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CARMELIGHT

Sponsored by
Indian Council of Social Science Research

Navigating Cross-functional Collaboration for Ecological Security Pattern

ICSSR SPONSORED
INTERNATIONAL CONFERENCE
ON
BIODIVERSITY, CLIMATE CHANGE AND SUSTAINABILITY
17 - 18th January 2025

ANVESHAN

BOOK OF ABSTRACTS



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MESSAGE FROM DIRECTOR



Sr. M. Albina, Director & Secretary MCES

Higher education institutions (HEIs) play a crucial role in promoting environmental sustainability and addressing global challenges. In order to be sustainable, our current wants must be met without endangering the capacity of future generations to satisfy their own. To design systems that are long-lasting and just, it entails striking a balance between environmental, social, and economic aspects. Reducing our carbon footprint, preserving resources, and safeguarding ecosystems are common environmental definitions of it. Fairness, community support, and guaranteeing that everyone has access to opportunities and necessities are all included in the social aspects of it. To ensure economic stability both now and in the future, it is important to design durable and efficient systems. A conference with a sustainability topic has the potential to significantly influence how environmental stewardship and sustainable practices develop in the future. Such a conference, which focuses on academics and students, not only informs but also empowers the upcoming generation of scholars and leaders.

MESSAGE FROM PRINCIPAL



Dr. George Lekha, Principal

Educational Institutions are essential to the sustainability of the environment due to their incorporation of environmental practices and knowledge into their operations, curricula, and community participation, educational institutions are essential to the sustainability of the environment. They influence students, employees, and communities by functioning as centres of learning, creativity, and action on environmental sustainability. Through community involvement, operating procedures, and educational initiatives, they support the development of a sustainable culture that can have a major positive impact on the environment. The conference will serve as a platform to raise awareness among the youth, share knowledge, and build collaborations to safeguard our natural, biodiversity, and heritage sites for future generations, promote Indigenous knowledge and practices for living in harmony with nature, work on conservation strategies and policies, explore partnerships and collaborative initiatives, promote green and sustainable investment models. The conference will explore innovative business models integrating indigenous practices, traditional knowledge systems, and modern technology to address climate change and enhance ecological security.

MESSAGE FROM REGISTRAR



Dr. Suma Singh - Registrar, Academics

The technology driven world of the 21st century is facing its biggest challenge in terms of Climate Change, which has the ability to impact all of mankind and change the trajectory of human history. The need to embrace 'Sustainability' as the mantra across all walks of life from the way we cultivate our food to what we eat, the buildings we construct to modes of transportation, acknowledging the importance of protecting the rich Biodiversity for our own existence to revisiting the rich indigenous knowledge is the need of the hour. The International Conference hosted by MCC sets the platform to engage academicians, researchers and students in meaningful deliberations which would disseminate knowledge about the pathways to Sustainability and also curate executable models for preserving our Biodiversity and address the Climate Crisis. Congratulations to the Organizing Committee for taking forward commitment of our institution to Sustainable Development Goals.

Keynote Address

GOPICHAND KATRAGADDA
Founder & CEO, Myelin Foundry

"I extend my heartfelt congratulations to the organizers of the International Conference on Biodiversity, Climate Change, and Sustainability for choosing such an impactful theme. The breadth of topics underscores the importance of multidisciplinary collaboration in addressing global ecological challenges.

Technology serves as a key enabler in this journey, empowering us with tools to scale solutions, enhance efficiency, and integrate traditional knowledge with modern innovation. India, with its deep-rooted philosophy of frugal living, offers a unique perspective to the global discourse, standing in thoughtful contrast to the abundance-focused paradigms of Silicon Valley. By merging resource-conscious values with technological advancements, we can lead the way in creating a more sustainable and equitable future."

Why Environmental History Matters?

VINITA DAMODARAN
University of Sussex

What is environmental history and why should we do it? Environmental History has been described variously as the interdisciplinary study of the relations of culture, technology and nature through time by historians such as Donald Worster. For Richard Grove it is the historically documented part of the story of the life and death, not of human individuals but of societies and species, in terms of their relationship with the world around them. More recently, there has been a welcome, though late, realization of the importance of environmental history to debates in economic history. This lacuna is being redressed in recent debates in South Asian environmental history, which developed as an offshoot of global environmental history by historians who wanted to quantify the ecological changes accompanying colonial rule in India since the eighteenth century. This presentation focuses on the links between resource extraction and environmental regulation, as well as the impact of extreme climatic events and the climate more generally on land, labour and livelihoods in South Asia from the seventeenth to the twentieth century.

THE CIRCULAR INFRASTRUCTURE IMPERATIVE

MANOJ KUMAR NALLAPANENI
School of Energy and Environment, City University of Hong Kong, Kowloon, Hong Kong

The world is facing some major challenges these days – climate change, dwindling resources, and crumbling infrastructure. And that's really calling for us to rethink how we design, build, and maintain the critical infrastructure that our societies depend on. When you look around the globe, the way countries categorize and prioritize their critical infrastructure sectors can vary a lot. In developed nations like the USA, there are typically 16 critical infrastructure sectors – things like energy, transportation, healthcare, finance and others. Like this in other developed nations like Australia, Canada, and the rich nations in Europe as well as Asia. These are usually big-ticket, sometimes high-tech, and deeply interconnected systems. But in developing countries, critical infrastructure might cover a wider range – basic services like water, food, energy, sanitation, and housing. Access and reliability are still huge hurdles in a lot of these areas. Regardless of where you are – whether in the global south or the global north – the criticalness of infrastructure systems – including energy, transportation, water, waste management, tele communications and others – to the functioning of old and the modern societies (including the outward and upward grown cities) has heightened the need to rethink how the assets in critical infrastructure are planned, designed, operated, and eventually decommissioned. Because, the existing linear infrastructure model, characterized by a take-make-use-throw approach, has become unsustainable due to its significant resource consumption, waste generation, and environmental impacts. Studies have highlighted how the extraction, processing, construction, and disposal of infrastructure assets are major contributors to global greenhouse gas emissions, ecosystem degradation, and resource depletion. In contrast, a circular model of infrastructure approach seeks to design out waste and pollution, keep products and materials in use, and regenerate natural systems. This involves rethinking infrastructure planning, design, financing, and governance to enable the reuse, repair, remanufacturing, and recycling of materials; optimizing resource efficiency; and utilizing nature-based solutions.

As a result, regardless of a country in global south or the global north – the need to shift towards circular critical infrastructure that is sustainable and resilient (includes the accessibility even in the case of disaster) is gaining traction. The time to act is now. If we get this right, critical infrastructure can become the backbone of a thriving, equitable, and future-proof global economy. In this keynote, let us explore how we can totally transform the critical infrastructure by embracing the circular economy principles especially from the circular business models perspective and by tapping into the latest technologies.

Participation and Inclusion in NBS: is it Equitable?

ARVIND LAKSHMISHA
Azim Premji University

The era of Anthropocene, with record-breaking temperatures and intense rainfall and flooding across the globe. These extreme events have amplified both social and economic inequality hampering the achievement of SDGs. Nature-based Solutions (NBS) has gained prominence as a solution to overcome the distributive impacts of climate change as they provide multi-fold and multi-sectoral benefits especially in cities of the global South. Though there is increasing awareness of the importance of NBS for cities, there are concerns regarding the participatory nature and inclusion of local communities and governments while implementing NBS across continents. There is a greater for overcoming structural and institutional barriers to enable empowerment and co-creation of NBS involving local communities. An analysis of cases of NBS across cities in the global South, it can be highlighted that the type of institutional arrangement influences not only the mode of participation but also the goals of NBS, ranging from climate resilience to ecosystem restoration—creating accessible and inclusive public spaces.

Surviving Climate Change: Security, Sovereignty and Strategy

VIVEK N D
University of Hyderabad

Climate change is an existential threat reshaping security, sovereignty and strategy worldwide. From the disappearing mangroves of the Sundarbans to Pacific Island nations facing submersion, millions are displaced, infrastructures strained, and geopolitical tensions escalated. While liberal internationalism urges collective action, neo-classical realism highlights how national interests hinder global cooperation. Efforts like Tuvalu's migration agreements and Bangladesh's adaptation projects offer hope but remain underfunded. To mitigate rising sea levels, cultural loss and conflict, bold strategies integrating local resilience and global action are essential. Humanity must bridge competition and collaboration to combat the escalating crisis, securing a sustainable and just future.

Archiving Climate Change and Environmental Sustainability: Challenges and Solutions

JAYA RAVINDRAN
Milli Archives

It may not be wrong to say that we are part of a country that appreciates visual objects like monuments and old artefacts rather than archival material. Footfall in an exhibition is incomparable to that of an archives Reading Room. Increasing number of museums being established across the country only proves this more than anything else. What remains unknown to most of these visitors is that the captions or the stories about the monuments, artefacts or exhibits are found among the various archival sources lying across the country. While the museums and exhibitions are established and can even change thematically, as per the popular demand or the interest of the Establishment, archives remain the same. The interpretations may change but not the original records.

As an archives professional, it is not difficult to identify the challenges faced by archives and the archivists managing them. Solutions are not difficult if citizens understand that archives hold the information not only of many past socio-political events/ happenings but also about natural resources and disasters across the country and beyond. Each of us are deeply connected to the archival holdings. Exploring various archival sources across the centuries would help us understand about changes in weather / climate patterns within the country and how these changes have affected the socio-economic lives of common citizens but also the overall growth of the country. In-depth perusal of the archival sources would bring out stories of Government actions to address environmental challenges, individual and community efforts to survive and sustainability. But for the archives, all such history, stories will be lost forever. However, it a challenge as often people forget or ignore the precious role archives plays to keep the memories alive. Archives are the custodians of our past history and memory keepers of the documentary heritage of any country. Sustaining an archive through adverse atmosphere (political or economic) is as much a challenge as environmental sustenance.

The speaker will share her experience as an archive professional on these issues with some plausible solutions at creating a healthy archival atmosphere for the country.

People and Spaces

RAMU ARAVINDAN
Landeater Design & Documentation

Ramu Aravindan's presentation will feature a selection of photographs from his documentation of landscapes, objects and spaces across India. Broadly, he's been looking at them as storehouses of culture and human activity. But one of the subtler themes running through them is their transitory nature; the forces environmental or social change surrounding these objects and spaces.

Sustainability in Conservation- Myth or Miracle?

S. GIRIKUMAR
Conservator in Private Practice

Everything in the nature undergoes changes as it ages. These irreversible and undesirable changes, both chemical and physical, are caused by its composition and structure, the materials it is in contact with, prevailing climatic conditions in the surroundings, wear and tear caused by handling etc. A substantial quantity of cultural materials continues to be lost forever because of this. Conservation is an attempt to slow down, arrest and/or reverse these changes as far as possible. However, the conventional methods of conservation are resource intensive and often not sustainable in the long term. This is an attempt to look at the philosophy and mechanism of conservation of cultural materials and some unconventional solutions that are practical and more sustainable.

The Western Ghats: A Biodiversity Hotspot

ARUNDHATI DAS
Wildlife Conservation Society – India

The Western Ghats, one of four global biodiversity hotspots in India, ranks among the world's eight most significant biodiversity hotspots. Older than the Himalayas, this mountain range was accorded World Heritage status by UNESCO in 2012. The region hosts diverse ecosystems, ranging from tropical evergreen rainforests and montane grasslands to Myristica swamps and major riverine ecosystems. Over 325 species of globally threatened flora and fauna are found here, with new species continuing to be discovered. This talk delves into the rich biodiversity of the Western Ghats, explores its diverse habitats, and highlights major conservation challenges. The efforts of WCS-India in conserving the unique biodiversity of this region are also emphasized.

Bio-Cultural Perspectives: The role of Community-Knowledge Systems in Ecological Conservation, with some examples from the Nilgiri Biosphere Reserve (NBR)

FAISAL REHMAN
Keystone Foundation

The knowledge systems of Indigenous-Adivasi Communities have a crucial role in framing debates around ecological and forest conservation issues and practice. Adivasi perspectives and experiences can inform the way in which we approach the primary sites of conservation and ecological revitalization, mostly located in the cultural territories of Indigenous communities. Over the last few years, a few Community-led Initiatives in the Nilgiri Biosphere Reserve have been taking up research into the intangible and material knowledge heritage of the region, known for its rich cultural and biological diversity. Indigenous Cartographies, Sacred Ecologies, Material Cultures, Ethno-Botany, Cultural Expressions and Food Cultures are some of the domains of knowledge being documented and researched through these efforts. These approaches reveal a new way of understanding conservation priorities since they are based on the ways in which Adivasi communities evolved within their micro-ecological contexts. Biocultural perspectives in conservation recognizes the importance of Traditional Cultural Expressions and Ecological Knowledge and emphasizes local ways of knowing. For instance, the need to have healthy forests and ecosystems are mostly always framed in radically different ways by the Indigenous-Adivasi Forest dwelling communities when compared with the predominantly economic frameworks employed by modernized communities or State systems. In Nilambur, Kerala, an Indigenous-Adivasi Research Collective called *'Beesalu'*, identified concerns and emerging issues related to the declining health of their forests through research into the complex community fishing techniques and knowledge about riverine fauna and flora. This is leading to community-led advocacy efforts to bring attention to the alarming changes observed and experienced. Using such examples, this talk will explore the need to bring more focus on Indigenous-Adivasi perspectives in understanding ecology or forest conservation as a priority, and argue for a change in course that conservation discourses need to adapt as an imperative. The talk will also explore an example or two from other regions in India and the world, operating in dissimilar or similar socio-political contexts.

Keywords: Bio-Cultural Protocols, Traditional Cultural Expressions, Traditional Ecological Knowledge, Indigenous-Adivasi Communities

Panel Discussion

Bridging Education and Action: Integrating Climate Knowledge into Practice

SUNAYANA GANGULY- Climate Educators Network
Pallavi Phatak- ASAR
SHREELATA KRISHNAN- School of Policy and Governance
Seetha Ananthasivan-Bhoomi College

As the urgency of the climate crisis intensifies, bridging the gap between education and action becomes paramount. This panel discussion will explore how climate knowledge can be effectively integrated into practice, focusing on teaching methodologies, institutional training, and curriculum design.

Moderated by **Shreelata Krishnan**, Director of the School of Policy and Governance, the discussion brings together an esteemed panel of changemakers: **Sunayana Ganguly** from the Climate Educators Network, **Pallavi Pathak** from ASAR, and **Seetha Ananthasivan** from Bhoomi College. Together, they will examine the intersection of climate science, governance, and policy, framing climate change not merely as a scientific challenge but as a societal one.

The session will delve into critical themes, including the role of governance in climate action, the significance of interdisciplinary and experiential learning, and the ways institutions can nurture a generation of changemakers prepared to address global climate challenges.

Designed for students, faculty, and participants, this engaging conversation aims to inspire action-oriented education and equip individuals with the tools to transform climate knowledge into meaningful change.

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A COMPREHENSIVE STUDY OF HUMAN-WILDLIFE CONFLICT AND BIODIVERSITY IN ASSAM, INDIA

Anagha Rajesh*
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Abstract
Human-Wildlife Conflict (HWC) is the term used to describe unfavourable interactions between people and wild animals that have an adverse effect on both wildlife and their habitats as well as people and their resources. In regions with high biodiversity, conflict between people and wildlife over scarce resources, or HWC, is becoming a bigger problem. In the states of Assam, Karnataka, and Uttarakhand in India, which are all severely impacted by HWC, tigers, leopards, elephants, and monkeys are the most impacted species. Conflicts like livestock theft and crop raiding are common because of habitat degradation, competition for resources, and wildlife behavior. Assam, a state with a variety of habitats and endangered species, often faces disputes due to its widespread forests and locations that are susceptible to flooding. In regions such as Dibru-Saikhowa National Park, wild buffaloes and elephants do considerable damage to crops and other property, often forcing local inhabitants to take defensive measures. On a social, ecological, and psychological level, HWC has significant effects. In the biological sense, habitat degradation and wildlife death disturb biodiversity; the usual outcomes are financial losses, fewer options for subsistence, and rising poverty. Fear and anxiety are among the psychological impacts experienced by the affected groups. Initiatives for mitigation, such as barriers, compensation plans, and community-based wildlife management, have been hindered by a lack of information, inadequate recompense, and inadequate coordination. To address HWC in Assam, a comprehensive plan that includes public awareness campaigns, effective compensation schemes, and policies at the landscape level is required. Finding a balance between the preservation of biodiversity and human well-being is essential for sustainable conflict resolution. This research examines these conflicts in Assam and provides recommendations for more effective mitigating strategies.

Keywords: Human-Wildlife Conflict, biodiversity, Assam, habitat degradation, mitigation strategies.

CONSUMER DEMAND FOR GREEN PRODUCTS & THE ROLE OF GREEN INVESTMENT

Bhargavi Pandurangi[1]*Reetu Deshpande[2]

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Abstract

The growing awareness of environmental challenges has led to a significant shift in consumer behavior, with increasing demand for green products that align with sustainable and ethical values. This paper explores the factors driving consumer demand for green products, including environmental consciousness, social influence, and regulatory pressures. Additionally, it examines the role of green investment in supporting the growth of sustainable businesses and influencing consumer choices. By analyzing the interplay between consumer demand and green investment, the paper highlights how financial markets and corporate strategies are evolving to meet the demands of a more environmentally conscious society. Surveys were given to a representative sample of 300 respondents using stratified random sampling, which ensured representation across a range of demographic categories. The selection of 10 participants for in- depth interviews was done using purposeful sampling, with an emphasis on people with notable experience or insights into consumer behavior and green investments. Descriptive statistics, regression analysis, and factor analysis were used to evaluate quantitative data in order to determine the main elements impacting demand and to summarize customer preferences. Furthermore, a deeper comprehension of the narratives around green investments and their impact on market trends was made possible by thematic and content analyses of the qualitative data. The findings underscore the role of green investments in shaping sustainable consumer behavior & driving market trends toward environmental responsibility.

Keywords: Green Investments, Consumer Demand, Market Trends, Sustainable practices, Environmental Awareness.

EXPLORING THE CIRCULAR ECONOMY: FUTURE INNOVATIONS IN BIODIVERSITY AND SUSTAINABLE CORPORATE GOVERNANCE

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1*

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Abstract

The continuous rise in global consumption underscores the pressing need to transition from a linear to a circular economy. In the context of fulfilling the United Nations' Sustainable Development Goals (SDGs) and the 2030 Agenda, innovation in production and economic practices is crucial. This study examines how circular economy principles align with the SDGs and their potential to address the limitations of the traditional linear model, thereby contributing to achieving sustainability targets. The paper highlights the importance of adopting sustainable economic practices, such as circular production systems and advanced recycling mechanisms, to reduce waste and enhance resource efficiency. It explores the concept of industrial metabolism as a means of controlling waste production. It stresses the role of policy frameworks that promote training and development in support of the circular economy. Additionally, the role of corporate governance is critically examined, demonstrating how effective governance and policymaking can drive the transition to sustainability and foster innovations that benefit both, biodiversity and economic growth. By conducting a comparative analysis of linear and circular economic models, the research aims to demonstrate how circular economy principles can serve as key enablers in achieving the global sustainability targets set for 2030. The paper offers insights into how these principles can be integrated into corporate strategies and policymaking to create a more sustainable future.

Keywords: Circular economy, SDG's, Economic Growth, Corporate Governance, Innovation

LOST AT SEA: THE DECLINE OF KHARVI TRADITIONAL FISHING TECHNIQUES AND ITS IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT GOALS (SDGs)

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Abstract
The present study, titled "Lost at Sea: The Decline of Kharvi Traditional Fishing Techniques and Its Implication for Sustainable Development Goals SDGs," attempts to explore the wide- ranging impacts that modernization and socio-economic pressures have on traditional fishing methods and indigenous knowledge systems followed by the Kharvi community, a coastal caste in India traditionally engaged in fishing. The present paper attempts to examine how economic compulsions, changing ecological conditions, and caste-related anxieties are driving the erosion of traditional cultural practices, using the Kharvi village of Akhada in Goa as a case study. In this respect, this qualitative research shall be based on fieldwork using ethnographic methodology, semi-structured interviews, and analyzing historical documents to understand the dynamics at play. The findings are expected to reveal significant insights into the erosion of cultural heritage and its implications for sustainable resource management, particularly in relation to SDG 14 (Life Below Water) and SDG 15 (Life on Land). The research also will evaluate how traditional practices embolden contemporary sustainability efforts through Sustainable Development Goal 12 (Responsible Consumption and Production) and Sustainable Development Goal 10 (Reduced Inequalities). This study aims to contribute valuable insights into the preservation of traditional knowledge and the intersection of cultural and environmental sustainability within the context of global development goals.

Keywords: Kharvi community, traditional fishing, indigenous knowledge, caste issues, SDGs.

THE IMAPCT OF AMPHIBIAN EXTINCTION ON HUMAN WELLBEING AND ECOLOGICAL BALANCE

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Abstract

Biodiversity is the diversity of species, ecosystems, and genetic resources and is essential to the health of the world and its people. It preserves the natural equilibrium and vital ecological services necessary for human survival. This paper examines the relationship between amphibians and environmental health, focusing on the ways that a decline in amphibian biodiversity jeopardizes human health, food security and ecological balance. Amphibians have a crucial part in biodiversity as they are a key part of both aquatic and terrestrial communities. They play a vital role in maintaining stability in the ecosystem due to their distinctive role as both prey and predator in food webs. This research explores the domino effects of amphibian extinction due to their immense contribution to nutrient cycling, aquatic health and pest control. By analyzing case studies, this research aims to shed light on the nexus between amphibian survival and human welfare highlighting the need for conservation efforts. In conclusion, the decline of amphibian species is causing environmental damage that often goes unnoticed unlike the extinction of apex predators. While they are excellent bioindicators in the ecosystem due to their complex life cycle. Effective conservation strategies are essential to protect these species who hold a pivotal position in the food chain, thereby affecting the life and livelihoods of all living beings. This paper argues that maintaining a check on the rapid extinction of amphibians and their habitats is essential for human survival and the future prosperity of all life on earth.

Keywords: Food security, amphibian extinction, ecological balance, bioindicators, conservation efforts.

URBAN NATURE: DECIPHERING ECOLOGICAL UNDERCURRENTS IN MCEWAN'S FICTION

Shani K. Meeran*

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Abstract

The research paper delves into the nuanced representation of urban ecology within Ian McEwan's novels *The Child in Time* (1987), *Saturday* (2005), *Solar* (2010), and *The Children Act* (2014) through an ecocritical perspective. Despite not being explicitly ecological, these works are argued to possess underlying ecological themes that illuminate nature-based solutions for urban sustainability. By examining the subtle integration of nature within urban settings in McEwan's narratives, the research highlights how literature can influence human experiences and promote a sustainable urban ethos. Utilizing textual analysis and drawing from ecocriticism, urban studies, and ecopsychology, the paper offers a multidisciplinary examination of urban ecology as portrayed in McEwan's fiction. The analysis focuses on the interaction between human and non-human characters, urban landscapes, and natural elements to reveal an implicit ecological consciousness. This consciousness, the study suggests, reflects, and encourages nature-based approaches to addressing urban environmental challenges. It posits that literary works like McEwan's can inspire urban planners, policymakers, and communities to adopt ecological perspectives in urban development and management. By recognizing and interpreting ecological themes in urban narratives, the paper argues for the potential of literature to provide insights into the complex relationship between nature and cities. It emphasizes the importance of incorporating cultural and psychological dimensions in implementing nature-based solutions for urban sustainability. Ultimately, the research advocates for an integrated approach to urban sustainability that embraces the arts and humanities, aiming to foster resilient, ecologically harmonious urban futures

Keywords: Urban Ecology, Ecocriticism, Cityscape, Ecopsychology

INTEGRATING PERMACULTURE DESIGNS FOR ECOLOGICAL RESILIENCE: PATHWAYS TO A SUSTAINABLE FUTURE

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Abstract

The intensifying environmental challenges of the twenty first century claim innovative and integrative approaches to ensure ecological resilience and sustainable development. This paper explores the role of permaculture designs in fostering interdisciplinary partnerships to address ecological crises, focusing on building a sustainable future through green and sustainable representations. With its principles rooted in ecosystem resilience and self-sufficiency, permaculture offers a holistic background for environmental scientists, policymakers, urban planners and communities. This study highlights how permaculture design augments biodiversity conservation, promotes sustainable practices and restores degraded ecosystems. It also investigates the social impact of integrating permaculture into community driven projects, demonstrating its ability to empower local populations in environmental stewardship. Further, this paper scrutinizes the economic implications of green investments, illustrating how financial support for permaculture-based initiatives can drive long-term ecological stability. Through an inclusive review of case studies and theoretical models, this paper advocates for a shift towards ecological design systems that harmonize human activity with nature. Eventually, it positions permaculture as a pivotal strategy in addressing global sustainability challenges and reinforcing ecological security across multiple sectors.

Key Words: Permaculture design, ecological resilience, sustainable development, biodiversity conservation, green investments

E-GOVERNANCE AND CARBON EMISSION: AN EMPIRICAL ENQUIRY IS E-GOVERNANCE AT A MACRO LEVEL MAKING ECONOMIC ACTIVITY GREENER?

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Abstract

The importance of Information and Communication Technologies (ICTs) cannot be overstated, impacting virtually every aspect of our lives and shaping the modern world profoundly. Implementing ICTs in government entities has a multiplicative effect, as they are ubiquitous entities present in nearly every facet of our lives, playing a crucial role in shaping societies and economies. This empirical study focuses on identifying the proof for the hypothesis, E-governance has a positive effect on environmental sustainability performance of nations through the above three branches, at macro level, using samples of developed and developing countries. The analysis will try to fill the gap of limited empirical studies that analyze the strategy (e-governance) and the outcome (environmental sustainability). The study utilizes balanced panel data of 44 and 33 countries, developing and developed countries respectively, for the time range of 16 years (2000 - 2015). With observable variables, like percentage of population with internet access, control on corruption, etc., including imputed E-governance indicator, latent variables (in short E-gov) are constructed to represent the E-governance level in a country. With E-gov as an independent variable, along with other control variables, like GDP growth rate, percentage of fossil fuel reliance, etc., and CO_2 emissions as the dependent variable (proxy variable for countries' environmental sustainability level), the relationship is identified by leveraging the GMM estimation approach. The results for developing and developed countries indicate the E-gov had an insignificant relationship with CO_2 emissions level. Indicating the incomplete and incubation state of ICTs in government entities at a macro level. However, numerous studies have highlighted the negative relationship of corruption and Environmental sustainability, which is observed to be mitigated with Egov. This line of interaction falls in only one of the possible branches, resource management branch, through which E-governance can reduce environmental degradation. Indicating the potential for effective policies and implementation of E-governance through other two branches.

Keywords: E-Governance, ICTs, Environmental Sustainability, Digital dividends, Digitalization, Efficacy.

FROM ANTHROPOCENE TO CAPITALOCENE: CONTESTING THE NORMATIVE PATTERNS OF CLIMATE CHANGE DISCOURSES

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Abstract
The Anthropocene epoch has necessitated a need for inculcating the concepts of Environmental Humanities in the cultural consciousness of the post-millennial generation. The term 'Anthropocene' itself has been problematized by later theorists, who argue that this term attributes the responsibility of climate change solely to humans (a term which is itself defined through exclusion rather than inclusion) which is a debatable idea. Critically analyzing the Anthropocene also includes the examining the socio-economic divisions and the power structures which vilify the indigenous communities, women and other marginalized sections who are, in reality, at the receiving end of ecological and climactic violence. This paper titled 'From Anthropocene to Capitalocene: Contesting the Normative Patterns of Climate Change Discourses' problematizes the idea of Anthropocene and asserts the need to inscribe the concept of Capitalocene in addressing the issues with regard to climate change in precarious lives reported in the narratives about Mundakkai in Wayanad.

Keywords: Anthropocene, Capitalocene, Climate change, Indigenous, Postcolonialism, Feminism

ASSESSING THE STATE OF AND THE NEED FOR "GREEN INVESTMENT" IN SUSTAINABLE WASTE MANAGEMENT IN BENGALURU

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Abstract
While there are a lot of problems under sustainability that require large amounts of investment, one central issue is efficient waste management. Efficient waste management is a critical component of sustainable development, requiring significant investment and collaboration among government bodies, private investors, and research institutions. The serious consequences of improper waste disposal are land, water, and air pollution, spreading diseases, diminishing living conditions, lack of sustainable living, increased carbon emissions, and more. Green investment instruments are proposed as an effective means to enhance public participation in sustainability initiatives. The active involvement of the public is crucial in ensuring the success of waste management initiatives. Education is required on the importance of green investments, the available pathways and instruments of investing, and proper waste collection and disposal techniques. The information about the processes used for waste management is collected from the state government websites. This study highlights the necessity of shifting public perception and fostering behavioral change regarding waste management practice and try to elaborate on the waste disposal process in Bengaluru and its limitations. The fact that the waste is being segregated from the house itself is a good start. Still, the process is long, and every step should be micromanaged to prevent any mistakes that would cause any of the problems mentioned above from taking place. The paper will also discusses existing investment opportunities and necessary policy changes to improve waste management. Despite advancements in waste disposal practices, significant challenges persist in waste collection, transportation, and disposal, underscoring the need for effective policy implementation to achieve sustainable outcomes.

Keywords: Green investment, waste disposal, public participation, investment instruments, policy changes, implementation of policies.

CSR AND SUSTAINABILITY ADOPTION BY MNC's IN INDIA

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Abstract

The study aims to highlight the sustainable practices and CSR adoption by various MNCs in India. The study examines the specific areas in which companies are focusing on sustainability, examines the motivations for adopting corporate social responsibility (CSR), and examines both internal and external drivers, including regulatory requirements, stakeholder expectations, and the pursuit of competitive advantage. It also analyses trends and patterns in CSR activities and details how these practices are integrated into overall corporate strategy. Additionally, the study examines government CSR spending across various sectors, providing insight into regional differences and industry priorities. By examining case studies and data from a variety of states and industries, this study explains the distribution of CSR investments and their impact on communities. This analysis provides a detailed understanding of how CSR initiatives contribute to socioeconomic development at the local level. By combining knowledge of CSR practices and country-level cost structures, this study provides a comprehensive overview of sustainable business practices in India. The results are expected to highlight the importance of strategic investments in CSR to address regional challenges and promote inclusive growth. This study contributes to the broader discussion on corporate sustainability by highlighting the synergies between CSR activities, local development goals, and corporate goals.

Keywords: MNCs, sustainability, corporate social responsibility (CSR), socioeconomic development, local development goals, corporate goals.

DECARBONISING THE ELECTRICITY SECTOR: STRATEGIES FOR A ZERO-CARBON FUTURE

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Abstract

Carbon has inherently a dual impact as a component of human metabolic waste and a contributor to environmental degradation, leading to harmful consequences for both human health and the ecosystem when its concentrations surpass optimal levels, whether internally or externally. The idea of net zero-carbon electricity has been generated from this idea of human acknowledgement to the past atrocities, intolerance enduring the hardships of the present environmental backlashes and anticipating the impending havocs. Fossil fuel combustion releases around 21.3 billion metric tons of CO_2 annually (2020). The eradication of carbon fuel as a source of electricity (decarbonization) with alternate renewable source of energy like wind, solar, tidal, geothermal energy is the need of the hour. This research investigation elucidates the efficacy of a multifaceted approach, incorporating policy incentives, technological advancements, and infrastructure investments, in achieving a zero-carbon electricity sector by 2050. The study identifies five critical components: Rapid scaling of renewable energy deployment like India's Solar Mission: Increased solar capacity from 2.6 GW to 30 GW in 5 years (2015-2020), Augmentation of energy storage and grid flexibility like Tesla's Hornsdale Power Reserve which is a 129 MWh lithium-ion battery storage project. Implementation of carbon pricing and emissions trading regimes Promotion of demand-side management and energy efficiency measures. Facilitation of international cooperation and knowledge sharing. The supply of electricity generated from fossil fuels should be limited in recognition of their irreplaceable role, similar to the inherent dependence of aircraft only on liquid fuel, given that advanced technologies for alternative renewable energy sources have not yet been developed to replicate their functionality. Similarly, and gradually, the demand for carbon fuels should be brought down till it reaches the net zero.

Keywords: Decarbonization, renewable energy, policy incentives, energy storage, grid flexibility, carbon pricing, energy efficiency, knowledge sharing, sustainable energy

ENVISAGING THE CONSEQUENCES OF CLIMATE CHANGE THROUGH *MIGRATIONS* BY CHARLOTTE MCCONAGHY

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Abstract

The paper explores the novel *Migrations* by Charlotte McConaghy and tries to expose the relation between flora, fauna and the humans. It examines the interdependency between these three entities and the consequences of a crisis on one of these is shared by all. Through the journey of Franny, McConaghy points out that it is still not too late and that the world still has hope. The novelist uses the symbolism of the arctic terns and their relationship to Franny to signify the positive interplay between Nature and human beings. The detrimental effects of the fishing industry on the planet, and the complex relationships between the members of the community as seen through the dynamic between Franny and Captain Ennis along with other crew members, become a crucial reflection of the relationship between Man and Nature and highlights the loss of a sense of home, as seen in the state of the ecosystem presented in the text. The paper will conduct a literary analysis of the novel on these lines so as to create a three-dimensional understanding of an ecological crisis presented in Literature.

Keywords: Migration, climate change, ecological grief, displacement, species extinction

ASSESSING CLIMATE-INDUCED VARIATIONS IN WATER QUALITY AND HEAVY METAL BIOACCUMULATION IN BANGALORE'S COMMERCIALLY FISHED LAKES: A COMPREHENSIVE ANALYSIS

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Abstract

This investigation elucidates the implications of climatic alterations on integral components of select lake ecosystems in Bangalore, India. Morphometric indices and Geo-coordinate-specific climatic data of lakes from 2001–2022 are visualized to statistically determine the potential impact of climate change on water quality (WQ). Principal Component Analysis (PCA) and Factor Analysis (FA) are performed on compatible climatic and WQ parameters, specifying the increasing order of significance of those indices (sodium percentage, bicarbonate concentration, total dissolved solids, ammoniacal nitrogen content, chemicaloxygen demand, etc.) that contribute to the PC1 variance of 99.87%. Subsequently, WQ is scrutinized for a multitude of parameters, including 29 physico- chemical, 6 biological, and inorganic micropollutant indices, expressing their statistical significance and mutual influences. Heavy metal analysis of Hg, Cd, Zn, Pb and Cu in water and sediments is undertaken to ascertain the bioaccumulation factors (BAFs) in the muscle, skin, gills, kidney, and liver tissues of three predominantly consumed lentic fish species: *Oreochromis niloticus, Labeo rohita, and Catla catla* (n=80). Comparative analyses of the results reveal that among all tissues analyzed, the liver tissues in *L. rohita*, from Lake Sarakki, accumulated Hg at a concentration exceeding FAO's Maximum Residue Limit of heavy metals in fish and fishery products. To summarize, this study integrates the climate change realm to identify key factors that may need close monitoring to preserve the lakes' deteriorating health and addresses gaps in literature on heavy metal content in over-exploited but under-researched lakes of Bangalore and its fish fauna.

Keywords: Climate Change, Lake Ecosystem, Heavy Metal Pollution, Lentic Fish Fauna, Water Quality.

SYNTHETIC BIOLOGY FOR CONSERVATION - A PROMISE OR PERIL?

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Abstract

The rapidly booming discipline of synthetic biology makes it possible to engineer new biological systems. The prospective uses of this biotechnology branch in various industries, such as agriculture, healthcare, and conservation biology, have attracted much attention. This technology opens exciting possibilities for species survival, such as creating disease-resistant individuals like the American chestnut trees and restoring degraded ecosystems using engineered bacteria for pollution cleanup. Furthermore, synthetic biology creates opportunities for the potential reintroduction of extinct species using artificial proxies. However, this potent tool is not without its difficulties. There can be unpredictable results in releasing Genetically Modified Organisms (GMOs) into natural habitats, upsetting complete ecosystems, and the emergence of deadly diseases. And we need to carefully evaluate the ethical ramifications of playing "God" and controlling life. Finally, developing and regulating these technologies necessitates international collaboration and clear guidelines to ensure responsible use. This paper primarily aims to explore the potential of synthetic biology in conservation, highlighting the risks and the benefits. Secondly, to explore the questions that need to be addressed to ensure a balanced approach - maximizing the positive impact on conservation while minimizing potential harm.

Keywords: American chestnut trees, synthetic biology in conservation, highlighting the risks and the benefits, balanced approach.

FROM HUNTERS TO GUARDIANS: HOW KHONOMA BECAME INDIA'S FIRST GREEN VILLAGE

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Abstract

This study provides insight into how Khonoma, India's first green village, located in Nagaland, has become a model of environmental conservation by transforming its traditional hunting community into committed conservationists. Historically, the Angami Naga tribe, which inhabits the village, practiced hunting as a cultural norm. However, a deep respect for their natural surroundings inspired the villagers to shift from hunting to preservation. This transformation led to the development of eco-tourism and sustainable farming practices, including organic agriculture, forest conservation, and a hunting ban that protects endangered species like the Blyth's Tragopan. Central to these efforts is the Khonoma Nature Conservation and Tragopan Sanctuary (KNCTS), which preserves biodiversity and attracts eco-tourists eager to experience the unique cultural and environmental heritage of Nagaland. This study will utilize secondary data to analyze Khonoma's journey demonstrates how traditional knowledge, when combined with modern conservation principles, can lead to sustainable development. The village's successful integration of cultural heritage with contemporary sustainability practices is evident in its embrace of eco-friendly living. By banning hunting and focusing on eco-tourism, the community has converted former hunters into stewards of nature, safeguarding biodiversity while providing an enriching experience for visitors. Khonoma's example offers valuable insights into how traditional practices can be harmonized with modern conservation strategies, making it a compelling case study for other communities seeking to balance cultural preservation with ecological sustainability. Through this study, Khonoma's model provides a guide for sustainable development that can be adapted globally.

Keywords: Khonoma, Angami Naga tribe, environmental conservation, sustainable farming, organic agriculture, cultural heritage

RESILIENT FARMING: BOOSTING CROP YIELDS WITH CLIMATE - SMART AGRICULTURE

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Abstract

Climate change poses significant challenges to agriculture, disrupting weather patterns, reducing water availability, and threatening crop yields. As a result, farmers are increasingly facing the need to adapt their practices to sustain agricultural productivity. Climate-Smart Agriculture (CSA) has emerged as a crucial strategy, promoting practices that enhance resilience, mitigate the effects of climate change, and improve agricultural yields. CSA encompasses various approaches, including water, nutrient, and knowledge-smart practices, which help farmers adapt to changing environmental conditions. This study examines the relationship between CSA adoption and agricultural productivity, comparing high adopters of CSA practices with low adopters. The high adoption group demonstrates greater human capital, with 52.2% having completed higher secondary education and 34.8% having attended university. They also possess extensive farming experience, with many reporting over 30 years of involvement in agriculture and 2 to 5 family members working on the farm. High adopters show strong social integration with 91.3% influenced by organizations, Krishi Mitra, and fellow farmers in their decision to adopt CSA practices. However, both groups have equal access to irrigation resources and extension centers. In terms of crop yield, 30.4% of high adopters achieve 30-39 quintals per acre, while most low adopters report yields between 20-29 quintals per acre. High adopters employ a range of CSA practices, favoring water-smart practices, such as sprinklers, and nutrient-smart practices including organic and green manure and weather and knowledge-smart practices. Conversely, low adopters on the other hand focus more knowledge-smart practices like improved seed varieties and adjusting planting dates. Key barriers to CSA adoption include a lack of information for low adopters and a lack of institutional support for high adopters. The findings highlight the significant role of CSA practices in enhancing agricultural resilience and productivity amid climate change.

Keywords: Climate Change, Agricultural productivity, Climate Smart Agriculture, Climate Smart Practices, Adaptation, Resilience

FROM DEGRADATION TO RECOVERY: WAYANAD'S CRISIS AND A STUDY ON GLOBAL APPROACHES TO SUSTAINABLE TOURISM

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Abstract

Eco-tourism and responsible development have been the focal point of sustainable growth in environmental hotspots like that of the western ghats. The recent case of Wayand landslides has sparked discussions about the impact of commodification of ecological sensitive areas into a procapitalist bulk for tourist consumption. In 2011, the Gadgil Committee designated 64% of the Western Ghats as an Ecologically Sensitive Zone (ESZ), recommending stringent measures to preserve its rich biodiversity. However, this report faced opposition and was effectively overridden by the formation of the Kasturirangan Committee in 2012, which reduced the ESZ coverage to 37%, softening the original restrictions. Subsequently, in 2014, the Kerala government further diluted these terms by establishing the Oommen V. Oommen Committee, which relaxed several of the regulatory recommendations made by the Kasturirangan Committee. This flexibility led to several anthropogenic activities that severely disrupted the balance of flora, fauna, and overall biodiversity in the region, leading to environmental degradation. This degradation, combined with deforestation, quarrying, mining and unregulated development, has significantly increased the area's vulnerability to natural disasters, such as landslides. From encroaching forest lands to increasing human animal conflicts, addressing fragile ecology is an immediate concern and requires government intervention through regulations. This research seeks to explore the underlying causes and consequences of unsustainable environmental practices by using Wayanad as a case study and aims to examine sustainable tourism and conservation models that garner public support, drawing on successful global examples such as the eco-tourism model of Thenmala village in Kerala, which emphasizes a balance between environmental preservation and community involvement. By investigating these approaches, the study will highlight effective strategies for achieving both ecological resilience and economic viability.

Keywords: Eco-tourism, procapitalist, economic viability, sustainable models, ecological resilience, responsible development

EXAMINING KARNATAKA AND ITS COMMITMENT TO CLEAN ENERGY AND GREEN HYDROGEN

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Abstract

Academic attention to smart cities and evergreen development is rapidly flourishing. The aim of sustainable smart cities is to associate itself with safe inclusive city growth a massive urbanization while withholding the sanctity of a decent quality of life alongside coexistence with nature. It also ensures a clean and sustainable environment and application of 'Smart' Solutions with Smart collaborations. Under the leadership of Prime Minister Narendra Modi, the government of India launched its flagship program, 'Smart Cities' on 25th June 2015. As part of the program, keeping SDG 8 in mind, the government decided to develop 100 Smart Cities by 2024. The global energy sector is rapidly evolving due to the pressing need to combat climate change and cut greenhouse gas emissions. In this scenario, hydrogen is becoming increasingly important as a clean and sustainable energy source. Green hydrogen stands out for its ability to significantly reduce carbon emissions across multiple sectors, such as industry, transportation, and power generation. This makes green hydrogen a pivotal element in the drive towards a more environmentally friendly and sustainable energy system. Karnataka is set to be a major driver in India's low-cost clean energy transformation, while ranking second in green hydrogen production and with the highest wind energy potential in the country. However, there is little literature on how Karnataka is balancing its economic goals with clean energy transition. This paper will focus on Karnataka's clean energy policy and measures adopted by the state inclusive of the green hydrogen methodologies, where Karnataka's forward-thinking strategy on green hydrogen highlights its commitment to environmental sustainability and establishes it as a leading force in the green hydrogen sector. This approach fosters innovation, stimulates economic growth, and contributes to a cleaner energy future.

Keywords: Smart' Solutions with Smart collaborations**,** Green hydrogen stands, Karnataka's clean energy policy

THE NEO-MYTHOLOGIZATION OF SUNDARBANS: PROBLEMATIZING ECOTOURISM AND THE ELITIST REPRESENTATIONS OF SUNDARBANS IN POPULAR MEDIA

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Abstract

The Sundarbans, located in the Brahmaputra, Ganges and Meghna delta regions, have long been a site of fascination, conflicts and mythological significance (Rakshit). Home to the estuarine crocodile, the Indian python, the great Bengal tiger, 260 bird species, and over 4.5 million people, these low-lying islands are gaining popularity daily as attractive tourist spots for both local and international explorers ("The Sundarbans"). With the number of footfalls the place sees throughout the year, the old myths surrounding it have continuously been rewritten, thereby giving rise to forms of neo-mythologism that are becoming a popular way to represent the delta region. A UNESCO site since 1987, the islands, in keeping with the changing socio-political dynamics of the century, keep changing their physical size and shape too on a regular basis due to the constantly shifting paths of the rivers surrounding them. With Amitav Ghosh's *The Hungry Tide* (2004), the islands became visible to the global audience. Paradoxically, visibility comes at a cost when the so-called natural wonder becomes a site for multiple carefully constructed narratives on popular media that are often far removed from reality. This paper deals with how the massification of popular media contributed a fair deal in stereotyping Sundarbans and culturally appropriating it in a manner that does not always represent the ground reality the local inhabitants face. Focusing on the representations of Sundarbans in popular media, this article argues how contemporary popular media sites often function as a medium to regulate the land as a pristine, mythical destination, thereby espousing an elitist narrative of ecotourism.

Keywords: neo-mythologism, Sundarbans, delta, popular media, elitist, ecotourism**.**

COMMUNITY BASED-ECO TOURISM PRACTICES - A COMPREHENSIVE STUDY OF SIKKIM'S SUSTAINABLE TOURISM MODEL

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Abstract

Community-based eco-tourism (CBET) has emerged as a crucial strategy in sustainable tourism development, particularly in ecologically sensitive and marginalized regions. It focusses a strong emphasis on community empowerment, environmental preservation, and local business development. Distinguished from conventional tourism by its focus on minimizing and mitigating negative impacts on natural and cultural environments, CBET offersa multifaceted approach towards achieving ecological and social goals. This paper explores Sikkim's community-based eco-tourism model as an innovative and successful example of biodiversity protection, emphasizing the active involvement of local communities in sustainable tourism practices. Sikkim, known as "The Land of Mystic Splendour," boasts unique biodiversity and cultural heritage. As the first Indian state to adopt an eco-tourism policy, Sikkim has aligned tourism with resource conservation, cultural revival, and economic diversification. Its mountainous terrain, including Mount Kanchenjunga, and rich biodiversity of Rhododendrons, Orchids, birds, and butterflies, make it a prime eco-tourism destination. Areas such as Gangtok, Lachen, Lachung, Yumthang Valley, Pelling, and Dzongu exemplify the integration of community participation in managing natural resources. Through the analysis of secondary data from government reports, academic literature, and case studies, this paper assesses the socio-economic and environmental impacts of community- based eco-tourism in Sikkim. While the benefits of eco-tourism include biodiversity conservation, cultural revival, and income generation for local communities, the paper also addresses the challenges Sikkim faces, such as limited infrastructure, inadequate government support in terms of loans and subsidies, and threats to indigenous cultures. It also highlights the importance of community ownership and participation in creating sustainable tourism practices that align economic development with environmental stewardship.

Keywords: Community Based eco-tourism, Sikkim, Cultural heritage, biodiversity, local community.

ASSESSING THE IMPACT OF URBAN HEAT ISLANDS IN BENGALURU VIA PYTHON PREDICTIVE MODELLING: GREEN INFRASTRUCTURE AS A MITIGATION STRATEGY

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Abstract

Bengaluru, a rapidly urbanizing metropolis, faces growing challenges from Urban Heat Islands (UHIs). The study aims to develop predictive methodology using QGIS and Python to estimate changes in Land Cover (LC) and corresponding Land Surface Temperature (LST). It highlights the effectiveness of Python's predictive model over conventional tools like ENVI-met and Ray- Man, which are expensive and time-consuming, suitable mainly for small-scale, micro-climate analysis. The study involves two modelling techniques: (a) Python Predictive Model and (b) Scenario- Based Prediction. Historical trends indicate that green cover in 2004, 2014, and 2024 was 65.52%, 55.60%, and 50.39%, with corresponding average LSTs of 31.24°C, 32.98°C, and 33.58°C. Built-up areas increased from 17.97% to 37.44%, with LSTs rising from 33.24°C to 36.10°C during the same period. Model (a) predicts a further decline in green cover to 42.04% and 34.47% by 2034 and 2044, with LSTs rising to 34.94°C and 36.11°C, respectively. Built-up areas are projected to increase to 47.55% by 2034, with an LST of 37.64°C and 57.29% by 2044, with LST of 39.07°C. Model (b) explores alternative scenarios, suggesting that maintaining green cover at 55% could lower LSTs to 33.86°C i.e., 2.25 °C lower in vegetated areas and 2.46°C lower in built-up areas by 2044. In conclusion, the historic trends forecast a concerning rise in LST due to diminishing green spaces. However, scenario-based predictions offer a more positive outlook, demonstrating that strategic land use planning can significantly mitigate UHI effects. Our paper also explores the socio-economic impacts of Green Infrastructure and various initiatives aimed at mitigating UHIs.

Keywords: Urban Heat Islands (UHIs), Land Surface Temperature (LST), Land Cover (LC), Green Infrastructure (GI), QGIS.

BREATHING INEQUALITY: HOW ENVIRONMENT AND SOCIOECONOMICS SHAPE HOSPITAL VISITS FOR LUNG DISEASE PATIENTS IN INDIA

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Abstract

The Global Disease Burden Study conducted in India in 2024 highlighted the increasing inequalities that exist in treating non-communicable diseases such as lung diseases. While studies have been conducted on the sociodemographic factors associated with inpatient visits among patients with lung disease, the role of pollution and other environmental factors is often overlooked. This study analysed the factors associated with inpatient visits among patients with lung disease in India and examined their potential implications. We used LASI Wave 1 (2017-21) data for the analysis and adapted the Andersen Model of Healthcare Utilization as the theoretical framework. Owing to the presence of overdispersion in the data, a quasi-Poisson regression model was used for analysis. The odds of higher inpatient visits were estimated using the incidence rate ratio (IRR), which was calculated after exponentiating the quasi-Poisson coefficients. The incidence of inpatient visits decreased with age (IRR: 0.95); however, patients diagnosed at a later stage were more likely to spend more nights at the hospital (IRR: 1.04). Male patients (IRR: 0.535), those with higher wealth (IRR: 1.06), government insurance (IRR: 1.55), indoor air pollution (IRR: 2.03), and consulting doctors (IRR: 17.96) had a higher incidence of IP visits than their counterparts. Our study found that inpatient visits were significantly associated with factors such as sex, wealth, insurance type, and environmental conditions. The impact of wealth and government insurance on healthcare utilization highlights the need for more equitable healthcare policies. These findings provide valuable insights for policymakers and healthcare providers in developing targeted interventions, potentially reducing the burden of lung diseases, and improving health outcomes across diverse populations in India.

Keywords: Air Pollution, Lung diseases, Inpatient Visits, Quasi-Poisson Regression, LAS

GREEN INVESTMENT UNDER THE CONCEPT OF GREEN BANKING PROMOTE THE SUSTAINABLE PRACTICES –FEASIBILITY AND ITS CHALLENGES – A COMPREHENSIVE STUDY

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Abstract

The concept of Green Banking introduction gave opportunities for introducing the green concept in many diversified manner, one the diversification is Green Investment for sustainable development practices. Does the concept is used in appropriately according to the market environment? The study tries to identify the feasibility and challenges confronted to promote sustainable practices through Green Investment under the concept of Green Banking. The comprehensive study undertakes to collect both primary and secondary. The sampling technique shall be judgmental sampling and convenient sampling. The literature reviews will focus on 'Green investment' Green Banking' 'sustainable practices' 'feasibility' and 'its challenges'. The findings of the study may identify the sustainable practices by the promotional concept of Green Investment of Green Banking. The respondents will share their feasibilities on green investment and the challenges will be considered. The challenges for the investors towards Green Investment can be mitigated through following appropriate strategies and norms or guidelines frame by the SEBI and by the investment bankers. The concept of Greenwashing should be avoided or removed.

Keywords: Green Investment, Green Banking, Promote Sustainable Practices, Feasibility Challenges, Greenwashing

HOME, ART, AND COMMUNITY: PEER ART PRACTICE OUTDOORS AS A REFLECTIVE TOOL FOR ALIENATED URBAN YOUTH

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Abstract

This study investigates the potential of reflective peer arts practice in fostering a sense of community and clarifying concepts of home for urban youth aged 18-24. Employing Performance as Research and Qualitative methods, the scholars develop and conduct workshops, responses to which reveal an engagement with social connection, home, nostalgia, environment and meaning making through the arts. The study develops a replicable methodology for conducting peer art workshops in outdoor environments.

Keywords: Peer-art Practice, Outdoor Art Practice, Home, Alienation, Urban Alienated Youth

THE IMPACT OF GENDER EQUALITY ON BIODIVERSITY PROTECTION: BRIDGING THE GAP FOR CLIMATE CHANGE RESILIENCE

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Abstract

Gender equality has emerged as a crucial factor in enhancing biodiversity protection and climate change resilience. This article explores the multifaceted impact of gender equality on conservation efforts and its potential to bridge critical gaps in climate adaptation strategies. Traditionally, biodiversity conservation has been predominantly driven by male-dominated institutions and approaches, often overlooking the unique perspectives and contributions of women. However, recent studies highlight that gender-inclusive practices lead to more effective and sustainable conservation outcomes. Incorporating gender equality into biodiversity protection efforts can significantly enhance climate resilience. Women, especially in rural and indigenous communities, often possess deep knowledge of local ecosystems and traditional practices that contribute to effective conservation. By integrating women's perspectives and leadership into environmental policies and decision-making processes, conservation initiatives benefit from a more holistic understanding of ecological challenges and solutions. Gender equality also promotes diverse and innovative approaches to managing natural resources, leading to improved outcomes for both biodiversity and climate adaptation. Furthermore, gender-sensitive policies address the different vulnerabilities and adaptive capacities of men and women in the face of climate change. Women are disproportionately affected by environmental degradation and climate impacts due to their roles in agriculture, water management and household responsibilities. Gender-responsive strategies that consider these differences ensure that both men and women can contribute to and benefit from conservation efforts, thereby strengthening overall climate resilience. This article synthesizes evidence from various case studies and research to demonstrate how gender equality can bridge gaps in current biodiversity protection and climate adaptation strategies. It advocates for policies that promote gender inclusivity as a pathway to more effective and equitable environmental stewardship, ultimately enhancing resilience to climate change and safeguarding biodiversity for future generations.

Keywords: Gender Equality, Biodiversity Protection, Climate Change Resilience, Sustainable Development, Rural Communities, Indigenous Knowledge, Environmental Policy

TOWARDS A SUSTAINABLE WAYANAD: MITIGATING THE DESTRUCTIVE EFFECTS OF CLIMATE ACTION

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Abstract

Wayanad has always been a land of serenity and menace, yet in this instance, the menacing side of the nature proved to be overpowering and unforgiving by the recent landslide on 30th July 2024. The continuous landslides occurring every decade caused the same level of destruction yet with different reasons, alerting us to take the necessary actions as quick as possible for the future. The landslide led to vanishing of Chooralmala and Mundakkai villages and without having any clue people leaving their soul. It is high time to take action so that the consequences of climate change don't reach us or any part of the world in future. This research helps to investigate the unintended cause of human made climate change on the ecological balance of Wayanad, a biodiverse region in the Western Ghats. The adverse effect on the flora and fauna, also on the indigenous community's livelihood, fertility of soil and on the economy also. The study explores how government policy, reforestation drives, and green tourism projects have helped to mitigate the problem atleast to some extent in this region. Using a mixed methods approach the research analyzes environmental data, satellite images and policy reviews to assess the effectiveness of climate initiatives in Wayanad. The findings highlight the critical need for a more region-specific, community-driven approach to sustainable development. The paper concludes with recommendations for adaptive climate strategies and solution that balance ecological preservation with socio-economic stability, offering a model for achieving a sustainable and safe life in Wayanad while contributing to global climate goals.

Keywords: Wayanad landslide, Solution, Climate change, Ecological balance

NEXUS BETWEEN MACRO-ECONOMIC VARIABLES AND FOOD SECURITY IN INDIA: EVIDENCE FROM TIME SERIES ANALYSIS

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Abstract

The Public Distribution System (PDS) in India plays a crucial role in ensuring food security for economically disadvantaged sections of society by providing subsidized food through a network of fair price shops across the country. This study, based on secondary data from the Union Budget, the Ministry of Consumer Affairs, Food and Public Distribution, the Ministry of Finance, the World Bank, and Indian statistics, employs descriptive research and time series analysis to explore the relationship between macroeconomic variables and the PDS. The findings reveal a negative correlation between Gross Domestic Product (GDP) and the Below Poverty Line (BPL) ration card population, indicating that as GDP declines, the number of individuals reliant on BPL ration cards increases. Forecasts suggest that, over the next decade (2021-2030), GDP will continue to decline, while the unemployment rate, BPL ration card distribution, government expenditure on the PDS, food subsidies, and the stock of food grains and storage capacity in the Food Corporation of India (FCI) will increase. However, the anticipated growth in food grain stocks at the FCI is expected to exceed the growth in storage capacity, which could compromise the system's ability to adequately support the increasing BPL population and address food insecurity, raising concerns about the long-term sustainability of the Public Food Distribution System in India.

Keywords: Food Corporation of India (FCI), Below Poverty Line (BPL), Gross Domestic Product (GDP), food subsidy, National Food Security Act, Priority Household (PHH).

CLIMATE ANXIETY AND HUMAN IDENTITY: A STUDY OF AMITAV GHOSH'S THE HUNGRY TIDE

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Abstract:
This paper explores the relationship between climate anxiety and human identity in Amitav Ghosh's The Hungry Tide, focusing on the role of communities in fostering sustainable. Environments and habitats. Through a close reading of the novel, the research highlights how communities, particularly those living in vulnerable ecological zones, navigate their identity in response to the climate crisis. It examines how the collective experiences of environmental uncertainty, displacement, and survival contribute to the formation of a resilient, place-based identity, which in turn shapes their interactions with nature. The paper uses the theoretical framework of Timothy Morton's hyper objects and hypo subjects to look at climate change and communities in The Hungry Tide. In this book, the floods and calamities can be understood as hyper objects that change the lives of humans, leading to anxiety and uncertainty. In the face of these hyper objects, humans negotiate with their identity as a hyper subject. The paper also integrates David Abram's Eco phenomenological approach to understand the formation of new identity in response to climate change. By emphasizing the interdependence of human and non-human worlds, this research underscores the potential of community-based efforts to foster sustainable interactions with ecosystems, offering a hopeful perspective on mitigating the effects of the climate crisis through communal identity and action.

Keywords - The Hungry Tide, Climate change, communities, climate anxiety, human identity.

LIFE CHANGES: MAINSTREAMING SUSTAINABLE LIFESTYLES USING TRADITIONAL PRACTICES AND KNOWLEDGE

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Abstract:
The LiFE (Lifestyle for Environment) mission, recently announced by the Prime Minister, emphasizes the need for both individual and collective efforts to enhance environmental sustainability. This initiative advocates for minor lifestyle modifications that promote a pro-environmental ethos. Traditional knowledge systems offer valuable insights into sustainable daily practices, which are often overshadowed by modern methods. This research paper explores the potential of neo-traditional practices-modern adaptations of traditional methods—by assessing their feasibility, adoption, and benefits compared to contemporary techniques like cloud seeding. While such modern geoengineering methods have often exacerbated ecological problems, traditional practices may offer more sustainable solutions. This study investigates the scope for integrating traditional and neo-traditional approaches to address climate change and conserve biodiversity. It incorporates interviews and insights in traditional knowledge and examines the synergy between established practices and contemporary innovations.

Keywords: LiFe Mission, Sustainable lifestyle, neo-traditional practices

AI INTEGRATION IN HEALTHCARE: ADDRESSING SOCIO-ECONOMIC CHALLENGES AND LABOUR MARKET ADAPTATION IN BENGALURU

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Abstract

Artificial Intelligence (AI) is transforming industries, with healthcare showing significant potential. This study examines AI integration in healthcare within a labour-surplus economy, focusing on Bengaluru, India. It evaluates AI's capacity to enhance healthcare delivery while addressing socio-economic challenges like the digital divide, labour market polarization, and an informal workforce. The research assesses Bengaluru's readiness for AI adoption, considering its technological infrastructure and labour constraints. Key questions explore AI's impact on rural healthcare, labour adaptability, ethical concerns, and the policies needed to bridge gaps in digital and healthcare access. Methodology involves qualitative and quantitative analyses, using tools like affinity diagrams, Pareto charts, PRISMA, and Rough Stepwise Weight Assessment Ratio Analysis (R-SWARA) to prioritize key factors. Insights from focus groups with healthcare professionals and AI experts highlight practical challenges and opportunities. Findings show that AI can significantly improve healthcare, especially in underserved areas, but may also increase workforce displacement and socio-economic inequality if not managed carefully. The study advocates for an ethical, inclusive AI approach to reduce inequalities and promote sustainable healthcare. This research provides actionable insights for policymakers, industry leaders, and healthcare professionals, promoting data-driven decisions that balance AI integration with labour markets, reduce the digital divide, and ensure equitable healthcare outcomes.

Keywords: Artificial Intelligence, digital divide, labour intensive, polarization, digital healthcare, Bengaluru.

ENVIRONMENT AND SUSTAINABILITY: WOMEN'S LEADERSHIP IN CONSERVATION EFFORTS IN KERALA

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Abstract

Women have a unique connection with the environment and are often the first to address the environmental crisis. They are a crucial part of ecological movements worldwide, contributing significantly as both active participants and influential leaders. Over the years, Kerala, the southwest state in India, has seen a series of significant movements for protecting the environment, with women playing a crucial and active role. This paper explores how women leaders have shaped environmental activism and navigated obstacles to advance ecological and social justice goals. Also, the paper uncovers the women's leadership in environmental conservation efforts in Kerala. It analyses how ecofeminism's perspective intersects with women's leadership in environmental movements. The paper is a qualitative study that analyses women's leadership in Kerala's environmental movements based on in-depth interviews with members of Haritha Karuma Sena and secondary resources such as journal articles, books, news articles, interviews, and other internet sources. It considers ecological movements in Kerala, from the Silent Valley Movement to the 'Haritha Keralam Mission'. The study also explores the challenges faced bywomen who are active in community-based work, especially through 'Kudumbasree' and 'Haritha Keralam Mission'. It is observed that women's involvement in environmental movements is crucial as they are the most affected by environmental degradation The study reveals the significant role of women in conservation and sustainability efforts both in association with the government and in voicing opposition to state policies that aredetrimental to the environment.

Keywords: Ecofeminism, Environmental movements, Women Leadership, Environmentconservation, Ecological and social justice.

GREEN TECHNOLOGY AND INNOVATION: DRIVING SUSTAINABLE DEVELOPMENT AND ECONOMIC GROWTH

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Abstract

Green technology and innovation play a pivotal role in advancing sustainable development amid escalating environmental challenges. This study explores how green technologies can act as transformative agents by reducing environmental impacts while promoting economic growth. By analyzing recent advancements in renewable energy, waste management, and resource efficiency, the research highlights how innovative solutions lower carbon footprints and foster a circular economy, ensuring resource sustainability. Case studies and technological trends are reviewed to emphasize the importance of intersectoral collaboration and policy support in accelerating green technology adoption. The findings provide actionable insights for stakeholders aiming to integrate sustainability into technological development, supporting long-term ecological balance

Keywords: green technology, sustainability, ecological, environmental economics.

THE ECONOMICS OF GENDER EQUALITY IN CLIMATE ADAPTATION: POLICY PATHWAYS TO RESILIENCE

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Abstract

The proposed paper explores the economic dimensions of gender-responsive climate adaptation, highlighting how socioeconomic disparities disproportionately affect women's ability to adapt toclimate change. It focuses on the intersection of gender, economics, politics, and policy analysis to propose strategies that enhance women's economic empowerment in climate adaptation efforts. It draws on data from microfinance programs, social protection systems, and informal labor markets and interviews, alongside studies on inclusivity. The study seeks to assert how economic disparities, such as income inequality and limited accessto finance, restrict women's capacity to adapt to climate change. Microfinance, social protection,and participatory governance are identified as effective tools for empowering women economically. The research also highlights how integrating gender into national and internationalclimate policies improves adaptation outcomes and contributes to broader economic growth. The paper attempts to comprehensively link economic theories with gender-responsive climate adaptation. It offers a unique interdisciplinary framework that combines insights from several narratives, emphasizing the role of women's economic empowerment in climate resilience. The findings can have significant policy implications, suggesting that governments and international organizations must prioritize gender equality in economic policies to ensure sustainable and inclusive climate adaptation strategies.

Keywords: Gender-responsive adaptation, Economic empowerment, social protection, Inclusivegovernance, Feminist economics

SUSTAINABLE PRACTICES OF THE MISHING TRIBE OF ASSAM AND THEIR INFLUENCE ON MAINSTREAM ENVIRONMENTAL STRATEGIES

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Abstract

The Mishing tribe, who lives beside the Brahmaputra River, engages in a custom of floodplain farming that is flexible enough to adjust to the river's unpredictable flow. To take full advantage of the rich silt that the river deposits, they employ floating farms and other environmentally friendly methods. In order to deal with the frequent floods, they build stilt houses, which serve as a model for sustainable living in flood-prone areas. The houses made of bamboo stilts known as 'chang ghar' are elevated in structure. This protects them from annual flooding. Practices like jhum cultivation avoid the loss of crops during flood. As a pathway to achieve long term goal, they put to use the 'agroforestry' system where trees and crops are grown simultaneously. They are induced with the practice of modern methodologies like early warningof floods and taking preventative measures, adopting flood resisting crop varieties, using community-based disaster management systems. Assam and other flood-prone areas arebeginning to recognize the Mishing community's flood-resistant farming and building practices as successful examples for flood management. The research article aims to delve into the sustainability practices of the Mishing community with a detailed historical background with its rich socio-cultural foregrounding which would pave the way for a clarity of understanding. It also observes the challenges of climatic changes that the community is combating and how they are making way through their traditional practices without the intervention of the broder society. Rather the former's minimalist usage serves to cast an influence on the mainstream environmental strategies. The article also discusses to suggest how the assimilation process of the tradition and the modern would aspirefor a better sustainable development plan.

Keywords: Assimilation, Environmental friendly, Flood, Mishing Tribe, Sustainable practices

TRADITIONAL KNOWLEDGE AND SUSTAINABLE TOURISM

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Abstract

Sustainability is a major concern of the world today. Traditional knowledge can contribute to eco-friendly development practices. Tourism is a dynamic service industry established all around the world. Tourist destinations lie mostly in proximity with nature. 'Eco-tourism' can be promoted with help of traditional knowledge of indigenous people dwelling in the particular area. Waste disposal and land degradation are some of the emerging threats in tourism industry. This article dwells into the possibility of promotion of eco-friendly tourism with help of skilled tribal inhabitants. Tribal people are unique with their vast traditional knowledge and distinguished skills. Efficient policy implications can result forward linkages on sustainable tourism as well as upliftment of indigenous groups. The skilled inhabitants are capable to make almost every object for the sustenance of life like basketry, mat making, pottery, handicrafts, iron tools, bamboo utensils, bamboo carriers etc. These handmade products are an alternate for plastic bags, plates, cups and other disposable utensils. Tourist destinations can be changed into no plastic zones by reviving the traditional skilled laborers of the specific area. NSSO data is used to identify the traditional laborers in the nation.

Keywords: Sustainability, Indigenous craft labour, eco-tourism, development

INDUSTRY 4.0 AND 5.0: TECHNOLOGY FOR HUMAN-CENTRIC DEVELOPMENT IN BENGALURU'S CORPORATE SECTOR

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Abstract

The transition from Industry 4.0 to the emerging Industry 5.0 framework marks a significant technological shift, driven by successive industrial revolutions that have redefined business operations. This research examines the technological exploitation and transformation from Industry 4.0 to 5.0, focusing on their human-cantered development within business corporations in Bangalore, Karnataka. Industry 4.0 introduced radical technologies such as artificial intelligence (AI), the Internet of Things (IoT), big data, and digital twins, fundamentally altering company processes by enhancing productivity, automation, and decision-making quality. In contrast, Industry 5.0 emphasizes human-machine collaboration, sustainability, customization, and social impact. This study addresses two key research questions: (1) How have industrial revolutions influenced technological advancements in business organizations? (2) How are current technological transitions toward Industry 5.0 impacting businesses? Data collected from corporate employees is analyzed using the fuzzy Best-Worst Method (FBWM), a multiple criteria decision-making technique that prioritizes the significance and effectiveness of various technological applications at the enterprise level. The research objectives include analyzing the technologies underpinning Industry 4.0 and 5.0, particularly AI, IoT, Big Data, and Digital Twins, and their operationalization in business contexts. This paper provides empirical insights into the future direction of corporate innovation and technological integration within Bangalore, highlighting the socio-economic impacts of this transition. The human-centric approach of Industry 5.0 aligns technological evolution with improved corporate responsibility, personalization, and social welfare.

Keywords: Corporate Sector, AI, IoT, Big Data, and Digital Twins

EXTRACTIVE CAPITALISM AND INEQUITIES IN HEALTH AND CLIMATE: INDIA'S STRUGGLE WITHIN THE GLOBAL NORTH-SOUTH DIVIDE

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Abstract

This study investigates the impact of extractive capitalism on health and climate change inequities in India, highlighting how this economic system exacerbates disparities between the Global North and Global South. The research explores how capitalist-driven policies shape unequal health outcomes and contribute to climate-related vulnerabilities. The study critically analyses recent literature and case studies that focus on India's socioeconomic structure, influenced by colonial legacies and neoliberal reforms. It examines how extractive capitalism has deepened inequalities in access to healthcare, while also exacerbating environmental degradation and climate change impacts. Extractive capitalism in India has perpetuated significant health and climate change inequities. The Global North's exploitative economic practices have led to disproportionate climate-related consequences for India, worsening extreme weather events and public health crises. Additionally, capitalist interests in privatising healthcare have contributed to a dual system, where wealthier populations access high-quality services, while marginalised communities rely on underfunded public systems. This dynamic reflects broader Global North-South inequalities. This study connects the concepts of extractive capitalism with health and climate inequities in India, offering a critical lens on the global imbalance between the North and South. It highlights how global capitalist structures, historically rooted in colonialism, continue to shape adverse outcomes in climate and health, particularly for the Global South. The study calls for global health and climate policies that address the inequalities perpetuated by extractive capitalism. It emphasises the importance of reforming governance structures to ensure equitable access to healthcare and climate resilience in India and the broader Global South.

Keywords: Extractive capitalism, health inequities, climate change, India, Global North-South

SAFRANIN DYE ABSORPTION BY DRIED THALLUS OF *ATRICHUM SUBSERRATUM* (HARV. & HOOK. F.) MITT

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Abstract

The present study was to evaluate safranin dye absorption by dried thallus of *Atrichum subserratum. A. subserratum* was collected from Munnar. The thallus was dried. Six concentrations of safranin were made – 0.005 %, 0.01 %, 0.015 %, 0.02 %, 0.025 % and 0.03 %. 100 ml of each solution was taken in 250 ml beaker. Three gram of dried thallus was immersed in the solutions and absorbance of the solutions were read at 520 nm at 10 minutes interval for 1 hr. Afterwards, the thallus was taken out and the same initial amount of safranin was added to each beaker, stirred well and the same thalli were immersed in the corresponding beakers. This is the second cycle of bio absorption and again absorbance was measured *A. subserratum* could absorb safranin from water. With 60 minutes of treatment, 3 g thallus could absorb 24.3 mg safranin from the 30 mg/100 ml solution. In the second cycle, the thallus absorbed 19.2 mg safranin from the 0.03 % dye solution. Methanol can be used to desorb the dye from thallus. Dried biomass of bryophytes have the ability to absorb dye. Kerala being rich in biodiversity, an attempt was made to study the absorption of safranin by *A. subserratum*. High degree of bio absorption was noted with dried thallus of *A. subserratum*. This indicates the effective utilization of dried thallus of bryophyte in removing dye from spent over waters of textile industries.

Key words: Bryophyte, *Atrichum subserratum,* bio absorption, safranin

NEXUS BETWEEN WHALES, CLIMATE CHANGE AND CO_2 EMISSIONS

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Abstract

Oceans are undoubtedly our largest allies against climate change, as they absorb about twenty five percent of carbon dioxide as a result of human activities. Whales, the largest known mammal to man, also happen to actively contribute to the reduction of carbon dioxide in the environment. They are our leading accomplices in combating climate change, providing nutrients through the 'whale pump' and their fecal plumes, rich in iron and nitrogen, serving as a major source of nutrition to microscopic planktons, which in turn are consumed by krills. More krills feed on more planktons, which brings about an increased absorption of carbon dioxide from the environment, contributing to climate control. The paper aims to peruse a ligature between whale population and CO_2 emissions. Conservation of the population can mitigate the climate change, which increases the carbon capture and in reverse, how the climate change affects the economy as a whole. Review on how whale watching tourism industries create an economic incentive, valued at nearly $2.9 billion globally while trying to steer clear of the threats posed on the cetaceans and abetting the conservation of the population, is also taken into account. Additionally, creation of an employment window for the coastal community and to provide an educational view on the sustainability and preservation of the population is also achieved.

Keywords: Whale pump, microscopic planktons, Carbon dioxide absorption, CO_2 emission, Climate change, Sustainability.

AXENIC CULTURE AND ANTIBACTERIAL ACTIVITY OF *BRYUM ARGENTEUM* HEDW. COLLECTED FROM IDUKKI DISTRICT, KERALA

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Abstract

The present study was to evaluate antibacterial activity of *Bryum argenteum* and to develop axenic culture of the taxa. *B. argenteum* was collected from Munnar. Soxhlet extraction of the plant was carried out in petroleum ether, ethyl acetate, methanol and water and extracts were tested against three bacterial species (*Bacillus subtilis*, *Xanthomonas campestris* and *Listeria monocytogenes*). For axenic culture, ripe capsules were surface sterilized in sodium hypochlorite (0.5 % to 1.5 %) for 5-10 minutes. Spores were inoculated in half strength Knop's medium (1 % agar) and incubated at 25°C, 16 hr light and 8 hr dark. Ethyl acetate extract showed antibacterial effect against all the tested bacterial strains, with maximum zone of inhibition of 22 mm against *X. campestris* and *L. monocytogenes.* Axenic culture of *Bryum argenteum* was successful with the optimum sterilization condition of 1% sodium hypochlorite for 5 minutes. Studies on antibacterial activity and axenic culture of bryophytes are very scanty in the country. The present study has evaluated the antibacterial activity of the plant found in Kerala and was successful in developing axenic culture. With microbes gaining antibiotic resistance, search for novel antibacterial compounds is gaining momentum. Thus, antibacterials from less explored taxa like bryophyte can be novel to science. Axenic plant cultivation can be scaled up to be used for isolation of compound without disturbing natural population. The axenic plant can be a source material in ecosystem restoration.

Key words: Bryophyte, *Bryum argenteum,* antimicrobial activity, Axenic culture

ECOLOGICAL CONCERNS OF BACKWATER TOURISM IN KERALA

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Abstract

Kerala is known for its riches in natural beauty. The tiny state at the southern side of Indian Peninsula is blessed with beaches, hill stations and backwaters. The increase in the number of tourists visiting Kerala every year is an indication of its worldwide popularity. Kuttanad and its backwaters play a vital role in attracting tourists from other parts of the country and from abroad. Kumarakom is one of the well-known tourist spots which draw large number of domestic and foreign tourists. At the same time, there are certain ecological issues people of these areas face because of the excessive tourist activities. For the last few decades, Kumarakom and other parts of Kuttanad are facing a lot of challenges because of the different ways in which the local people, the tourists and the owners of the houseboats and resorts dispose waste. The same has been a concern for a long time and there were resolutions and laws to foster the natural beauty by not littering. But the problems prevailed. This paper is an attempt to analyze the attitude of local people towards ecotourism and the efforts by the tourists to make responsible tourism a reality. Using a questionnaire, data were collected from over 100 respondents (56 local people and 48 tourists). Statistical analysis was performed to assess the situation.

Keywords: Responsible tourism, ecotourism, backwaters of Kerala

IMPACT OF ECONOMIC GROWTH AND ENVIRONMENTAL DEGRADATION ON MILLET PRODUCTION IN SELECTED BRICS NATIONS

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Abstract

Agricultural productivity is directly threatened by increasing global warming and changing climatic conditions, which impact food security by hampering crop production. In this context, it has become essential to grow crops like millet that are more resilient to climate change. With its high nutritional content, ability to adapt to dry and semi-arid regions, and low water requirement, millet is a suitable alternative to other crops for maintaining food security. The BRICS nations—which account for a sizable share of the world's population and economic activity—play a crucial role in global agriculture as well as in millet production. However, the existing studies mainly focus on CO_2 emissions and how they impact millet production in developing countries; a comprehensive analysis focusing on the nexus between economic growth and environmental degradation on millet production, especially with regards to BRICS nations, is lacking. Thus, the purpose of the study is to evaluate how land utilization pattern (Ar), CO_2 emission, employment in agriculture (Emp), economic growth (GDP), fertilizer utilization (Fer), and the and the Food Price Index (FPI) interact to influence millet production (MP) in selected BRICS nations such as China, Ethiopia, India, and Russia. The research uses the FMOLS model as a baseline model for analyzing the panel data ranging from 1991-2020. Using the dynamic ordinary least squares (DOLS) method, the validity of the FMOLS result has been checked. Further, the Dumitresecu and Hurlin (2012) method was used for bidirectional Granger causality. Results show that rising GDP, fertilizer utilization, and CO^2 emissions eventually reduce the millet output, whereas increasing the FPI and area under millet boost the millet production in these nations in the long run. According to the Dumitrescu and Hurlin test (2012) conducted, there exists a bidirectional causality between FPI and MP, and FPI and GDP. The findings emphasize how crucial it is to implement green agro-technologies in millet cultivation in order to increase its output and lower CO_2 emissions.

Keywords: Millet production, BRICS nation, FPI, FMOLS

GETTING BACK TO THE BASICS, ATTAINING SUSTAINABILITY THROUGH RELIGIOUS ETHOS

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Abstract

Current scholarship on climate change, global warming, sustainability has and continue to warn us that, the direction various nations have engaged under the pretext of so-called development have done more damage than good to the environment. This is no new fact that, unprecedented urbanization, harsher over exploitation of natural resources has affected the quality of beings and throwing humanity into disorder. The present study makes a critical analysis on how Buddhist Economics can be employed in restoring the ecology. The study banks on the theoretical framework informed by the concept of *Posthumanism,* that acknowledges; agency is only distributed to humans through forces beyond their control and they entirely are entangled and dependent on nature and the environment. And in the process, the paper sets out to provide a swift rundown on the present state of ecological crisis and the immoral ecological practices across the globe and its antagonistic history. To find a riposte is to start anew a vital dialogue about embracing the 'Buddhist Economics' as labelled and advocated by E.F. Schumacher in his work, Small is Beautiful. 2500 year before the Kyoto Protocol, Buddha discoursed on how to live a harmonious life encompassing compassion and right livelihood. As Buddha goes on to state, "you are your own master", the *Shakyamuni* just shows us the path, *Dhammapada*. For the Global South there is no better time than now, to take a cognizance, appreciate, and realize and the nuggets offered by the wisdom informed by Buddhist Economics and promptly adopt the philosophy for a noble cause – to safeguard the *Gaia.* Even the 'Superman' as envisaged of Friedrich Nietzsche cannot bail us out of this ecological misadventure. We require to turn over an environmental leaf by embracing and practising Buddhist Economics not just in addressing the climate emergency that is staring humanity right in the face but also the larger ecological crisis. If not the best, human perhaps is the only keeper of the future of a sustainable world.

Keywords: Buddhist Economics, Posthumanism, Global South, E.F. Schumacher

CULTURAL CONSERVATION: THE ROLE OF TRADITIONAL KNOWLEDGE IN PRESERVING BIODIVERSITY BY KHASIS IN MEGHALAYA

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Abstract

This study investigates the role of traditional farming practices in biodiversity conservation in Meghalaya, India, highlighting how indigenous methods have evolved to support sustainable land use. Historically, local communities engaged in diverse agricultural techniques such as shifting cultivation and agroforestry, which have not only enhanced food security but also fostered rich ecosystems. The research focuses on the integration of traditional ecological knowledge with modern conservation strategies, demonstrating how practices like crop rotation and intercropping contribute to soil health and pest management without relying on synthetic inputs. Using secondary data, this study will analyse the socio-economic factors influencing the persistence of these practices, such as cultural beliefs and the impact of globalization. By advocating for the recognition of traditional knowledge in contemporary conservation efforts, the study will critique policies that often neglect indigenous practices. The findings will illustrate how traditional farming is essential for biodiversity preservation, offering a compelling case for other regions to adopt similar approaches. Ultimately, this research emphasizes that by valuing and integrating indigenous methods, communities can achieve sustainable development while safeguarding their cultural heritage and environmental resources.

Keywords: Traditional farming, Biodiversity, Conservation, Meghalaya, Indigenous knowledge, Sustainable, Agroforestry, Eco-friendly, Cultural heritage, Globalisation

MARINE ECOLOGIES, COASTAL COMMUNITIES, SEAWEED ECONOMIES IN SOUTH INDIA: THE ROLE OF CREATIVE INTERVENTIONS

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Abstract

This paper maps some of the challenges facing coastal life, understood in terms of the marine ecology and coastal communities through the recent developments of seaweed economies in South India. The developments of seaweed economies are explored in relation to market pressures, nutrition, ecological sustainability and cultural relevance. Developments around the Tamil Nadu Thoothukudi coasts and Goan coasts are particularly studied in relation to State supported plans as well as experiments and interventions by researchers and marine life activists. This paper argues that the efforts of different stakeholders will have greater success if creative interventions led by creative researchers are also made that consider the balance of marine ecologies and coastal communities through a cultural lens. In this case the role of performance and food innovations is proposed by the creative researchers. (Creative Research/ Artistic Research/ Practice based research is also briefly introduced as a methodology).

Keywords: marine ecology, seaweed economies, Thoothukudi coasts, food innovations

TO WHAT EXTENT DOES THE URBAN ENVIRONMENT INFLUENCE LEVELS OF ENVIRONMENTAL APATHY AMONG YOUNG ADULTS

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Abstract

Research has sought to explore possible formal connections between certain social-sovereignty expressions and symposium typology as socio-legal constructs used in urban settings. The literature reviewed correlates anthropocentrism perceptions, locus of control, and age involved in environmental representations. The quantitative study used it to interview young people in urban settings: environmental attitudes-and perceptions of locus of control. An age-anthropocentrism relationship is of major consequence, for it shows that younger people are most ready to think themselves or hold anthropocentric views. The research has shown that the more aware that people are of their locus of control, the more they express care about environmental problems. Such insights reveal how urban surroundings and individual psychology coalesce to account for certain environmental apathy; it seems that younger adults express drive for protection of the environment. The research brings home the salience to future studies over how urban environments shape attitudes and the promotion of a sense of agency in order to counter environmental apathy.

Keywords: Environmental Apathy Scale, Anthropocentrism, Urban, Young Adults, Locus of Control, Ecocentrism.

CELLULOSE-BASED HYDROGELS: SUSTAINABLE ENVIRONMENTAL APPLICATIONS

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Abstract
Cellulose-based hydrogels (CBHs) have emerged as promising materials for environmental sustainability due to their renewable, biodegradable, and eco-friendly nature. Derived from natural cellulose, these hydrogels exhibit unique properties such as high-water absorption, biocompatibility, and tunable surface chemistry, making them ideal for various environmental applications. This review focuses on the potential of CBHs in addressing key environmental challenges, including water purification, soil enhancement, waste management and as slow releasing fertilizer. In water treatment, CBHs have demonstrated remarkable efficiency in adsorbing heavy metals, dyes, and organic pollutants from wastewater, offering a sustainable alternative to conventional adsorbents. Their ability to retain and release water makes them valuable in agriculture, where they can improve soil moisture content and facilitate the controlled release of agrochemicals, thus reducing irrigation frequency and minimizing environmental contamination. Additionally, CBHs show promise in waste management as absorbents for oil spills and hazardous substances, with the added benefit of biodegradability, reducing long-term environmental impact. Despite their potential, challenges such as scalability, cost, and optimization for specific applications remain. This review explores recent advancements in the synthesis and functionalization of CBHs to enhance their environmental performance, along with the integration of these materials into holistic environmental management strategies. By highlighting the versatile applications and sustainable nature of CBHs, this paper aims to underscore their role in promoting eco-friendly practices and contributing to a sustainable future.

Keywords: Cellulose-based hydrogels, environmental sustainability, water purification, soil enhancement, waste management, biodegradable adsorbents etc.

TURNING THE PAGE ON CLIMATE CHANGE: AN EXPERIMENTAL STUDY ON EXPLORING THE PEDAGOGICAL POTENTIAL OF COMIC STRIPS IN CLIMATE CHANGE EDUCATION

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Abstract

This study investigates the effectiveness of incorporating comic strips into climate change education to foster greater understanding and awareness among students. This study illustrates how comic strips, with their visual storytelling capabilities, offer a promising avenue for conveying complex concepts and fostering empathy towards environmental issues. By encouraging students to reflect on their attitudes and behaviours towards the environment, comic strips facilitate active learning and critical thinking. Through a pre-experimental quantitative research design and thematic analysis of existing literature, this study examines the effectiveness of comic strips in raising awareness and promoting understanding of climate change. Statistical analysis using SPSS revealed a significant improvement in students' comprehension of climate change concepts post-intervention, highlighting the promising pedagogical role of comic strips in facilitating meaningful engagement and learning experiences. This study contributes to the broader discourse on effective pedagogical strategies for promoting environmental consciousness. This research underscores the transformative potential of integrating comic strips into climate change education, offering educators a powerful tool to inspire and empower the next generation of environmental stewards.

Key words: Climate change, climate change education, comic strips, environmental consciousness, environmental comics.

TECHNICAL EFFICENCY OF MILK PRODUCTION IN KERALA: A STOCHASTIC PRODUCTION FRONTIER APPLICATION

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Abstract

Indian agriculture is the main pillar of the Indian economy. The labour force which is actively involved in this sector is high as compared with other sectors of the economy. There are many agricultural activities but among them Animal husbandry plays an important role in transformation of socio -economic scenario of Indian dairy farmers. The sustainability of dairy farmers is impacted by several number of factors such as nature dairying, low milk production hike in input costs and the major one among these is the transformation to non-farm activities. Milk production in India has reached 236.35 million tonnes (2023-24) and the Kerala accounts to 2579.76 thousand tonnes. The growth of milk production is very slow and erratic growth in Kerala. Kerala is a state has got a great dependence on dairy farming; the statistics shows that there is an in efficiency in the milk production. The study focusses majorly on the technical efficiency which 399 dairy farmers were taken for the study and estimates the relationship between technical efficiency and factors influencing quantity of milk production is significant. Through the usage of stochastic frontier approach it has estimated that mean technical efficiency is 67 per cent and 82.2 per cent of inefficiency exists in stochastic production frontier. The endogenous variables taken for the study are herd size, quantity of green fodder, dry fodder and concentrates and other minerals and labour hours in the farm shows a positive significant relationship with milk production.

Keywords: Indian dairy farmers, Milk production, stochastic frontier approach, green fodder

A COMPARATIVE STUDY OF ZOMATO AND SWIGGY'S FOOD DELIVERY PERSONNEL USING GPS LOCATION APPS WITH REFERENCE TO VIJAYAPUR CITY

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Abstract:
Online business has become common, with every field engaged in it. Post-COVID, 99% of business sectors have adopted GPS location applications. Every business app cannot operate without a GPS location feature. Preparing and consuming food at home is a thing of the past, as the focus has shifted to consuming food prepared elsewhere. This is the reason for the necessity of GPS location apps. The present paper focuses on the GPS location applications used by food delivery personnel with reference to Vijayapur city. It presents a comparative study between the GPS location apps used by Zomato and Swiggy's food delivery personnel. In Vijayapur city, there are more than 200 online food delivery personnel. In this paper, responses were collected from 50 respondents and analyzed using the statistical tool of a five-point Likert scale. The research covers questions regarding the accuracy of customer locations while using GPS, buffering problems, instances of the app showing shorter routes than the actual distance, issues of getting stuck while reaching a destination, and discrepancies in the location displayed by the app compared to previous information, along with additional research questions. The paper presents conclusions regarding the GPS applications used by Zomato and Swiggy.

Keywords: GPS location, Zomato, Swiggy's Food Delivery, five-point Likert scale, Vijayapur City

A CUSTOMER SATISFACTION SURVEY: MARKETING OF GREEN VEGETABLES IN SUPERMARKETS AND STREET VENDORS IN SHIVAMOGGA CITY

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Abstract

Food is a basic human need, and as such, the food industry comprises more than 50% of the economy. There exists a hybrid system of green marketing, where customers purchase vegetables both from street vendors and from supermarkets. Supermarkets have been selling vegetables for the past 20 years. It is important to note that green marketing in rural areas differs from that in urban areas. This paper presents the results of a customer satisfaction survey conducted in supermarkets that sell vegetables in Shivamogga town. A simple random sampling method was employed to analyze respondents' opinions using a five-point Likert scale. The analysis focused on factors such as product price, freshness, quantity, quality, and seller behavior. The paper concludes that the green marketing practices of street vendors and supermarkets in Shivamogga city effectively satisfy customer needs.

Keywords: Green Marketing, Rural areas, social media, Supermarket, Street Vendors, Shivamogga City

OPTIMIZATION OF CADMIUM (II) REMOVAL FROM AQUEOUS SOLUTION USING ACTIVATED CARBON PREPARED FROM *ANISOMELES MALABARICA* LEAVES

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Abstract: Activated Carbon has recently been produced from agro-industrial wastes to reduce the cost of adsorption systems. In this study, *Anisomeles malabarica* leaves were used to prepare activated carbon (AMC) and its Cd (II) ion removal capacity was analyzed. The activated carbon was produced by a phosphoric acid chemical activation process using H_3PO_4: char ratios (w/w) of 1:2 at 450^oC in an inert atmosphere. The surface area of the AMC was determined as 489.3 $m^2 g^{-1}$ by BET method. The BJH pore size distribution showed average pore diameter of 2.43 nm, indicating the presence of mesopores and macropores. XRD result showed broad peak indicating the amorphous nature of carbon. SEM analysis revealed that most of the particles in the synthesized AMC were agglomerated and EDS spectrum confirmed the presence of carbon and oxygen elements. Taguchi design method was employed to analyze the adsorption capacity of metal ion Cd (II) onto AMC. Main adsorption factors such as initial metal ion concentration, pH temperature, adsorbent dose and contact time at four levels with an orthogonal array layout of L16 had been optimized. Maximum sorption for Cd (II) metal ions were found to occur at pH = 7.0, temperature = 30° C, concentration of metal = 50mg L^{-1}, adsorbent dosage = 50g L^{-1} and contact time = 90min. The study was validated further using optimized parameters resulting in maximum cadmium metal adsorption.

Keywords: Activated Carbon, *Anisomeles malabarica,* Taguchi design method, adsorbent dose

TRAGEDY OF COMMONS: MINING INDUCED DISPLACEMENT AND RESETTLEMENT (MIDR) IN *THE YEAR OF WEEDS* BY SIDDHARTHA SARMA

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Abstract

Development and environment are often portrayed as two conflicting entities. In a planet that is materially finite, unchecked and unrestrained development jeopardizes the livelihood and sustenance of the have-nots and the marginalized people. Capitalists use development as the trump card to bring about transnational capital expansion and economic growth. More often than not, this profit driven development is "mal-development" as Vandana Shiva would call it. This development discourse promises liberation, at any cost, of the poor people from the sufferings and miseries construed by the capitalists. The untold modus operandi of this development discourse is the enclosure of commons and the displacement of the indigenous people. The raw materials required for development are mostly extracted and mined from the commons that are communally controlled by the indigenous people thus involuntarily displacing them. Mining of gold, diamond and bauxite are the major contributors for this displacement. *The Year of Weeds* poignantly narrates the story of Korok, a young boy, and the Gond tribe's fight to retain the control over their commons. The objective of this paper is to study how mining companies aided by the Government try to displace the Gond tribes in a small village in Odisha by expropriating their commons and critique the unjust and ambiguous resettlement plans. The study analyses the literary narrative using the ecofeminist lens.

Key words: commons, MIDR, mal-development, development, displacement, resettlement

ASSESSING THE SHORT-TERM AND LONG-TERM RELATIONSHIP BETWEEN AIR PASSENGER MOVEMENT AND CO_2 EMISSIONS: AN ERROR CORRECTION MODEL AND COINTEGRATION ANALYSIS

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Abstract

As air travel in India expands rapidly, understanding its impact on CO_2 emissions is crucial for informing sustainable policies and addressing environmental challenges. This study aims to investigate the dynamic relationship between air passenger movement and CO_2 emissions, focusing on both short-term and long-term effects. The study uses the following variables: air passenger movement and CO_2 emissions. Time series data was obtained, ranging from 1970 to 2019 with 50 observations. The Error Correction Model (ECM) was used to determine the existence of a short-term relation and the Engle-Granger Method of cointegration analysis was employed to determine if the variables share a long-term equilibrium relationship. The findings reveal that both the variables are stationary in the 1st order using the Augmented Dickey-Fuller (ADF) Test. Furthermore, both CO2 emissions and air passenger movement share a positive and significant relationship. The analysis suggests that an increase in air travel causes an increase in CO2 emissions both in the short term and in the long term as well. The study concludes that increased air travel directly contributes to higher CO_2 emissions. These findings underscore the urgency for policymakers and stakeholders in the aviation sector to recognize the immediate environmental impact of increased air travel. Strategies aimed at reducing emissions could include promoting more sustainable travel practices and investing in cleaner technologies. This study will contribute to the understanding of the environmental implications of air travel and highlight the importance of integrating sustainability measures within the aviation sector.

Keywords: CO_2 Emissions, Aviation Industry, Engle-Granger Method, Cointegration, Error Correction Model

EXPLORING THE PHYTOCHEMICAL COMPOSITION AND BIOACTIVE POTENTIAL OF BEE POLLEN: A SUSTAINABLE APPROACH TO GLOBAL HEALTH AND WELL-BEING

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Abstract

Bee pollen, a nutrient-rich apitherapeutic product, is in line with Sustainable Development Goal (SDG) 3 (*Good health and well-being*) due to its rich composition of protein, lipids, flavonoids, amino acids, and vitamins. The present work aimed to evaluate the phytochemical composition and effects of bee pollen using *in vitro* assays. The total soluble sugar, phenolic, and flavonoid content in bee pollen extracts were analyzed and found to be high. We studied the antioxidant activity using the DPPH radical scavenging method and reducing power test, and the extracts' significant antioxidant activity supported its use in treating oxidative stress disorders and chronic diseases. Membrane stability was evaluated based on the prevention of inflammation-related aggregation and the ability to inhibit protein denaturation, supporting the anti-inflammatory properties of bee pollen for the treatment of inflammation related conditions. Anti-diabetic effect was demonstrated by reducing alpha amylase activity, proving that bee pollen has potential as a natural remedy for diabetics. Furthermore, the collagen denaturation test revealed that bee pollen has anti-arthritic properties and can effectively treat joint diseases. The findings presented corroborate the therapeutic role of bee pollen and are in line SDG 12 (*Responsible Consumption and Production*), which promotes the sustainable use and consumption of health products, and with SDG 13 (*Climate Action*) for stressing that climate and pesticide exposure have an impact on the quality of bee pollen. Further, its nutrient content can be used to combat undernutrition, thus achieving SDG 2 (*Zero Hunger*). In summary, bee pollen shows promise as a natural, sustainable product for improving global health outcomes while supporting environmental conservation efforts.

Keywords: Apitherapy, anti-arthritic activity, bee pollen, anti-diabetic, hyperglycemia, metabolic syndrome.

MATIR XAAL: LOOMS OF THE SOIL – ECOLOGY AND CULTURAL EXPRESSION OF ASSAM

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Abstract
Assam possess a unique cultural expression that the legacy of history, art, crafts, belief systems, customs, traditions, nuances and literature related to Assam, contributing to the state's economic growth, sustainable development, and sociocultural cultural inheritance since ancient days. Starting from Gamocha (Traditional Towel) to Mekhela-Sador (Traditional Attire worn by ladies in Assam) the textile of Assam is adorned with woven designs that may include motifs inspired by mythology, ecology or cultural practices. This handloom tradition of Assam relies on locally-sourced natural materials such as silk worms (Muga, Eri, and Pat), cotton, and plant-based dyes, making it inherently sustainable and closely tied to the region's unique biodiversity and ecological cycles giving some unique fabrics, designs which is available only in the same geographical area . Among them, Muga provides unique features like 85% protection from ultraviolet rays used worldwide. This paper will study the socio-cultural factors constitute the traditional handloom industry of Assam making it sustainable and market friendly. Various ecological issues such as establishment of tea plantations using pesticides near rearing lands will also be addressed which have adversely affected the silkworms. Thus, this paper will try to see how these challenges can be addressed, and new technology can position natural fabric of Assam in the world textile map and help race socio-economic progress of the silk rearing and weaving communities.

Keywords: Assam, Matir Xaal, plant-based dyes, tea plantations, silkworms

AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN GUNAS AND ENVIRONMENTAL CONNECTEDNESS

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Abstract

To examine the relationship between Vedic personality types and an individuals' connectedness to nature. By administering the Connectedness to Nature Scale developed by Mayer and McPherson-Frantz (2004) and the Vedic Personality Inventory developed by Dr. David Wolf (1998), the research aims to determine whether individuals with a predominantly sattvic personality exhibit a higher connection to nature. A correlational research design was used to explore the relationship between vedic personality traits and connectedness to nature, without manipulating any variables. Using the random sampling method, 71 literate participants aged 18-45 from different parts of India completed both the questionnaires via Google Forms. The sample was selected to ensure participants could accurately comprehend and respond to the survey. No specific criteria related to gender, religion, sexual orientation, or language were used for inclusion or exclusion, resulting in a diverse participant group. A significant positive correlation (Spearman's rho = 0.269, $p = 0.024$) was found between connectedness to nature and sattva guna, suggesting that individuals with sattva guna as their predominant guna are more connected to nature. A negative correlation was found between individuals with their predominant gunas as tamas guna and rajas guna with regard to their connectedness to nature (Spearman's rho = -0.403, $p < 0.001$ for tamas guna and connectedness to nature, and Spearman's rho = -0.390, $p < 0.001$ for rajas guna and connectedness to nature respectively). The research study suggests that individuals with a predominant sattvic guna are more likely to have a stronger connection to nature. This positive correlation suggests that personality traits associated with balance, harmony, and calmness, as represented by sattva guna, play a significant role in fostering environmental affinity.

Keywords: Vedic personality; guna; sattvic guna; rajas guna; tamas guna; mahabhutas; tridoshas; environmental consciousness.

GLOBAL TRENDS IN CLEAN ENERGY TECHNOLOGIES: CHALLENGES AND LESSONS FOR INDIA'S NET ZERO JOURNEY

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Absract

The global shift towards clean energy technologies is a pivotal component of climate change mitigation and sustainable economic growth. This paper analyzes current global trends in clean energy, including the deployment of various sources of renewable energy sources, innovations in energy storage and advancements in grid modernization. The paper also examines the challenges that impede the scaling of these technologies, such as high initial capital costs, supply chain vulnerabilities, geopolitical tensions, and technological gaps. In this context, the research focuses on the implications of these global trends and challenges for India's journey toward achieving its ambitious Net Zero target by 2070. It highlights how the dramatic reduction in the cost of solar photovoltaic (PV) systems and onshore wind power has driven unprecedented levels of global deployment. Intermittency of renewable sources requires advancements in energy storage and grid management. Regulatory and policy barriers, such as inconsistent incentives and subsidies for fossil fuels, also slows progress. Additionally, technological limitations and market dynamics, including established fossil fuel industries, create resistance to change. India, the third-largest greenhouse gas emitter, has set an ambitious target of achieving Net Zero by 2070. To meet this goal, India must significantly accelerate its transition to renewable energy sources, particularly solar and wind, while addressing challenges unique to its context, such as energy access disparities, grid reliability, and the coal dependence of its power sector. Furthermore, it stresses the importance of policy interventions that encourage private sector investment, facilitate technology transfers, and promote research and development in clean tech space. In conclusion, while India's Net Zero journey is fraught with challenges, the experiences and innovations emerging globally offer valuable insights. A clear focus on overcoming barriers related to financing, infrastructure, and technological adoption is critical for India to meet its clean energy goals, contribute to global climate mitigation, and ensure sustainable development.

Keywords: Sustainability, renewable energy, batterie, grid, net-zero

ASSESSMENT OF CHROMIUM ABSORPTION AND BIOACCUMULATION BY *HYOPHILA INVOLUTA* (HOOK.) A. JAEGER

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Abstract

Heavy metal contamination in aquatic source is difficult to identify and their presence can result in bioaccumulation and biomagnification. The present study aims to assess chromium absorption and bioaccumulation by *Hyophila involuta* (Hook.) A. Jaeger. *H. involuta* was collected from Idukki. The plant was washed and air dried. The dried thallus was immersed in 50 ml potassium dichromate solution with a chromium concentration of 170µg/ml. Biomass concentration and treatment duration was optimized with biomass ranging from 0.5 g to 3 g and days of immersion from 1 to 3. The thallus showed high levels of chromium absorption. With 24 hours of immersion, 0.5 g biomass removed 17.8 % chromium from water. With increase in biomass concentration there was increase in chromium removal with maximum removal of 82 % when 3 g biomass was used. In day two, 3 g biomass removed 94 % chromium from water and in day 3, biomass concentration from 2 g to 3 g could bring down the detectable range of chromium to zero. Cell wall of bryophytes is thought to have net negative charge that can bioabsorb cations. No major studies are there utilizing this ability of bryophytes. *Hyophila* is a common taxa in Kerala and hence the ability of *H. involuta* in bio absorption of chromium can be exploited in water treatment plants.

Keywords: Bryophyte, *Hyophila involuta,* Chromium, Bioabsorption

TOXIC AESTHETICS AND VISCERAL ENTANGLEMENTS: VISUALIZING ECOLOGIES OF WASTE IN CONTEMPORARY INDIAN WOMEN'S ART

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Abstract

This paper will take as its point of departure, the relationship between contemporary visual culture and neoliberal infrastructures of waste: landfills, dumps, polluted atmospheres and toxified geographies. The works selected for this inquiry, by contemporary Indian women artists, foreground a constellation of interrelated concerns–environmental ethics, multispecies ecologies, social justice, and local and indigenous articulations of resistance–that cohere around waste as a material, semantic, and political locus of lively and enduring histories of colonial-capitalist and industrial-extractivist relations. Our paper will trace the creative and dissensual ways in which art carves a particular processual and indeterminate relationship with waste and waste-producing apparatuses. The artworks explored in my paper are wary of instrumentalizing waste as inert and passive matter lending itself solely to mechanisms of management and disposal. In a related vein, they also critically examine how aesthetic practices perpetuate forms of social and ecological invisibilization and exploitation by Patranobish and Sajitha 2 instituting and naturalizing a logic of metaphoric and ontological (and by extension socioeconomic) interchangeability between waste as substance and waste as people, bodies and communities. I will analyse the ecocritical art of Himali Singh Soin and Vibha Galhotra, and further explore the dynamics of cultural mediation, performative framing, and embodied representation through which discardscapes in various situated contexts: urban and suburban spaces, unpeopled nomadic expanses, strategic geopolitical outposts, and private and intimate domains of inhabitation are incorporated into art. Discard permeates art as a component of its aesthetic-critical and material-sensory repertoire, even as waste's own historically structured and ideologically imbued materiality resists containment within such aesthetic enclosures.

Keywords: contemporary visual culture, aesthetic practices, cultural mediation, material-sensory repertoire

THE IMPACT OF PLACE ATTACHMENT ON PRO-ENVIRONMENTAL BEHAVIOR MEDIATED BY ECO-EMOTIONS AMONG EMERGING ADULTS

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Abstract

Eco-emotions as a mediator between place attachment and pro-environmental is less explored so, this study aims to assess the relationship between place attachment and pro-environmental behaviour and the mediating role of eco-emotions such as eco-anxiety, eco-guilt, and ecological grief among emerging adults between the ages of 18 to 25. The data have been collected from 485 samples through purposive sampling. The correlational research design with mediation analysis was adopted. The results revealed that place attachment has a significant positive relationship with pro-environmental behaviour, which has been mediated by eco-guilt, and ecological grief but not eco-anxiety. These findings help us to understand the relationship better which aids in framing policies and strategies that would focus more on integrating both place attachment and eco-emotions to promote pro-environmental behaviour.

Keywords: Place attachment, Eco-anxiety, ecological grief, Eco-guilt, Pro-environmental behaviour.

SCREENING OF THE LACTIC ACID BACTERIAL ISOLATES FROM TRADITIONALLY FERMENTED FOODS FOR PHYTASE ACTIVITY

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Abstract

Traditionally fermented Indian foods epitomise our cultural heritage and harbour diverse microbial communities contributing to their unique flavour and health benefits. Indian ethnic phytate fermented foods are rich sources of lactic acid bacteria with phytase activity. Phytases are crucial enzymes contributing to flavour development and dephytinization of phytate foods that enhance nutritional properties. They have a lot of applications in food industries like dairy, beverage, bakery etc. In the present study, lactic acid bacterial isolates with phytase activity were screened from traditionally fermented food samples collected from Assam and Manipur. Food samples were inoculated in MRS broth to enrich the LAB growth and the isolates were characterized by cultural, biochemical, and molecular methods. Enzyme activity was assessed through plate assays. The phylogenetic relationships of the microbial isolates with potent phytase activities were identified by comparing their 16S rRNA gene sequences. The isolates were identified as *Lactobacillus crispatus* (Isolate 1) and *Lactococcus garvieae* (Isolate 2). Phytase activity, essential for phosphate liberation and improved mineral bioavailability was measured through inorganic phosphate liberation assays. *L. garvieae* exhibited the highest activity followed by *L. crispatus* at 50°C. Influence of temperature (ranging from 25° C to 60ºC) and pH (ranging from 4 to 9) on enzyme activity was assessed. *L. crispatus* had the highest phytase activity at pH 6 and 37°C, *L. garvieae* showed the highest activity at pH 5 and 37°C. This study aimed to screen potent LAB strains for industrial use, improving nutritional profiles and flavour of phytate containing foods. It provides insights into traditionally fermented foods, paving the way for future advancements in food technology and consumer satisfaction.

Keywords: Fermented foods, Dephytinization, Phytase activity, 16SrRNA sequencing

PRINCIPLES OF NATURE IN EDUCATION

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Abstract

Climate change and climate action are much-discussed topics these days; there is a lot of awareness, conversation and writing, expert opinions, factual data, initiatives, movements, both local and global, and stories of hope and calamities hitting hard. There is also "climate change anxiety," also known as eco-grief or climate gloom, experienced deeply by young people. Having committed to a business-as-usual anthropocentric worldview, education has been addressing this issue in a piecemeal manner. What if education tackled this issue head-on, took a holistic approach, and fostered and nurtured a more compassionate eco-centric worldview? In our paper presentation, Principles of Nature in Education, we will focus on nature-centric education, giving primacy to nature and her principles and actively shaping an eco-centric worldview. Going beyond the thinking, talking, and feeling aspects related to climate change, we will focus on action choices, which is the need of the hour. Besides the green practices we have implemented in Prakriya Green Wisdom School and Bhoomi College, the two institutions we are associated with, we will share our experiments of shaping this eco-centric worldview and our recommendations for a required paradigm shift. A paradigm shift that moves us away from an anthropocentric worldview. Our paper will focus on the root-level issues that unfortunately get ignored in popular conversations and practices that are implementable both by individuals and institutions.

Keywords: climate gloom, Nature in Education, green practices, Prakriya Green Wisdom School and Bhoomi College, paradigm shift

VRIKSHAYURVEDA: TRADITIONAL KNOWLEDGE FOR SUSTAINABLE BIODIVERSITY MANAGEMENT

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Abstract

The ancient Indian science of Ayurveda extends beyond human health to encompass the well-being of the environment through its specialized branch, *Vrikshayurveda*—the science of plant life. Rooted in traditional knowledge, *Vrikshayurveda* offers time-tested practices for nurturing the health of trees and plants, emphasizing harmony between nature and humanity. In the context of contemporary challenges such as deforestation, habitat loss, and biodiversity degradation, this ancient wisdom serves as a beacon for sustainable biodiversity management. This paper highlights the principles and techniques of *Vrikshayurveda*, including natural soil enrichment methods, plant disease management through herbal remedies, and eco-friendly agricultural practices that enhance the health of flora. The paper further explores how these practices can stabilize ecosystems, promote ecological balance, and contribute to the conservation of biodiversity. By integrating *Vrikshayurveda* with modern scientific approaches, we can establish a holistic framework to restore degraded ecosystems, ensure sustainable land use, and strengthen biodiversity. This synthesis of traditional and contemporary knowledge offers a pathway to achieving the global biodiversity goals outlined in initiatives like the Convention on Biological Diversity (CBD). Through this presentation, the aim is to raise awareness of the pivotal role of *Vrikshayurveda* in preserving the health of "green trees" and, by extension, the planet's biodiversity. Emphasizing its relevance in today's ecological context, this paper advocates for the revival and incorporation of this ancient wisdom in biodiversity conservation policies and practices.

Keywords: Vrikshayurveda, Sustainability, Biodiversity, Ecological Balance, Conservation

ANTIFEEDANT ACTIVITY OF METHANOL EXTRACT OF *RICCIA SP.* COLLECTED FROM IDUKKI DISTRICT, KERALA

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Abstract

The present study was to evaluate antifeedant activity of methanol extract of *Riccia sp.* and to identify possible compounds that offer antifeedant property through GC MS analysis. *Riccia* thallus was collected from Idukki district. Soxhlet extraction of the plant was carried out sequentially in petroleum ether, ethyl acetate and methanol. The extracts were tested for antifeedant property using *Bombyx mori* fourth instar larvae. The plant extract was air dried and dissolved in acetone and then coated over mulberry leaf bits. Choice and no-choice assay was performed. GC MS analysis of methanol fraction of *Riccia* was carried out. Methanol extract showed good antifeedant effect in both choice and no-choice assay. GC MS analysis revealed the presence of 211 compounds. The most abundant compound was 9-Octadecenoic acid (Z)-, methyl ester. Only 40 compounds had match score above 75 % indicating a large number of novel compounds. Fatty acid esters and compounds like thujanone, diphenyl methanone, hexacosane are well-established antifeedants. Antifeedant property can also be due to the combined effect of well-established as well as novel compounds. Bryophytes are less eaten by insects and this can be possibly due to antifeedant chemicals present in them. Being a less explored taxa, searching for antifeedants can pave way for novel compounds. Antifeedants of plant origin can be a safe method of protecting crop plants from pest. Identifying such compounds and elucidating its structure can pave way for mass production of antifeedant chemicals.

Keywords: Bryophyte, *Riccia,* Antifeedant activity.

UNLOCKING THE GREEN INVESTMENT POTENTIAL IN SUSTAINABLE WASTE MANAGEMENT IN INDIA: A CASE STUDY OF BANGALORE CITY

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Abstract

Efficient waste management is critical to sustainable development, requiring significant investment and collaboration among government bodies, private investors, and research institutions. The severe consequences of improper waste disposal are land, water, and air pollution, spreading diseases, diminishing living conditions, lack of sustainable living, increased carbon emissions, and more. This paper highlights the rush and the necessity of shifting public perception and fostering behavioural change regarding waste management practices. Green investment instruments are proposed as an effective means to enhance public participation in sustainability initiatives. The active involvement of the public is crucial in assuring the success of waste management initiatives. Education is required on the importance of green investments, the available pathways and instruments of investing, and proper waste collection and disposal techniques. The paper elaborates on the waste disposal process in Bengaluru, its limitations, and its impacts. The fact that the waste is segregated from the house itself is a good start. However, the process is long, and every step should be micromanaged to prevent mistakes that would cause any of the problems mentioned above from taking place. The paper also discusses existing investment policies and necessary changes to improve waste management. The information about the processes used for waste management is collected from the official CPCB, State Pollution Control Board and Pollution Control Committee, and PIBs. The paper elaborates on the waste disposal process in Bengaluru, its limitations, and its impacts. Despite advancements in waste disposal practices, significant challenges persist in waste collection, transportation, and disposal, underscoring the need for effective policy implementation to achieve sustainable outcomes.

Keywords: Green investment, waste disposal, public participation, investment instruments, policy changes, implementation of policies.

INDIGENOUS METHODS OF SEEDS AND FOOD GRAIN PRESERVATION: CHALLENGES TO SUSTAINABILITY AND BIODIVERSITY CONSERVATION

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Abstract

This research paper explores indigenous techniques and methods of seed and food grain preservation, highlighting their role in promoting and challenging sustainability and biodiversity conservation. The advent of advanced agricultural technologies, including hybridization, genetically modified crops (e.g., BT varieties), and modern preservation techniques, has contributed to nutrition deficiencies and the rapid loss of traditional seed varieties. While hybrid seeds address immediate food demands, their long-term sustainability, adaptability, and nutritional value remain uncertain. In India, pulses, cereals, and vegetables such as chilli, potato, tomato and cauliflower have achieved global adaptability. However, crops like pepper, cardamom, clove, coffee, and indigenous rice varieties growing in India are constrained by specific environmental conditions and need to be adaptable across broader regions. Traditional practices of preserving food grains like paddy, pulses, cereals, and onions after harvest have been integral to Indian agriculture for centuries. Unfortunately, the pressures of market demand and supply, coupled with market manipulation, challenge farmers' ability to sustain these practices. Indigenous methods such as maintaining soil fertility and exchanging seeds within local communities have preserved the genetic diversity and adaptability of crops for generations. These practices have fostered biodiversity conservation and provided resistance against environmental changes. This study draws on primary sources, including farmer interactions and secondary sources, such as books and published articles, to analyse the efficacy and relevance of these methods. The scope focuses on traditional agricultural practices in India, emphasizing their significance in sustainable farming and biodiversity preservation.

Keywords: Indigenous seeds, Traditional techniques, Food preservation, BT, Hybrid, Crossbreeds, Biodiversity

CLIMATE CHANGE EDUCATION AWARENESS AMONG UNDERGRADUATE STUDENTS IN BOGURA TOWN, BANGLADESH

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Abstract

This study investigates the state of climate change education awareness among undergraduate students in Bogura Town, Bangladesh. A survey was conducted to assess students' understanding of climate change, their perceptions of educational adequacy, and their preferences for learning about this critical global issue. The results indicate a significant gap in climate change education, with only 37% of students feeling their academic education provides adequate information on the subject. While most students recognize the importance of climate change education, there is a notable lack of engagement in extracurricular activities related to climate change. The study reveals a preference for interactive and experiential learning methods, with 98% of students expressing interest in field trips and outdoor activities. Furthermore, the findings highlight challenges in climate change education, including a lack of practical, action-oriented learning opportunities. This research underscores the need for comprehensive and engaging climate change education programs that empower students to take informed action. The study's implications extend to educational policy and curriculum development, emphasizing the importance of aligning educational practices with students' learning preferences and the urgent need for climate action.

Keywords: Climate change education; Undergraduate students; Bangladesh; Environmental awareness

CAUVERY CONFLICT RESOLUTION THROUGH SUSTAINABLE SOLUTIONS FOR WATER MANAGEMENT AND INCLUSIVE GROWTH

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Abstract:

Conflicts over water management have been a persistent issue globally for centuries, and the Cauvery River in southern India exemplifies this ongoing struggle for the past 130 years. What began as a dispute over the distribution of water sources has escalated with industrialization and growing populations since the late 1980s. Climate change has worsened the problem by diminishing rainfall and increasing water scarcity. The Cauvery dispute highlights the right to watercourse between the states, Tamil Nadu and Karnataka. After 17 years, in 2007 the Cauvery Water Dispute was divided between Karnataka, Tamil Nadu, Pondicherry, and Kerala with the remaining 14 TMC reserved for environmental protection. Through the lens of Sustainable development, we aim to examine the conflict beyond the issue of water sharing and uncover the struggle for an inclusive livelihood between irrigation and industrial uses. The dispute remains unsettled due to Tamil Nadu's proposal for a release of 10,000 cusecs of water as farmers have shifted focus towards drip irrigation methods to achieve the 2045 irrigation sustainable efficiency goal, however, the lack of compliance with tribunal borders and release of water from Karnataka has derailed Tamil Nadu's progress. To effectively address this problem, a comprehensive climate change strategy is essential with attention to conflict resolution strategies; without it, it will be challenging to develop a resolution. Integrating community ownership into water management could foster more sustainable and inclusive solutions for the region. 40% of the population in both states rely on agriculture for their livelihoods, underscoring the need for inclusive policies that consider the needs of all stakeholders. By analysing current and past policies and agreements, this paper aims to profile the Cauvery basin and further explore the dispute from the perspectives of sustainable development, regulatory instructions, and inclusive growth for migrant and marginalised communities which affect agricultural productivity, economic stability, and social equity in both states through co-operative management.

Keywords: Cauvery River, Water Management, Dispute, Industrialization, Climate Change, Sustainable Development, Marginalised communities, Cooperative Management

WEAVING BIODIVERSITY: THE INTERWOVEN HERITAGE OF ERI SILK AND ECOLOGICAL SUSTAINABILITY IN ASSAM

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Abstract

This study explores the interwoven heritage of Eri silk weaving and its role in biodiversity conservation in the state of Assam. Eri silk also known as *ahimsa* silk is eco-friendly and non-violent in production. Eri culture is the traditional practice of rearing Eri silkworms, which has existed for a long time in Assam. Eri silk weaving was practiced by the ethnic communities of Assam such as the Boros, Kacharis, Misings, Karbis, etc. The weavers are now creating Eri silk fabrics that are in high demand, not only in India, but also internationally. The traditional practices and indigenous knowledge systems associated with Eri silk weaving, and the cultivation of castor plant - the primary food for Eri silkworms provide a sustainable way for the use of natural resources and also contribute to sustainable livelihoods. It not only leads to the socio-economic well-being of local communities but also the sustainability of biodiversity. It can serve as a model for biodiversity-based sustainable livelihoods, contributing towards economic development. It also helps in the conservation of biodiversity through sustainable agroforestry and organic farming, which enhances the soil as well as increases plant diversity. Modernisation and changing market dynamics has impacted the traditional Eri silk practices and the associated biodiversity, including shifts in land use, plant species cultivation, and silkworm rearing methods. This paper aims to document traditional practices, assess the ecological impact of Eri silk production, and examine its potential for biodiversity-based sustainable development based on interviews, surveys, and ecological assessments to gather data from weavers, farmers, and community leaders. Eri silk weaving provides crucial livelihoods, particularly for women, reinforcing socio-economic stability. However, challenges such as habitat loss and reduced transmission of traditional knowledge due to modernisation can be observed. Integrated policies promote biodiversity conservation and sustainable livelihoods, ensuring local communities' resilience and cultural heritage preservation.

Keywords: traditional knowledge, plant diversity, biodiversity

AN ASSESSMENT AND REFLECTION OF CLIMATE JUSTICE AND POWER DYNAMICS THROUGH INDIAN ECO -NARRATIVE DISCOURSES

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Abstract

Eco – narratives is a rich and core source to identify the climate justice and power dynamics of a societal framework. The corporate – dominated stories benefit from environmental exploitation and they even endorse it to a greater extent. On the other hand, eco- narratives shape and exposes the oppressed communities' voices and opinions. The complex relationship between the forest people, animals and the bureaucratic forces if faltered could lead to a change in power equation and eventually a havoc. In this research paper the voices of the marginalized and vulnerable communities as reflected in the stories, frameworks and discourses to raise an alarm against the ecological injustice will be discussed. A comprehensive assessment will be done from the grass- root movements to the literary works; for instance, Chipko movement to the ganga cleaning initiative; Bishnoi communities to the Koli communities; reflecting both the natural and toxic landscapes.

Keywords: Voices, Landscape, Environmental Exploitation, Justice

THE GLOBAL GOALS FOR SUSTAINABLE DEVELOPMENT



CONFERENCE CORE COMMITTEE



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