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# RESEARCH ARTICLE

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## Termolecular Eley–Rideal pathway for catalytic oxidation of nitric oxide on $[\text{Pt}_2]^{0,\pm}$ dimers using $\text{O}_2$

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### Abstract

A comprehensive density functional theory (DFT) investigation of the catalytic oxidation of NO to  $\text{NO}_2$  on neutral and charged  $[\text{Pt}_2]^{0,\pm}$  dimers has been considered employing M06L/def2TZVP level of theory. Single as well as co-adsorption energies of NO and  $\text{O}_2$  molecules suggest that the traditional Langmuir Hinshelwood (LH) mechanism and less explored termolecular Eley–Rideal (TER) and termolecular Langmuir Hinshelwood (TLH) mechanisms, are suitable for a full catalytic reaction pathway in which two NO molecules are converted to two  $\text{NO}_2$  molecules, initiated by an activated  $\text{O}_2$  molecule. Activation barrier reveals that the TER mechanism is found to be more reliable in converting two NO molecules into two  $\text{NO}_2$  molecules on  $[\text{Pt}_2]$  dimer. In addition to shedding light on the intrinsic characteristics of  $\text{Pt}_2$  dimers, the study will serve as a benchmark for investigating the oxidation process of NO to  $\text{NO}_2$  utilizing models of termolecular chemical processes.

### KEYWORDS

adsorption energy, catalytic oxidation, dimers, M06L, termolecular Eley–Rideal

## 1 | INTRODUCTION

Nitrogen oxides ( $\text{NO}_x$ ) are one of the main air pollutants responsible for a variety of environmental issues, including acid rain, haze, and photochemical smog. Nitric oxide or nitrogen monoxide (NO) accounts for more than 90% of  $\text{NO}_x$ . It is a hazardous pollutant that gets released in the exhaust gas of diesel engines [1] and is the cause of serious respiratory ailments [2, 3]. Prior to emission, it is crucial to chemically convert NO to  $\text{N}_2$  in order to prevent air pollution. Despite the apparent irony, the catalytic oxidation of NO is a crucial phase in its catalytic reduction.  $\text{NO}_x$  storage and reduction (NSR), continuously regenerating traps (CRT), and selective catalytic reduction (SCR) are modern day techniques for NO reduction. In NSR, NO is oxidized into nitrogen dioxide ( $\text{NO}_2$ ) and/or nitrate ( $\text{NO}_3$ ) and temporarily retained on the surface of a noble metal before being reduced [4]. In CRT, NO is converted to  $\text{NO}_2$ , which then oxidizes unburnt hydrocarbons on a diesel particulate filter [5]. Also, the catalytic oxidation of NO is one of the most important steps in the Ostwald process for making nitric acid [6]. The catalytic oxidation of NO and  $\text{NO}_2$  is thus established as a crucial reaction for the reduction of detrimental  $\text{NO}_x$  gases, and considerable effort has been put into developing efficient catalysts for NO oxidation.

Platinum is the predominant choice for catalytic oxidation of NO in all of these current approaches due to its high catalytic activity. It is regarded as the model catalyst for NO oxidation and has been extensively investigated in the past years [7–11]. The catalytic activity of platinum catalysts for NO oxidation under different feed containing NO and  $\text{O}_2$  have been studied [7, 12]. Denton et al. [13] studied the oxidation rate of NO for both  $\text{Pt}/\text{SiO}_2$  and  $\text{Pt}/\text{Al}_2\text{O}_3$  and found out that Pt particle size was a key reason in controlling the reaction rate while the impact of the support was negligible. Schmitz et al. [9] investigated the impact of precursor, support, loading, and processing conditions on NO oxidation over



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Article

## Tuning the Reaction Mechanism toward Selective Hydrogenation of CO<sub>2</sub> to Formic Acid on a Sn<sub>10</sub>O<sub>20</sub> Cluster

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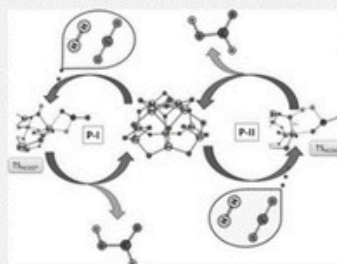
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**ABSTRACT:** Mitigation of CO<sub>2</sub> and its conversion into valuable chemicals is obligatory as continuous emission of CO<sub>2</sub> is a serious threat to global climate change and hence to living beings. Herein, we have studied the catalytic behavior of magic cluster Sn<sub>10</sub>O<sub>20</sub> toward the reduction of CO<sub>2</sub> to formic acid (FA) using the density functional theory (DFT) method. Two possible pathways have been explored for the conversion. First, the dissociation of H<sub>2</sub> on the cluster offers a route where Sn hydride triggers the selectivity of formic acid formation via a HCOO\* intermediate. Second, in the coadsorption pathway, as a result of the polarization effects of the 'O' of the O<sub>2</sub>C<sub>4</sub> active site, H<sub>2</sub> gets activated and forms a stable six-membered ring in the transition state to give a direct HCOO\* intermediate. In the transition state, the 'H' in the newly formed "C–H" bond is also characterized as a hydride with the Bader charge of −0.19 |e|, and it holds the selectivity of formic acid. Among the two pathways, the coadsorption pathway proves to have better catalytic efficiency by providing a lower energetic pathway than the Sn-hydride-assisted pathway. Our results and analyses reveal that the reduction pathway changes to get better selectivity from the small SnO<sub>2</sub> to the larger-sized Sn<sub>10</sub>O<sub>20</sub>. It is also noteworthy to mention that catalytic efficiency depends upon the coordination number of "Sn" in the clusters.



### 1. INTRODUCTION

The utilization of the potent greenhouse gas CO<sub>2</sub>, emitted continuously from the consumption of fossil fuels and other anthropogenic sources, is highly desired to resist both short- and long-term damage to the environment and mankind.<sup>1–3</sup> Owing to the various potent applications of HCOOH, such as chemical hydrogen storage (CHS), direct formic acid fuel cells, etc., it has taken a hot seat in small- to large-scale synthesis.<sup>4–6</sup> The activity of SnO<sub>2</sub> catalysts is widely explored due to their low toxicity and low cost, which has become significant for long-term industrial applications in various fields of catalysis.<sup>7–12</sup> Moreover, because of the presence of an oxide layer on Sn, plenty of experimental work has concentrated on the selectivity of SnO<sub>2</sub> nanoparticles for the hydrogenation of CO<sub>2</sub> to formic acid.<sup>13–15</sup> One crucial factor that controls the activity and selectivity of HCOOH formation is the size of the SnO<sub>2</sub> nanoparticles. Liu et al. have compared the catalytic properties of SnO<sub>2</sub> quantum wires (1.7 nm) with the SnO<sub>2</sub> nanoparticles (5.5 nm) and concluded that even though the larger particles have a more electrochemically active surface area, the quantum wires have exposed grain boundaries (GBs) that eventually enhance the current density as well as faradic efficiency over 80% for HCOOH.<sup>16</sup> In the same way, Kumar et al. discussed the activity of small-sized reduced SnO<sub>2</sub> nanowires toward the selectivity for HCOOH.<sup>17</sup> The key factor in their observation is that the nanoporous nature of the

particles having a high grain boundary controls the rate and selectivity of HCOOH production. There is experimental evidence of previously synthesized subnano-sized SnO<sub>2</sub> quantum dots along with their activity toward ethanol sensing with size of the QDs. Xu et al. synthesized SnO<sub>2</sub> quantum dots (QDs) and nanowires (NWs) with diameters of ~0.5–2.5 and ~1.5–4.5 nm and observed that small-sized particles show better sensing activity.<sup>18</sup> Moreover, the effect of the grain boundary and interface interaction of SnO<sub>2</sub> quantum dots are studied extensively by Wu et al.<sup>19</sup> In their work, both experimental and theoretical results show that in the presence of NC supports, the activity of SnO<sub>2</sub> quantum dots increases and shows tremendous results on CO<sub>2</sub> activation and reduction. Generally, the conversion of CO<sub>2</sub> to formic acid suffers from a higher overpotential and low current density. Meyer and his coworkers reported experimental studies on the relation between current density and overpotential and concluded that a higher current density of >10 mA/cm<sup>2</sup> can be achieved for the reduction of CO<sub>2</sub> to formic acid on tin

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Article

## Reaction Mechanism and Kinetics for the Selective Hydrogenation of Carbon Dioxide to Formic Acid and Methanol over the $[\text{Cu}_2]\text{O}_{\pm 1}$ Dimer

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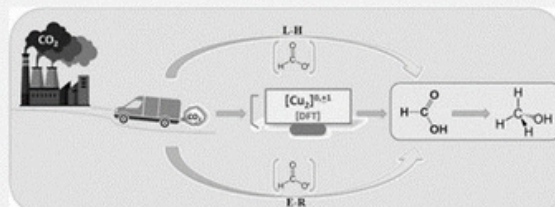
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**ABSTRACT:** With the rapid growth of industrialization, deforestation, and burning of fossil fuels, undeniably there has been an incredible escalation of the  $\text{CO}_2$  concentration in the atmosphere. In order to mitigate the problem, the capture and utilization of  $\text{CO}_2$  in different value-added chemicals have thus remained topics of concerned research for more than a decade. Accordingly, we have performed molecular-level catalytic hydrogenation of  $\text{CO}_2$  to formic acid using bare  $[\text{Cu}_2]\text{O}_{\pm 1}$  dimers as catalysts. The entire investigation has been performed using a density functional theory (DFT) method employing the Perdew–Burke–Ernzerhof (PBE) functional with the def2TZVPP basis set to explore the different possible routes and efficiency of the catalysts. Results reveal the feasibility of  $\text{H}_2$  dissociation on all three  $\text{Cu}_2$ ,  $\text{Cu}_2^+$ , and  $\text{Cu}_2^-$  dimers. The negatively charged hydride formed during  $\text{H}_2$  dissociation on  $\text{Cu}_2^-$  dimers facilitates the formation of the  $\text{HCOO}^*$  intermediate over  $\text{COOH}^*$ , thereby providing product selectivity for  $\text{HCOOH}$  above  $\text{CO}$ . However, the reaction on the  $\text{Cu}_2^+$  dimer forms both  $\text{HCOO}^*$  and  $\text{COOH}^*$  intermediates, but  $\text{HCOO}^*$ , being kinetically more favorable, results in  $\text{HCOOH}$  production. The free-energy change suggests that the complete reaction on  $\text{Cu}_2$  and  $\text{Cu}_2^+$  dimers forms a stable product compared to the  $\text{Cu}_2^-$  dimer. Furthermore,  $\text{H}_3\text{COH}$  production is studied using the title catalysts via the obtained  $\text{HCOOH}^*$  intermediate from the reaction channel. Transition state theory (TST) has been considered to evaluate the rate constants for each step of the reaction. Overall results suggest  $\text{Cu}_2$  to be better compared to  $\text{Cu}_2^+$  and  $\text{Cu}_2^-$  dimers for  $\text{HCOOH}$  formation and  $\text{Cu}_2^+$  over  $\text{Cu}_2$  and  $\text{Cu}_2^-$  dimers to be more efficient for  $\text{H}_3\text{COH}$  formation. This work opens the way for further investigation of the reaction mechanism and development of an efficient catalyst for  $\text{CO}_2$  hydrogenation.

### 1. INTRODUCTION

Nature's photosynthesis process mainly depends on atmospheric  $\text{CO}_2$  as it is the sole source of carbon for plants. However, with increasing global industrial revolution, the burning of fossil fuels and other human activities, the concentration of atmospheric  $\text{CO}_2$  is also increasing at an alarming rate day by day.<sup>1</sup> The average concentration of atmospheric  $\text{CO}_2$  on May 26, 2020 was 417.70 ppm as observed by NOAA, whereas 60 years ago it was 315 ppm.<sup>2</sup> This hyping emission of  $\text{CO}_2$  is the main effectuator of global warming and climate change along with being a severe threat to mankind.<sup>3</sup> Furthermore, the elevation in  $\text{CO}_2$  concentration has both positive and negative impacts on the agricultural sector.<sup>4</sup> Therefore, the utmost necessity to mitigate  $\text{CO}_2$  has gained the interest of researchers all around the globe to come

up with promising strategies for its capture and valorization. Over the last two decades, enormous research efforts have been accomplished to develop novel and cleaner technologies for sucking out excess  $\text{CO}_2$  from the atmosphere and converting it to different value-added products such as methane, methanol, carbon monoxide, ethanol, and other hydrocarbons.<sup>5</sup> Among the various chemicals, formic acid

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## Partial Oxidation of Methane to Methanol by Using Molecular O<sub>2</sub> on Pd<sub>2</sub><sup>+</sup> Catalyst: An Insight from Theory

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The partial oxidation of methane to methanol using cationic Pd<sub>2</sub> dimers is investigated by employing density functional theory (DFT) method. We used B3PW91 functional for geometry optimization, and frequency calculations of all species involved in [Pd<sub>2</sub>]<sup>+</sup> + O<sub>2</sub> + 2CH<sub>4</sub> reaction. Furthermore, a density-fitting triple zeta valence with single-polarization (def2TZVP) is used in the calculation to determine the atomic orbitals of the atoms. We oxidized Pd<sub>2</sub><sup>+</sup> to [Pd<sub>2</sub>O<sub>2</sub>]<sup>+</sup> using O<sub>2</sub> and performed possible

partial oxidation of methane to methanol on [Pd<sub>2</sub>O<sub>2</sub>]<sup>+</sup> and [Pd<sub>2</sub>O]<sup>+</sup> and explored various intermediates and transition states on the potential energy surface (PES) diagram. From Potential Energy Surface (PES) analysis, it is found that the [Pd<sub>2</sub>O<sub>2</sub>]<sup>+</sup> in doublet spin state multiplicity (SM = 2) following radical mechanism is the more preferred pathway for methane to methanol conversion.

### Introduction

Catalytic methane combustion has been receiving a great deal of attention in recent decades due to its rising use in ecologically friendly fuel combustion with reduced nitrogen oxide outflows.<sup>[1–6]</sup> Methane is a major component of natural gas. It is the most cost-effective and reasonable source of hydrocarbons, but because of its gaseous state at normal temperature, it is challenging to transport methane.<sup>[5]</sup> Methane gas is one of the major contributors in the greenhouse gas effect. Over a period of time, its capacity to cause global warming eventually surpasses that of CO<sub>2</sub>.<sup>[6]</sup> Therefore, turning methane into value-added products like methanol will not only meet the demand for petrol replacement but also help to reduce the effects of global warming.<sup>[7]</sup> Thus, the efficient use of methane is becoming increasingly important in terms of sustainable energy and cyclical energy use.<sup>[8–13]</sup>

Due to its ease of preservation, methanol (liquid fuel) is a potential replacement for compressed natural gas.<sup>[14]</sup> Methane is now a lot more lucrative and enticing energy source since methanol produced from it is a more portable and effective fuel.<sup>[15]</sup> Possible uses of methanol are as a fuel, solvent, gasoline

additives, chemical raw materials for biodiesel formation, etc.<sup>[16]</sup> On the basis of environmental and energy considerations, methanol is widely regarded as a promising alternative fuel for automobiles and other vehicles.<sup>[14]</sup> As a result, establishing a worldwide market for fuel methanol will reduce reliance on petroleum-based energy sources, which will increase competition among energy providers and lower prices.<sup>[15]</sup>

Methanol is now produced using a typical, expensive, and energy-intensive two-step process. Fluid methanol is created in a two-step process that starts with turning methane vapour into syngas (a combination of CO and H<sub>2</sub>), which is then converted to methanol using highly weighted catalysis.<sup>[17]</sup> This strategy is expensive and susceptible to sulfur harming<sup>[17]</sup> but is used because of the relatively high yield of methanol generation.<sup>[18]</sup> Due to the expanding requirement for energy and natural security, the two-step preparation is not favourable, so the fractional oxidation of methane by the methanol directs the synthesis method has been an area of broad research task for numerous decades.<sup>[8, 19]</sup> The beneficial halfway oxidation pathway is the direct conversion of methane to methanol in a one-step response using oxygen.<sup>[12]</sup> The cost of methanol manufacture can be significantly reduced with a one step process that is financially feasible. To overcome the high reaction barrier, methane conversion to value-added products also needs high temperatures. It has become a crucial challenge to create a catalyst for the selective catalytic oxidation of methane under mild conditions because high temperature reactions are typically not advantageous for industrial applications. Therefore, an appropriate catalyst is needed, one that can activate methane at ambient temperature and prevents excessive product oxidation to CO<sub>2</sub>. However, low grade selectivity and secondary reactions provide considerable challenges.<sup>[16]</sup>

Pd can be utilised as a catalyst in the partial oxidation of methane, according to earlier experimental and theoretical investigations. Pd/TiO<sub>2</sub> nanoparticles demonstrate excellent

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**Name of the Journal:** Bharatiya Shiksha Shodh Patrika

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#### FORENSIC ACCOUNTING IN INDIA: A TECHNIQUE OF FRAUD DETECTION

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##### ABSTRACT

This research paper examines the realm of forensic accounting in India, exploring its historical evolution, contemporary significance, techniques employed, challenges faced and future trends. The study investigates the nature and types of financial frauds prevalent in the Indian economic landscape, offering strategic insights for businesses, policymakers and professionals. Real-world examples of significant financial scams in India, such as the Harshad Mehta Scam, PNB Nirav Modi Scam etc. are analysed to highlight the diverse complexities of fraudulent activities. The paper emphasizes the need for forensic accounting in addressing the evolving sophistication of financial crimes and the crucial role it plays in maintaining the integrity of financial systems. Forensic accounting techniques are examined in the context of the Indian scenario. The challenges faced by forensic accountants are identified and discussed. The research concludes with practical suggestions to address these challenges, emphasizing the importance of continuous professional development, regulatory enhancements and collaboration within the forensic accounting industry. The paper contributes for a holistic and adaptive approach to forensic accounting in India to safeguard financial integrity and prevent fraudulent activities in the dynamic economic landscape.

**Keywords:** Financial Fraud, Forensic Accounting, Fraud Detection, India.

##### INTRODUCTION:

Forensic accounting is a specialized field within accounting that involves the examination of financial records to uncover discrepancies, analyse financial data and provide evidence for legal proceedings. The term "forensic" refers to its application in a legal context, where the findings of forensic accountants can be used as evidence in court.

The roots of forensic accounting can be traced back to ancient civilizations, where financial transactions were subject to scrutiny. However, the modern concept of forensic accounting began to take shape in the latter half of the 20th century. The rise of white-collar crimes and corporate scandals in the mid-20th century, such as the Enron scandal, prompted a greater need for specialized financial investigation. Forensic accounting gained recognition as a distinct profession as organizations and governments acknowledged the need for experts who could navigate complex financial situations, uncover fraud, and provide expert testimony in legal proceedings.

Today, forensic accounting has evolved into a crucial component of financial investigation, playing a vital role in fraud detection, dispute resolution and regulatory compliance across various industries and jurisdictions. Its history reflects the on-going adaptation of financial practices and regulations to address the challenges of an ever-changing economic landscape.

Forensic accounting has emerged as a critical tool in the field of financial investigation, particularly in the context of the intricate financial landscape of India. With the increasing sophistication of financial fraud, the role of forensic accountants has become indispensable in detecting, preventing, and mitigating fraudulent activities. This introduction sets the stage for a comprehensive exploration of forensic accounting in the Indian scenario, aiming to shed light on the techniques employed, challenges faced, and the evolving nature of this discipline within the unique socio-economic and legal context of India. As financial systems become more complex, understanding the intricacies of forensic accounting in India becomes imperative for maintaining the integrity of financial transactions and ensuring trust in the financial ecosystem.

Forensic accounting in India operates within the framework of various laws and regulations. The Companies Act, 2013, and the Prevention of Money Laundering Act, 2002, are among the legal instruments that guide the practice. Regulatory bodies like the Institute of Chartered Accountants of India (ICAI) play a significant role in setting standards and guidelines for forensic accounting professionals. The ICAI's Forensic Accounting and Fraud Detection Committee provide a platform for the development and dissemination of expertise in this field.





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# UNRAVELLING THE DYNAMICS: DETERMINANTS OF GROWTH IN INDIA'S INFORMAL SECTOR

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Dr. Mridusmita Das, Assistant Professor, Dean, Assam Rajiv Gandhi University of Co-operative Management

## Abstract

India's informal sector is vast and incredibly diverse, offering both internal and external growth prospects. However, it also grapples with various challenges. This sector plays a pivotal role in job creation and contributes significantly to the nation's gross domestic product, particularly in underdeveloped and developing countries. Given its significance, it is imperative to explore ways to foster its growth and development.

The current study delves into the extensive literature surrounding the informal sector, aiming to pinpoint the key determinants influencing its growth. A systematic review meticulously examined existing research on the determinants of India's informal sector. By employing relevant keywords such as "determinants," "informal sector," and "unorganized sector" in search engines, the research identified eligible articles following strict exclusion criteria. These selected works were then analyzed to unveil the critical factors impacting the informal sector's growth.

The review brought to light several determinants that significantly affect the growth of India's informal sector. Notably, financial considerations emerge as a crucial factor. Access to capital, credit, and financial resources can either catalyze or hinder the expansion of businesses within the informal sector. Human resources also play a pivotal role. A skilled and motivated workforce can drive productivity and innovation, while the lack of access to training and education may constrain growth. Furthermore, marketing strategies and competitive dynamics within the informal sector can significantly influence its development. Effective marketing efforts and the ability to adapt to competition are critical for success.

Thus, the informal sector in India is a complex and dynamic landscape. To nurture its growth, addressing financial, human resource, marketing, and competitive factors is imperative. Understanding these determinants is vital for policymakers, businesses, and researchers seeking to bolster the informal sector's role in India's economic landscape.

**Key words:** Informal Sector, unorganized sector, Determinants of growth.

## Introduction:

The heartbeat of India's economy resonates not only within the boardrooms of multinational corporations or the gleaming spires of the tech industry but also amidst the bustling streets and narrow alleyways of the informal sector. India's informal sector, a complex tapestry of unregulated and often unrecorded economic activities, constitutes a significant and vital component of the nation's economic landscape. It thrives in the shadows, yet it is undeniably the lifeblood of millions, providing employment, goods, and services to an extensive section of the population. The sheer magnitude of the informal sector in India is awe-inspiring. With millions of individuals toiling in diverse occupations, from street vending and agriculture to home-based enterprises and unskilled labour, the informal sector plays a central role in the livelihoods of many. It encompasses the unorganized and unregistered workforce that often operates outside the purview of formal regulations and taxation. Its dynamism, diversity, and adaptability are both remarkable and essential, making it a multifaceted domain worthy of intensive examination.

This article embarks on a journey into the heart of the informal sector in India, striving to unveil the factors that drive its growth and sustenance. It seeks to comprehend the intricate web of determinants that influence the prosperity of the informal sector, from economic and societal factors to government policies and technological advancements. By delving into this labyrinthine world, we aim to shed light

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**Title of the paper:** Resurfacing heat stress phenomena in Indian cities during the post-COVID-19 lockdown period

**Name of the Journal:** Singapore Journal of Topological Geography

**Link for UGC/Scopus/WoS website for the journal:**


<https://www.scopus.com/sourceid/4700152838>

**Link of the Journal:** <https://onlinelibrary.wiley.com/>



doi:10.1111/sjtg.12517

## Resurfacing heat stress phenomena in Indian cities during the post-COVID-19 lockdown period

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This study investigates heat stress in 17 Indian cities during the post-COVID-19 lockdown period. The study compares thermal comfort experienced during the COVID-19 lockdown against that experienced during post-lockdown, which has not been previously studied. The analysis utilizes daily and monthly climate data from 1991 to 2022 obtained from the Langley Research Centre's official website. The net effective temperature (NET) and thermo-hygrometric index (THI) were employed to assess heat stress in cities. The findings indicate a sudden increase in heat stress levels during the post-lockdown period, particularly in cities like Lucknow, Chandigarh, Patna, Kolkata, Ahmadabad, Jodhpur, Guwahati, and Delhi. Moreover, there is a noticeable decline in the number of comfortable days for both THI and NET in certain cities, such as Delhi, Chandigarh, Bhopal, Ahmadabad, and Jodhpur, in 2021 and 2022. This analysis also reveals an overall rise in the number of torrid and very hot days, with significant increases recorded in 2022 compared to 2020. With a few exceptions, most cities show rising trends in THI and NET, causing Indian cities to experience more torrid and very hot months. This study clarifies the effect of the COVID-19 lockdown on bioclimatic comfort and offers important guidance for future studies in this field.

**Keywords:** torrid, comfortable, very hot, THI, NET

**Accepted:** 4 July 2023

### Introduction

Climate change as a result of global warming has become a major source of concern due to its negative effects on a variety of systems (Koteswara Rao *et al.*, 2020). According to the Inter-governmental Panel on Climate Change (IPCC) in its fifth assessment report (AR5), increasing greenhouse gas concentrations are primarily responsible for unusual warming of the earth, resulting in high intensity heat extremes lasting for long periods of time, affecting the working and living environment (Stocker *et al.*, 2013; Menne *et al.*, 2008; Baccini *et al.*, 2008; Meehl & Tebaldi; 2004; Robinson, 2001). The negative effects of climate change and global warming are increasingly being felt in cities. Approximately half of the global population now lives in cities (Mohanta & Sharma, 2017). Growth of population around the world increases the demand for accommodation, food and shelter, which consequently changes land use and land cover as more vegetation cover is replaced with artificial surfaces thus promoting the process of climate change (Igun & Williams 2018; Nzoiwu *et al.* 2017). Rapid land use and land cover dynamics associated with industrialization is hastening the effects of climate change on cities by raising the severity of urban heat island effect and heat stress. When natural surfaces in cities are replaced with impermeable built-up areas, albedo and maximum heat flow are reduced, while heat absorption increases, resulting in warmer urban regions and ensuing urban heat island phenomenon



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**Department:** Geography

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**Title of the paper:** Mapping the heat stress vulnerability landscape of Agartala City, India

**Name of the Journal:** GeoJournal

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## Mapping the heat stress vulnerability landscape of Agartala City, India

Rituraj Neog 

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**Abstract** The study evaluated Spatio-temporal pattern of heat stress (HS) vulnerability in India's Agartala urban region using Composite Z-score method. The experiment combined NDVI (Normalized difference vegetation Index), NDMI (Normalized difference moisture Index), MNDWI (Modified normalized difference water Index), MBUI (Modified Built up index), and LST (Land surface temperature) with gridded population density (1 × 1 km) to estimate HS vulnerability in the Agartala urban region. RSI (Relative Strain Index) was also used to calculate the vulnerability of near-surface HS over different months and seasons of the year. Landsat-8 and Sentinel data from 2022 were collected from earthexplorer.usgs.gov and <https://sentinel.esa.int>, respectively. The population density gridded landscan has been accessed via landScan.org. Similarly, climatic data for RSI estimation is obtained from power.larc.nasa.gov. HS vulnerability was observed in the central region of Agartala, with maximum areal coverage in the October and minimum in the April month. In the October and April month, 15.41 percent and 7.4 percent of urban populations, respectively, are considered vulnerable to very high HS. RSI estimates the maximum number of days under OHR (Overheating Risk) for 50% of the population in April and May with 7 and 2 days, respectively, with no HSR (Heat stroke

risk) months. But an hourly estimate reveals maximum HSR in May followed by April with 111 and 109 h of HSR to all population. The positive correlation between LST and RSI and negative correlation between NDVI and RSI evidencing potential role of LST and NDVI on near surface HS level of Agartala city.

**Keywords** Heat Stress · Vulnerability · RSI · Bioclimatic Comfort and discomfort

### Introduction

Urbanization and urban growth are worldwide phenomena. It is considered to be a natural part of the development process (Henderson, 2002). Urbanization is occurring over different nations of the world with varying degree (Desa, 2014). The rate and degree of urbanization in developing nations are quite greater than in developed nations (Henderson, 2002). Apart from degree and rate, the size of urban areas also varies between developed and developing countries. Cities are relatively larger in developing nations in terms of population size (Jedwab et al., 2021). However, urbanization and urban growth are remarkably modifying the landscape pattern of almost all cities in the world. The change in the landscape pattern can be easily interpreted with the help of land use and land cover dynamics (Dadashpoor & Nateghi, 2017; de Silva et al., 2015). One of the significant

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**DOI/Link of the paper:** 10.26515/rzsi/v123/i1/2023/153208

**Title of the paper:** Recent Benthic foraminiferal biofacies in the Bakkhali region, West Bengal, India

**Name of the Journal:** Records of the Zoological Survey of India

**Link of the Journal:** <https://recordsofzsi.com/>



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## Recent Benthic foraminiferal biofacies in the Bakkhali region, West Bengal, India

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<sup>3</sup>Department of Geology, Gargaon College, Simaluguri, Sivasagar – 785686, Assam, India

### Abstract

Coastal areas are transition zones and hence, are susceptible to dynamic changes. To understand the seasonal changes in benthic foraminiferal distribution, a study based on surface sampling was carried in two distinct sub-environments – intertidal flats (Bakkhali, Fraserganj) and marsh areas (Patibhunia and Henry's Island). Two short cores (~16 cm) were procured to observe the changes in foraminiferal signatures from top sediment surface to down the core. The characteristic foraminiferal population consists of *Ammonia beccarii*, *Ammonia tepida*, *Asterorotalia pulchella*, *Haynesina depressula*, *Haynesina germanica*, *Nonionella labradorica*, *Nonionella turgida*, *Quinqueloculina seminulum*, *Criboelphidium hispidulum*, *Criboelphidium poeynum*, *Trochammina inflata*, *Miliammina* spp., *Haplophragmoides canariensis*, *Haplophragmoides wilberti* and *Ammodiscus evolutus*. The abundance of foraminifera increases from tens to few hundreds and species richness increases from 4 to 8 on an average as we move from the western locations to the eastern locations of the study area. Agglutinated species were dominant in the marsh areas whereas, the intertidal flat consists of calcareous forms. Overall, the diversity of foraminiferal assemblages is poor.

**Keywords:** Bakkhali, Bay of Bengal, Benthic Foraminifera, Intertidal Flats, Marsh

### Introduction

Foraminifera are unicellular protists with a perforated chalky shell through which thin protrusions of the protoplasm extends. They are mostly marine and form thick ocean floor sediments when they die. Foraminifera of the coastal areas are typically benthic which dwell in the bottom sediments. Typical mangrove foraminiferal assemblages help to identify ancient tidal beds. Foraminifera have the advantage of possessing a mineralised test as compared to other microorganisms, which make them important biological proxies that can be used to reconstruct environmental changes (Alve and Murray, 1999). Foraminifera are also helpful in monitoring environmental pollution in coastal areas (Horton and Edwards, 2006).

Bakkhali is a small island situated at the southern portion of the Sunderban landmass. The formation of Bengal basin was related to different global processes like

plate tectonics, breaking of the Gondwana land, closure of Tethys Sea along with the tectonic upliftment of great Himalayas because of Alpine-Himalayan orogenies (Banerjee *et al.* 2012). The Sunderban landmass has a very recent origin (6000–7000-year B.P.). This stretch of coastal landmass displays various geomorphologic features like sand dunes, intertidal sand flats, beach ridges and tidal shoals. Meiobenthos found in the east coast of India have been studied previously by Choudhuri and Choudhuri, 1994; Jayaraju and Reddy, 1995; Kathal, 2002; Hameed and Achyuthan, 2011; Ghosh, 2012; Ghosh *et al.* 2014; Chakraborty and Datta, 2018 and Das *et al.*, 2019. Foraminiferal studies from this area of the Indian subcontinent have received inadequate attention. Some studies on foraminifera from Bakkhali have been done by Sabyasachi *et al.*, 1996; Ghosh *et al.*, 2014 and Das, 2015. The present study focuses on understanding the seasonal distribution pattern of intertidal and marsh foraminifera in the southern part of Sunderbans, West Bengal.

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**Name of the faculty with designation:** Dr. Pobon Gogoi, Associate Professor.

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**Title of the paper:** The political dimension of Social Welfare Schemes of Assam: An analysis

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**JOURNAL OF EMERGING TECHNOLOGIES AND  
INNOVATIVE RESEARCH (JETIR)**

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

## **The political dimension of Social Welfare Schemes of Assam: An analysis**

**Dr. Pobon Kr. Gogoi**  
**Associate Professor**  
**Gargaon College**

### **Abstract:**

Since the formation of the BJP government in the state of Assam, numerous welfare schemes have been implemented to ensure the welfare of the poor people. These welfare schemes have been transmitted through cash, kind, and necessary services. During the last seven years, the government of Assam unleashed huge amounts of money to the beneficiaries from the exchequer. Primarily distributing benefits to the needy is a noble effort by

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**DOI/Link of the paper:** <https://namibian-studies.com/index.php/JNS/article/view/3681>

**Title of the paper:** Nagas: More Autonomy And Less Than Independence

**Name of the Journal:** Journal of Namibian Studies

**Link of the Journal:** <https://namibian-studies.com/>

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## Nagas: More Autonomy And Less Than Independence

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### Abstract:

Northeast India is a multi-ethnic diversified region of India. Since past years the ethnic groups of this struggle for their independence to protect their distinct ethno-cultural identity. Among the various tribes Nagas of Nagaland develop a sense of nationalist consciousness to establish their self-determination and freedom. Due to hegemonic role of the Indian state they have been consistently urging their so called demand of 'Nagalim' or 'Greater Nagaland'. Through a carrot



**Name of the faculty with designation:** Dr. Pobon Gogoi, Associate Professor.

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**Title of the paper:** Ethnic Clashes in Manipur: Conflict against Subaltern Subjugation

**Name of the Journal:** Praxis International Journal of Social Science and Literature

**Link of the Journal:** <https://www.pijssl.com/>



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**Ethnic Clashes in Manipur: Conflict against Subaltern Subjugation**

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**Abstract**

*The Manipur is now in a hotbed of violent ethnic clashes between Meiteis and Kukis. The ethnic clashes begun after the verdict given by Manipur High Court. The honorable court urged the state government to recommend the proposal to the Union Ministry to consider the ST tag to the Meiteis. The All Tribal Student Union Manipur (ATSUM) organized the 'Tribal Solidarity March' on 3rd May to protest against the High Court verdict. Demographically the Meiteis are the majority with 53% population but not considered as native inhabitants. Therefore, they constantly demanded the Schedule Tribe status. But the other tribal communities opposed the inclusion of the Meiteis as tribal or ST status. The state government role was not active to control of the situation.*

**Keywords:** Meiteis, Naga, High Court, Ethnic clashes, Manipur, Schedule Tribe, Tribal status

**Name of the faculty with designation:** Dr. Pobon Gogoi, Associate Professor.

**Department:** Political Science

**DOI/Link of the paper:** <https://rifanalitica.it/index.php/journal/article/view/416>

**Title of the paper:** A Case Study of The Threat to Human Security Posed by The Assam Movement

**Name of the Journal:** Rivista Italiana di Filosofia Analitica Junior

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Vol 14, No. 2 (2023)

## **A Case Study of The Threat to Human Security Posed by The Assam Movement**

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**Dr. Pobon Kr. Gogoi**

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### **Abstract**

Assam movement is an anti-foreigner's movement launched by the dissidence of Assam against the illegal migrants. The illegal migrants are those who comes from prior East Pakistan, now Bangladesh, some from Nepal. There were political, economic and social base of this movement. The agitators demand for 3D's i.e. Detection, Disenfranchisement and Deportation as the people of Assam can protect their cultural identity and demography from the threat of foreign nationals. The subsequent period of the movement was 1979-1985. Geographically, the movement was confined to the Brahmaputra Valley which has been traditional homeland of Asomiyas and the people who were participated in this movement. The movement started in 6<sup>th</sup> November 1979 under the leadership of All Assam Student Union(AASU) and All Assam Gana Sangram Parishad(AAGSU) and officially ended on 15<sup>th</sup> August, 1985 after signing a historic 'ASSAM ACCORD 1985'. Initially, the movement was conducted most disciplined and peaceful manner but the involvement of ethnic tension and anti election seeds had given birth of violence. That violence

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**Title of the paper:** Women empowerment through PRIs: Liberation from poverty and suppression

**Name of the Journal:** Journal of Propulsion Technology

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History Research Journal

ISSN : 0976-5425 (P)

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**WOMEN EMPOWERMENT THROUGH PRIS: LIBERATION FROM POVERTY AND SUPPRESSION**

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**Abstract:**

The Panchayatiraj Institutions (PRIs) are the instrument through which women's empowerment can be ensured. The PRIs are the grassroots administrative mechanism intended for the development of rural areas and their people. The people include both men and women. But whatever the arrangement prevalent in India creates more opportunities for women counterparts living in rural areas. Since the last 75 years of independence, the legislative obligations have initiated different women-friendly processes which assured the enhancement of women's empowerment. Different women-related schemes as well as laws were framed and passed to endorse women's empowerment. Further, women's empowerment is relatively interconnected with the development of the nation. Being an agrarian country, India needs help from almost half of its population to increase agro-based products. It is assumed that if women are empowered then the GDP will increase more. In regards to participation in socio-economic and political fields, it is expected that women will more vibrantly participate in the process and a modern society will be established. Considering all the above elements in mind, the researcher endeavours to analyze the PRIs which will provide opportunities to enhance the empowerment of women. The critical observations, pros and cons, limitations of PRIs, and prospects are the primary concerns of this paper. There are different research studies, journal articles, and books that deal with this subject but nobody has analyzed from 'liberation of women from a poverty and suppression point of view. It will provoke the upcoming researcher to justify the arguments empirically in different states and places of India.

**Keywords:** Panchayatiraj, Women Empowerment, Legal Provisions, Poverty Eradication.

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**Title of the paper:** Reservation Politics in India: An Analysis of the Indian Reservation System

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**Research Paper**

## **Reservation Politics in India: An Analysis of the Indian Reservation System**

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<sup>2</sup> Mr. Himanshu Bora

*PG (MA) in Sociology, Sikkim University*

**ABSTRACT:** The reservation in educational institutions and jobs for SC and ST communities of India initiated by our founding fathers of the Constitution passed 72 years and it is extended to next 2030 years in a periodic interval of 10 years terms. The novel objective was to uplift the underprivileged sections of people by facilitating reserve quota in jobs and education which was later included to OBC people. During this period it was scrutinized by different scholars and policy makers and the question of rationality was evaluated. Some of them opined positively in favour of it while others negatively. Thus this paper is an academic exercise to identify the positive and negative aspects leading to political intervention of reservation. The study concealed within India and debates on reservation system in greater domain of political system is analysed.

**KEYWORDS:** Reservation, politics, meritocracy, caste and underprivileged section, Government.

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[https://www.researchgate.net/publication/376988087\\_PROSPECTS\\_OF\\_REGIONAL\\_POLITICAL\\_PARTIES\\_OF\\_ASSAM\\_IN\\_UPCOMING\\_ELECTIONS](https://www.researchgate.net/publication/376988087_PROSPECTS_OF_REGIONAL_POLITICAL_PARTIES_OF_ASSAM_IN_UPCOMING_ELECTIONS)

**Title of the paper:** Prospects of Regional Political Parties of Assam in upcoming election,

**Name of the Journal:** Rabindra Bharati University Journal of Economics

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Rabindra Bharati University Journal of Economics

ISSN : 0975-802X

**PROSPECTS OF REGIONAL POLITICAL PARTIES OF ASSAM IN UPCOMING ELECTIONS**

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**Abstract:**

The parliamentary election will be held in April 2024 for the formation of the 18<sup>th</sup> Lok Sabha in India. The NDA and INDIA alliance have already started campaigns all over India by adopting different strategies to win the confidence of the electors. The NDA allies consist of 38 national and regional parties and the INDIA alliance of 26 national and regional parties are consisted. In this great ally, the regional parties of Assam excluding AGP (which is the ally of NDA) also started their race with certain activities primarily holding public meetings, enhancing party membership, news hoardings, creating public opinion against the ruling government, news briefing, etc. They are primarily focused on strengthening the party base at the grassroots level. Thus, this paper is an academic exercise to understand primarily the prospects of regional political parties in future elections like the 2024 Parliamentary election and the 2026 Assembly election. In connection with this, the researcher will attempt to evaluate the advantageous and disadvantageous position of the regional parties of Assam excluding AGP.

**KEYWORDS:** Regional Political Parties, Parliamentary Election, Prospects, Advantages and Disadvantages.

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**Department:** Political Science

**DOI/Link of the paper:**

[https://www.researchgate.net/publication/376985835\\_NEW\\_TRENDS\\_OF\\_FEMINIST\\_MOVEMENT\\_IN\\_21ST\\_CENTURY](https://www.researchgate.net/publication/376985835_NEW_TRENDS_OF_FEMINIST_MOVEMENT_IN_21ST_CENTURY)

**Title of the paper:** New Trends of Feminist Movement in 21st Century

**Name of the Journal:** History Research Journal

**Link of the Journal:** <https://www.citefactor.org/journal/index/24703/history-research-journal>

History Research Journal

ISSN : 0976-5425 (P)

Volume: 29, Issue: 06, No.7, November – December : 2023

**NEW TRENDS OF FEMINIST MOVEMENT IN 21<sup>ST</sup> CENTURY**

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**Abstract:**

The trends of feminist movement of the world in the 21<sup>st</sup> century arrived at a new dimension. The feminist movement of the 19<sup>th</sup> and 20<sup>th</sup> centuries addressed some rudimentary as well as semi-advanced issues of patriarchal societies and nations which somewhat attained its goals. The feminist movements started at Western developed countries in the 19<sup>th</sup> century shifted to the developing and underdeveloped Asian and African countries in the 20<sup>th</sup> century focusing on new issues and movements. However, society is in a dynamic process of moving towards a new dimension at this post-modern era, hence, some new issues have mounted in the 21<sup>st</sup> century. Thus, in order to understand the dynamics of the feminist movement, the researchers, academicians, and feminist have tried to understand these issues and trends in new outlooks and orientations. The issues raised by them are so pertinent that need to be studied empirically with scientific temperaments. Further, the feminist has also made some new endeavours to address the newest issues of the women. Thus, this study in an academic exercise to understand the new trend that cropped up in the 21<sup>st</sup> century.

**Key words:** Feminist movement, Patriarchy, Western countries, Trends.



**Name of the faculty with designation:** Dr. Pobon Gogoi, Associate Professor.

**Department:** Political Science

**DOI/Link of the paper:**

[https://www.researchgate.net/publication/376985938\\_EXPLORING\\_THE\\_POTENTIALITY\\_OF\\_WELFARE\\_SCHEMES\\_FOR\\_POLITICAL\\_MILEAGE\\_AND\\_SOCIO-ECONOMIC\\_IMPACT\\_A\\_HYPOTHETICAL\\_ANALYSIS\\_WITH\\_SPECIAL\\_REFERENCE\\_TO\\_ASSAM](https://www.researchgate.net/publication/376985938_EXPLORING_THE_POTENTIALITY_OF_WELFARE_SCHEMES_FOR_POLITICAL_MILEAGE_AND_SOCIO-ECONOMIC_IMPACT_A_HYPOTHETICAL_ANALYSIS_WITH_SPECIAL_REFERENCE_TO_ASSAM)

**Title of the paper:** Exploring the Potentialities of Welfare Schemes for political mileage and socio-economic impact: A hypothetical analysis with special reference to Assam

**Name of the Journal:** Indian Journal of Psychology

**Link of the Journal:** <https://ugccare.unipune.ac.in/Apps1/User/Web/SearchJournal>

Indian Journal of Psychology  
ISSN: 0019-5553

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2023

**EXPLORING THE POTENTIALITY OF WELFARE SCHEMES FOR POLITICAL MILEAGE AND SOCIO-ECONOMIC IMPACT: A HYPOTHETICAL ANALYSIS WITH SPECIAL REFERENCE TO ASSAM**

**Dr. Pobon Kr. Gogoi** Associate Prof. Gargaon College [pobongogoi@gmail.com](mailto:pobongogoi@gmail.com)

**Abstract:**

The government of Assam has introduced several welfare schemes for the welfare of the people of Assam since 2016. These schemes aimed at to give different benefits to the people who are living below the poverty line and socially underprivileged section. The kinds for benefits include cash, kinds, subsidies, and other forms of support including medical care, loan subsidies, health care, insurance, etc. The students, youths, BPL families, women, senior citizens, farmers and peasants, the unemployed etc. are the beneficiaries of the welfare schemes. The offering of benefits is commendable and all-encompassing effort of the government but the political motive is also occupied too. The major political motive is intended to win voter's support during elections. The ruling BJP party in Assam and its alliance partners exploited these initiatives to gain political mileage. Thus, this study is an intellectual exercise to comprehend the political motive of the ruling political party(s) in garnering elector's support. As such, this discussion is hypothetical in nature because an assumption is made to delineate the possible support of the electorates in future elections of Assam. Out of the different factors leading to determine the voting behaviour of the electorates and welfare schemes may become one of them which can shift the mind-set of the voters.

**Key notes:**

Welfare schemes, poor, political, motive, hypothetical, mileage.

**Name of the faculty with designation:** Dr. Pobon Gogoi, Associate Professor.

**Department:** Political Science

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[https://www.researchgate.net/publication/380639074\\_Unveiling\\_the\\_dark\\_truth\\_of\\_human\\_trafficking](https://www.researchgate.net/publication/380639074_Unveiling_the_dark_truth_of_human_trafficking)

**Title of the paper:** Unveiling the Dark Truth: Human Trafficking in India and the Battle for Humanity

**Name of the Journal:** Bharatiya Shiksha Shodh Patrika

**Link of the Journal:** <http://bssslko.org.in/publications-link.html>

### UNVEILING THE DARK TRUTH: HUMAN TRAFFICKING IN INDIA AND THE BATTLE FOR HUMANITY

**Dr. Pobon Kr. Gogoi** Associate Professor Email. [pobongogoi@gmail.com](mailto:pobongogoi@gmail.com) 7002387042

#### **Abstract:**

Human trafficking has become a burning problem in India where thousands of people, particularly girls and women, are severely affected. This is considered to be a heinous crime against humanity where the human flesh is used as a tool of trade, exploitation, molestation, and killing of humanity at large. Various social, economic, and cultural factors like poverty, illiteracy or lack of education, displacement, gender inequality, organized criminal networks, and weak law enforcement mechanisms are the root causes of human trafficking in India. Painstakingly it has paralyzed not only the victims but also the individual, society, and state comprehensively. In India, thousands of girls and women are trafficked every year for intermingling forced labour, sexual exploitation, and organ trade. Nowadays the demand is high all over the world and so it has encouraged the traffickers to engage in this grave act more. The traffickers used mostly the tactics of luring the girls and women to get free education, jobs in metropolitan cities, fake marriage proposals, and assurance of a comfortable life. In most of the cases, the traffickers convinced the parents and their family members that they could help their children with education and job in the future. After eloping the girls are mostly selling in the brothels and rich people's houses for domestic work. According to the World Labour Organisation, it is the most profitable business in the world also mentioned that 20 million people are affected where 55% are women and girls and 26% are children<sup>i</sup>. In India, too, 10 million have the victims of human trafficking since independence. Thus, this study attempts to identify the causes and effects of human trafficking by applying different indicators and variables such as causes and consequences, vulnerable groups, forms and effects, and the role of government, NGOs, individuals, and society.

**Keywords:** Human trafficking, women and girls, poverty, sexual abuse, forced labour, vulnerability.

#### **Introduction:**

Human trafficking is a serious crime as well as a violation of human rights. It is an anti-humanity act seen in almost all around the world. This heinous deed is a dark reality of the world around us and spreads like a plague affecting millions of people every year<sup>ii</sup>. On a similar footing, India being an ancient country with high spiritual values is not immune to this issue. Thousands of girls and women



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## Potential determinants of voting behaviour of the electors of Assam

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### Abstract

The political parties are the backbone of the democratic form of government. The political parties are constituted to capture the power of the state and rule thereof. The composition, nature, and ideology or principle of every party is different but the primary objective is to capture the power of the state is the same. So, in order to capture the power, the political parties initiated different strategies and considered various determinants. The determinants might differ from party to party and place to place. Assam as a state of India is run by a state government following the parliamentary form of government and the party that gets the majority in the Legislative Assembly of Assam is allowed to form the government. Hence, there are many contesting political parties in Assam, and out of that some are national and others

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# Sustainable Development Goals: Realisation in Rural Assam

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**Abstract:** *At the end of the Millennium Development Goals in 2015, the United Nations Organisation launched Sustainable Development Goals with 17 goals, 169 targets, and 304 indicators on 25<sup>th</sup> September 2015 under the official agenda "Transforming our world: The 2030 Agenda for Sustainable Development". The SDGs are comprehensive and broader in the sense that attempt to address all social, economic, and environmental dimensions of sustainable development. The UN member states have voluntarily accepted and adopted the goals and targeted to achieve the goals within a stipulated time. As a member state of UNO, the Government of India has framed the strategy and policies under the Niti.Aayog and asked the state governments to fulfill the goals. As such, the government of Assam as like as other states initiated different benevolent steps to fulfil the objectives of the goals. Out of the 17 goals, goals 1 and 2 related to the eradication of poverty and ending hunger are also addressed by the government of Assam through the Panchayat and Rural Development department in cooperation with other departments. The process started with the development of agriculture, infrastructure, employment, health care, education, women empowerment, rural development, entrepreneurship, and social assistance. Thus, this study is conducted to understand the state government initiatives to eradicate poverty and hunger under SDGs 1 and 2 in Assam.*

**Keywords:** Development goals, Government, Niti.Aayog, Rural Assam, eradicate poverty.



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# Left Political Parties of Assam: Challenges and Prospects

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## **Abstract:**

The left political parties of Assam are playing a vital role in the election politics which have participated in Parliamentary and Assembly elections since independence. During the long journey of election politics of India and Assam, the left parties are passing through a trajectory mode where their support base quite satisfactory up to 1978. Later, the support base is reduced tremendously with decline of vote sharing. Being the ideologically strong political parties, the left have lost its support from the electorates due to certain shortcomings. Thus, this paper is an academic exercise to identify the factors responsible for the chronic decline of left political parties in Assam's electoral politics. Further, this study is intended to identify the prospect of left political parties of Assam in future elections. The prospects leading to revival of left parties of Assam in the future are considered important because of

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**RESEARCH ARTICLE**

**ROLE OF COTTAGE INDUSTRIES IN RURAL LIVELIHOODS**

**Dr. Pobon Kr. Gogoi**  
Gargaon College.

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Challenges, Rural Economy

**Abstract**

Agriculture and traditional handicrafts are deeply ingrained in India's rural terrain, and cottage businesses have emerged as a key component in maintaining rural livelihoods. This abstract explores the complex aspects of the function that cottage industries play in rural India's socio-economic structure. Cottage industries, which are sometimes confused with small-scale businesses, cover a broad range of pursuits, from contemporary pursuits like small-scale manufacturing and internet businesses to traditional handicrafts, handloom weaving, ceramics, and agro-processing. These sectors, which have their roots in rural India's rich cultural legacy, provide major contributions to job creation, income production, and skill development—all of which are critical for reducing poverty. Cottage industries promote inclusive growth by



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## YOUTH UNREST UNLOCKING THROUGH DEMOCRATIC SOCIALIZATION IN NORTHEAST INDIA

Dr. Pobon Kr. Gogoi\*

### ABSTRACT

The disgruntlement among young people is a global problem that is evident in all nations. Young people, who are an essential component of the state and society, express their annoyance by expressing their dissatisfaction with the socio-economic and political developments exist in the nation. They mainly express their dissatisfaction through radical and democratic methods. The democratic approach involves non-violent protests and agitations, whereas the radical approach mostly involves insurgency and extremism. The youth of Northeast India are not an exception to the global and Indian context, as they are engaged in both democratic protest and insurgency. Evidence of democratic movements and insurgencies has largely been visible since the 1960s. As a result, this is a serious topic of discussion, and scholars and academics are working to identify and provide various solutions for the youth unrest in Northeast India. Therefore, the goal of this academic exercise is to determine the best approaches for comprehending the issue. This paper aimed to investigate the content through the process of socialization.

**Keywords :** Northeast India, Youth unrest, Democratic Socialisation, Insurgency, State

**Introduction :**

arises among young people due to their discontent with

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## **A Review of the Protection of Women's Rights: An Indian Perspective**

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### **ABSTRACT**

*Protecting women's rights is predominantly adjudicated within a particular society and state. Society and state entail the laws and legislations for the protection of rights. In India's last 75 years of independence, the Constitutions, laws, and government decisions tended to ensure the rights and privileges of women. Along with the fundamental rights and different articles of the constitution, nineteen laws have been enacted to protect and preserve women's rights. But still, the conditions of the Indian women are in a marginalized position. Over time some new problems and shortcomings cropped up with new vigor and density. Thus, this study is an attempt to analyze them empathically and elaborately with new thoughts and views.*

**Keywords:** Articles, Constitution, Laws, Legislation, Shortcomings, Women's Rights.

### **1. INTRODUCTION**



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## **Politics of Bihu: Interface between culture and politics**

**Pobon Kr. Gogoi  
Upama Saikia**

### **Abstract**

The celebration of Rongali Bihu at the Sarusajai Stadium in Guwahati on April 13 and 14, 2023, was a significant event, marked by the attempt to set a Guinness World Record for the most number of folk dance performances. The Assam Government's goals for this event were multifaceted, and various viewpoints exist regarding its significance. One perspective views the government's involvement in the celebration as a political strategy, particularly by the BJP government, to connect with the cultural roots of Assam, as Bihu is a major cultural festival in the state. The presence of the Prime Minister and the roadshow leading to the Sarusajai Stadium were seen as attempts to garner support for the BJP's political agenda, particularly in light of the upcoming 2024 Lok