক্রমে তারা সমাজের অলিখিত আইনের মর্যাদা পেয়েছে। এইভাবে সামাজিক রীতি-নীতি কিংবা প্রথার জন্ম হয়েছে। আবার জীবনের চলার পথে গোষ্ঠীবদ্ধ মানুষ নিজেদের সম্মানের জন্য কল্যাণের জন্য কিছু কিছু আচার- আচরণকে মেনে নিয়েছে। এইভাবে আচার, সংস্কার ও বিশ্বাস লোকাচার, লোকসংস্কার ও লোক বিশ্বাস বলা যেতে পারে। কালে কালে এগুলির সঙ্গে যুক্ত হয়েছে ধর্মবোধ ও গোষ্ঠী চেতনা। কিন্তু সামাজিক রীতি-নীতি, প্রথা, সংস্কার, বিশ্বাস ইত্যাদির রূপ সর্বত্র এক নয়। দক্ষিণ চব্বিশ পরগনাও তার ব্যতিক্রম নয়। এই জেলার পরিচয় হলো ভারতের পূর্বাঞ্চলের দক্ষিণতম প্রান্ত ঘেঁষে বঙ্গোপসাগর উপকূলে দাঁড়িয়ে আছে পশ্চিমবঙ্গের প্রত্যন্ত জেলা দক্ষিণ চব্বিশ পরগনা। খন্ডিত বঙ্গের অখন্ড জেলা চব্বিশ পরগনা প্রশাসনিক প্রয়োজনে দ্বিখণ্ডিত হয়ে ১৯৮৬ সালের পয়লা মার্চ জন্ম নিয়েছে দক্ষিণ চব্বিশ পরগনা ও উত্তর চব্বিশ পরগনা দুটি স্বতন্ত্র জেলা। সেই সঙ্গে ভারতীয় সুন্দরবনের অঙ্গ ব্যবচ্ছেদ ঘটে গেছে। সুন্দরবন অঞ্চলের বেশিরভাগই লোক গেছে দক্ষিণ চব্বিশ পরগনার মধ্যে। জেলার উত্তর প্রান্তে ছুঁয়ে আছে কলকাতা মহানগরী ও উত্তর চব্বিশ পরগনা। উত্তর থেকে দক্ষিণ বরাবর হুগলী নদী প্রবাহিত কলকাতা সংলগ্ন মেটিয়ারকুজ -বজবজ থেকে গঙ্গাসাগর সঙ্গম তীর্থ পর্যন্ত পূর্ব দক্ষিণ প্রান্ত থেকে দক্ষিণ ভূভাগ ঘিরে আছে যথাক্রমে ইছামতি, কালিন্দী, রায়মঙ্গল ও বঙ্গোপসাগরের অশান্ত ও অনন্ত জলরাশি। খাল-বিল ধল-খাড়ি, নদী-নালা ভারানি - ফোড়ন খাল, বিচিত্র আকারের দ্বীপমালা, নদীমোহনা, সাগরবেলা,

চরভূমি, সৈকতারণ্য, অভয়ারণ্য, বাদাবনের, বাঘের জঙ্গল, জাতীয় উদ্যান, পাখিরালয়, বিশাল -বিস্তীর্ণ লাট- প্লট সমূহের আবাদিত, খামার গ্রাম গঞ্জ, হাট- বাজার, শহর- বন্দর ভারত খ্যাত ও গঙ্গাসাগর সঙ্গম তীর্থ শ্রীকৃষ্ণ চৈতন্য ও রামচন্দ্র খানের স্মৃতিবিজড়িত ছত্রভোগ বন্দরতীর্থ প্রভৃতি বৈচিত্র্য ও গৌরবের সমৃদ্ধ দক্ষিণ চব্বিশ পরগনা শুধু পশ্চিমবঙ্গের নয়, পূর্ব ভারতের অপার বিস্ময়। এখানকার মাটি ও জলবায়ু, গাছপালা, জলজ উদ্ভিদ, জলজ প্রাণীকুল, বনজ উদ্ভিদ, বিচিত্র প্রজাতির পশু-পাখি সরীসৃপ ও মানুষসহ প্রাণীকুলের পরস্পরের মধ্যে সুনিবিড় সম্পর্কও নির্ভরশীলতা।

দক্ষিণ চব্বিশ পরগনা মূলত: শ্রমজীবী মানুষের দেশ। এখানকার অধিকাংশ মানুষ কায়িক শ্রমের উপর নির্ভর করে জীবনযাত্রা নির্বাহ করে। উচ্চশিক্ষিত ও সুশিক্ষিত মানুষের অভাব এখানে। স্বল্প শিক্ষিত ও অশিক্ষিত মানুষের সংখ্যা এখানে বেশি। এই অঞ্চলে অক্ষর পরিচয়হীন মানুষ খুঁজলে এখনো প্রচুর মেলে। এইসব অঞ্চলে আধুনিক জীবনযাত্রার স্পর্শ খুব একটা ঘটেনি। ফলে এইসব প্রত্যন্ত অঞ্চলের মানুষদের চিন্তা, ভাবনা ধ্যান, ধারণা প্রাচীনপন্থী হওয়াটাই স্বাভাবিক। দীর্ঘদিন ধরে বংশ পরম্পরায় যেসব প্রথা আচার- সংস্কার ইত্যাদি ব্যবহৃত হয়ে আসছে তারা সেগুলিকেই আঁকড়ে ধরে থাকবেন। এক কথা বলাই বাহুল্য। সেগুলি সদাচার না কদাচার, সুসংস্কার না কুসংস্কার, তা তারা জানেন না জানার চেষ্টাও করেন না। পূর্বপুরুষ গণ অর্থাৎ বাবা, ঠাকুরদা মেনে এসেছেন ও আসছেন, তাই তারাও সেগুলিও মেনে চলেছেন। কিন্তু সামাজিক রীতিনীতি, প্রথা, সংস্কার, বিশ্বাস ইত্যাদির রূপ সর্বত্র এক নয়। স্থান কাল পাত্র অনুযায়ী এদের পরিবর্তন ঘটে। পূর্বে যে প্রথা, আচার, সংস্কার কিংবা বিশ্বাস প্রচলিত ছিল, বর্তমানে তা নাও থাকতে পারে। আবার বর্তমানে যে আচার, সংস্কার, প্রথা-বিশ্বাসের জন্ম হচ্ছে খোঁজ নিয়ে দেখা যাবে অতীতে তাদের কোন অস্তিত্ব ছিল না। আবার একই জেলার মধ্যে ও লোকবিশ্বাসের ভিন্নতা লক্ষণীয়। এক বয়সের মানুষের কাছে যেগুলি আচরণীয়, অন্য বয়সের মানুষ সেগুলি আদৌ মেনে চলেন না। এমনকি নারীরা যেগুলি মানেন, পুরুষরাও সেগুলি মানেন না।

মানব জীবন হলো অসংখ্য ঘটনার সমষ্টি। এর মধ্যে প্রধান ঘটনা হলো জন্ম ও মৃত্যু বিবাহ- এই তিনটি বন্ধনের দ্বারা মানুষ জগত সংসারে আবদ্ধ।

যদিও এর মধ্যে সবচেয়ে দুটি বড় ঘটনা হলো মানুষের জন্ম আর মানুষের মৃত্যু। মানুষের জীবনের দুই প্রান্তে দুটি বিশিষ্ট ঘটনাই জীবনকে ধরে রেখেছে। একটি শুরু ও আরেকটি শেষ। আর এই দুই প্রান্তবর্তী ঘটনাকে যুক্ত করে রেখেছে আরেকটি ঘটনা তা হল বিবাহ, যেখানে জীবনের চরম পূর্ণতা। যদিও এই তিনটি পর্যায়ে ঘিরে কত আচার, অনুষ্ঠান, সংস্কার, প্রথা-বিশ্বাসের ছড়াছড়ি। যে শিশুটি ভূমিষ্ঠ হলো কত আচার নিয়ম অনুষ্ঠানের মধ্যে তাকে বরণ করা হলো শিশুটি বড় হল, এল কৈশোর-যৌবন, আবদ্ধ হলো বিবাহ বন্ধনে। সৃষ্টি করল এক নতুন সংসার। শেষে জীবনের সায়াহ্নে মৃত্যুর মধ্য দিয়েই তার পরিসমাপ্তি। আমরা আশাবাদী মানুষ, আমরা বিশ্বাস করি মৃত্যুই জীবনের শেষ নয়। মানুষের নশ্বর দেহের মৃত্যু ঘটে। কিন্তু বেঁচে থাকে আত্মা, সে যে চির অমর। মানুষ অমৃতের সন্তান। আমাদের হিন্দু ধর্মে দর্শন আর বিশ্বাসে জড়িয়ে মানুষের জীবনকে বিভিন্নভাবে ব্যাখ্যা দেওয়া হয়েছে আর এই জন্যই হাজারো প্রথা সংস্কার আচারের প্রবর্তনা। জীবন যেন সুখী হয়, সুন্দর হয়-এই আমাদের কামনা এমনকি মৃত্যুর পর আত্মা যেন শান্তি পায়-এই আমাদের বিশ্বাস। জীবনের খুঁটিনাটি নানান বিষয় এইসব সংস্কারের বিশ্বাসের মূল স্বরূপ। দক্ষিণ চব্বিশ পরগনার সামাজিক রীতি-নীতি প্রথা, আচার, সংস্কার- বিশ্বাসের রূপ ও প্রকৃতি নিয়ে আলোচনা করতে গেলে লক্ষ্য করা যায় যে, এগুলি মূলত প্রাচীন ধারার অনুবর্তন কিংবা বিবর্তন। দক্ষিণ চব্বিশ পরগনার বসবাসকারী জনগোষ্ঠীর অধিকাংশই যেমন এক প্রাচীন পরাক্রমশালী জাতির বংশধর, তেমনি তাদের আচারিত রীতি-নীতি, আচার-সংস্কার, ইত্যাদি মূলত: প্রাচীনকালের রীতিনীতি, প্রথা, আচার ইত্যাদির অনুবর্তন। তাই প্রথা, আচার অনুশাসনকৃত বিশ্বাস/লোক বিশ্বাস, সংস্কার/লোক সংস্কার/কুসংস্কার ইত্যাদির এক বিশিষ্ট দক্ষিণ চব্বিশ পরগনাতে লক্ষ্য করা যায়। সুতরাং স্থান, কাল, পাত্র, জাতি-ধর্ম, গোষ্ঠী ইত্যাদি অনুযায়ী সামাজিক রীতি-নীতি প্রথা, আচার, সংস্কার ও বিশ্বাসের সামগ্রিক রূপের জন্ম হয়েছে হয়ে চলেছে, পরিবর্তিত, পরিবর্তিত, পরিমার্জিত হতে হতে অনাগত কালের দিকে এগিয়ে চলেছে। বিবাহ সম্পর্কিত নানা লোকাচার, প্রথা, সংস্কার, বিশ্বাস দক্ষিণ চব্বিশ পরগনাতেও প্রচলিত আছে। বিবাহ সম্পর্কিত আচার- অনুষ্ঠান, প্রাচীন সামাজিক রীতি নীতি, আচার

বিশ্বাসের প্রাচীন কালের প্রভাবও লক্ষ্য করা যায়। যেমন—

আবড়ো-আইবুড়ো

অকুমারী- অনুচা অর্থে একটা নির্দিষ্ট বয়সের পরের অবিবাহিত কুমারী মেয়েকে বলা হয়। ৯-১০ বৎসরের মেয়েকে অকুমারী বলে। সাধারণত: ৯ বৎসর বয়স পর্যন্ত মেয়েকে প্রকৃত কুমারী বলা হত প্রাচীন কালে।

উঁচকপালী- যে মেয়ের কপাল উঁচু সেই মেয়ে সুলক্ষণ যুক্ত নয়।

অধিবাস- বিবাহের দিন এক অনুষ্ঠান বলা যায় বিবাহ অনুষ্ঠানের সূচনা।

আইবুড়ো ভাত- নতুন কাপড় পরে এয়ো স্ত্রীর পঞ্চবাঞ্জন রান্না করে বর/কনেকে খাওয়ায়। এটি বিবাহের মূল অনুষ্ঠানের কাজ।

নানিমুখ- নান্দীমুখ। বিবাহের পূর্বে পিতৃপুরুষকে স্মরণ ও অন্নজল উৎসর্গ করা প্রভৃতি অনুষ্ঠান।

আভুতি- আভ্যুদায়িক শ্রাদ্ধ। নান্দীমুখের মধ্যকার অনুষ্ঠান।

কামানো- বর কামানো/কনে কামানো/ নাপিত ডেকে বর/কনের ক্ষৌরকার্য সম্পাদন।

নখকাটা- নাপিত ডেকে নখ কাটবার অনুষ্ঠান।

ছাদনাতলা- বিবাহের নির্দিষ্টস্থান। এখানে বর কনেকে দাঁড় করিয়ে বিবাহ কার্য সম্পন্ন হয়। প্রকৃতপক্ষে ছাদনাতলাই বিবাহ অনুষ্ঠানের মূল মন্ডপ / স্থান।

এছাড়া মানব জীবনের বিশেষ ঘটনা অবলম্বন করে বহু মান্য লোকসংস্কারের নিদর্শন রয়েছে।

সহায়ক গ্রন্থ:

১) রায়, নীহাররঞ্জন, 'বাঙালির ইতিহাস আদিপর্ব,' চতুর্থ দে'জ সংস্করণ অগ্রহায়ণ ১৪১০ দে'জ পাবলিশিং কলকাতা ৭০০০৭৩।

২) সেন, সুকুমার, 'বাংলা সাহিত্যের ইতিহাস', প্রথম খন্ড ,প্রথম প্রকাশ:, ১৯৪০। প্রথম আনন্দ সংস্করণ জানুয়ারি ১৯৯১।

৩) নস্কর, ধূজটি, 'পুণ্ড্র পৌণ্ড্র জাতি ও সভ্যতার ইতিহাস।' প্রথম প্রকাশ: কলকাতা বইমেলা, মার্চ ২০০৮।

৪) হালদার, বিমলেন্দু, 'দক্ষিণ ২৪ পরগনার কথ্য ভাষা ও লোকসংস্কৃতির উপকরণ,' প্রথম প্রকাশ: বইমেলা, জানুয়ারি ১৯৯৭।

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