

Sustainable India International Conference (SIIC) - I

Proceeding of International Conference : September 2022

"Sri Aurobindo once said, "Evolution of consciousness is the central motive of terrestrial existence." With the concept of evolution comes the shift in consciousness. Sustainability starts from this shift in our thoughts and practices. Sustainable India, which is an initiative of Sri Aurobindo Yoga & Knowledge Foundation, is a socio spiritual organisation, with an intent to take action towards creating better livelihoods, opportunities and learning for all. We believe that Action can only be taken when there is Awareness. Working at the grassroots level to create space and awareness is our priority. Finding and adapting technology and innovation that serves the greater purpose of creating a better experience for all species in existence should be the driving force for each one of us. Sustainability is not just a lifestyle ,it's a practice – a practice of gratitude to serve beyond and help everyone to grow with goodness. Every step taken towards the well-being of the planet as whole is an essential. We must keep in mind that when we seek a shift from ego to gratitude, we will be able to establish a clean ecology in our society.

Dr. Samarendra Mohan Ghosh is a Founder Trustee of Sri Aurobindo Yoga and Knowledge Foundation, India and working as a Director of the Initiative of THE PROGRESS. He is Doctorate in Computer Science and along with his team including the global Scientists and Engineers advising, promoting and creating awareness towards Sustainability.



**Scholars'
Press**

Dr. Samarendra Mohan Ghosh (Ed.)

Sustainable India International Conference (SIIC) - I

Issues and Challenges for Sustainable Development in Asian Countries

Dr. Samarendra Mohan Ghosh (Ed.)

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Imprint

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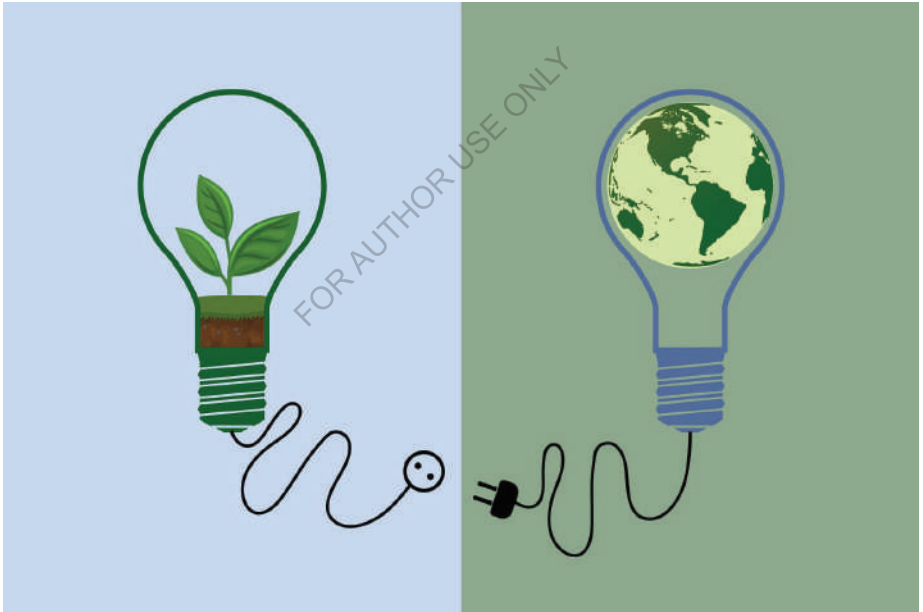
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*Issues and Challenges for Sustainable
Development in Asian Countries*





Presents

**An International Conference on
Issues and Challenges for Sustainable
Development in Asian Countries**

**In Puducherry, India
On 13th September 2022**



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“Sri Aurobindo once said, “Evolution of consciousness is the central motive of terrestrial existence.”

With the concept of evolution comes the shift in consciousness. Sustainability starts from this shift in our thoughts and practices. Sustainable India, which is an initiative of Sri Aurobindo Yoga & Knowledge Foundation, is a socio spiritual organisation, with an intent to take action towards creating better livelihoods, opportunities and learning for all. We believe that Action can only be taken when there is Awareness. Working at the grassroots level to create space and awareness is our priority.

Finding and adapting technology and innovation that serves the greater purpose of creating a better experience for all species in existence should be the driving force for each one of us. Sustainability is not just a lifestyle, it's a practice - a practice of gratitude to serve beyond and help everyone to grow with goodness. Every step taken towards the well-being of the planet as whole is an essential.

We must keep in mind that when we seek a shift from ego to gratitude, we will be able to establish a clean ecology in our society. A sustainable tomorrow starts from our awareness and the action that we take today.”

~ Shubhangi Ghosh

Co-founder/ Director of Sustainable India



“Education is always a sign of development and learning. It should be research-oriented, helping society to create something new. Thinking in an innovative and new way is significant to cope with technological changes. This Conference provides a forum for scholarly discussion on advance computing. It is also relevant for exploring and searching various aspects of education through the appropriate application of information technology.

The response of contributors and likeminded people in the educational fraternity showing their keen interest in this

conference is highly motivating. Presentation of such research papers is extremely beneficial for research scholars and stimulating factor for us to organize such conferences frequently in the future. I sincerely offer my earnest gratitude to those who have contributed through their research papers at the conference. I am sure that the conference would achieve its objective by providing a suitable platform for learning and experiencing the latest advancement in the field of industry. The cohesive efforts of a dedicated and committed team become necessary for organizing such conferences. We are fortunate enough for having such a hardworking team with us. I wish for the grand success of the conference.”

~ Meenakshi Ramesh Patel

Co-founder/ Director of Sustainable India



“It gives me a great pleasure to express my thanks to the organizing team of Sustainable India to conduct the first International Conference on “Issues and Challenges for Sustainable Development in Asian Countries” (SIIC – I) in September 2022. This conference will be a significant one and would provide a wonderful opportunity for the fellow educators and the research scholars to share and exchange their ideas in the recent advancements in Sustainability related issues in Asian countries. I sincerely hope that the dialogue that will get generated at this conference will lead to the implementation of many new ideas in this direction and thus pave wave for further improvements. I am extremely happy that many international experts and delegates will be attending the conference to present their papers and also deliver keynote lectures and invited talks. May this event be an insightful and educational experience for all those who participate in this wonderful occasion. I wish the conference a grand success!”

~ Dr. S. M. Ghosh

Managing Director of The Progress

Message From the Keynote Speaker



“I am passionate about promoting sustainable living to address the several planetary issues we face today, particularly climate change and biodiversity loss. I feel we are intimately connected with all life and the ecosystem. My conviction that humanity will truly thrive if we alleviate suffering for all living beings has led me to co-create and direct initiatives in low-impact living, renewable energy, solid waste management, afforestation, water conservation, agriculture and education since 2007.

I graduated in mechanical engineering and earned an MBA from the Manchester Business School, UK. I helped set up the National Coalition for Natural Farming, the largest network of its kind in India, to advance the adoption of Agroecology at scale. Earlier, as a Management Consultant, I worked on a wide range of exciting assignments, including finance, marketing, business information systems and CRM solutions.”

~ Mr. Minhaj Ameen

Founder, earth&us, Auroville

Founder, ImpactWala

Co-Founder & Advisor, The Neem Tree

Ex-CEO, National Coalition for Natural Farming

Founder and CEO, AmrutDhara

Messages from our other Speakers



“Sri Aurobindo refers to the industrial, commercial and economic age as “economic barbarism” when he states as follows in the Human Cycle (Chapter VIII: Civilisation and Barbarism):

“This economic barbarism is essentially that of the vital man who mistakes the vital being for the self and accepts its satisfaction as the first aim of life. The characteristic of Life is desire and the instinct of possession. Just as the physical barbarian makes the excellence of the body and the development of physical force, health and prowess his standard and aim, so the vitalistic or economic barbarian

makes the satisfaction of wants and desires and the accumulation of possessions his standard and aim. His ideal man is not the cultured or noble or thoughtful or moral or religious, but the successful man. To arrive, to succeed, to produce, to accumulate, to possess is his existence.”

A sustainable future for all calls for both inner and outer changes as only then the conditions for transformation and the emergence of a higher consciousness can be created. Our aim must not be to work for a sustainable future so that we can maintain our present life style and state of consciousness, but to create the conditions necessary for change and transformation at all levels of our existence.

~ Toine van Megen

Co-founder, Auroville Consulting (Unit of Auroville Foundation)



“It is my immense pleasure and honour to be a Speaker for this Conference. My profound gratitude is for the Progress Foundation by Sri Aurobindo for their globally vital mission of increasing human potential and helping people to consciously integrate with their unique selves, social and cultural ecology to bring about inspirational transformative change in-education-both in India and the world for our happier today and tomorrow.”

~ Iuliia Shamaieva

**Head of the Department of the English Language,
Associate Professor, PhD, School of Foreign Languages,
V. N. Karazin Kharkiv National University, Kharkiv,
Ukraine**

RESEARCH PAPER ABSTRACTS

SUSTAINABLE TOURISM: NEW DEVELOPMENT PRACTICES IN TOURISM

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The research paper consists of the measures for the sustainable development of tourism in a city. Sustainable tourism takes the following factors in account such as socio-economic, environmental, cultural etc. The author emphasizes how the sustainable development and its principles can reduce the ongoing concerns regarding tourism in a city. These practices can help in reducing the use of natural resources such as water and energy. These practices followed by the hotels can also be helpful in sustainable development by encouraging the locals and providing employment to them and also buying raw material from the locals. As tourism is an activity that uses natural resources and at its peak there is very high exploitation of the resources. On the other hand, it has the potential to generate employment for inclusive growth with the help of sustainable practices. This new type of development in tourism is encouraged by educational institutions, environmental as well as international organizations.

IDENTIFYING THE ROLE OF FIBROBLAST GROWTH FACTOR- 16 (FGF-16) IN OVARIAN CANCER CELL PROLIFERATION

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Ovarian cancer, “The silent killer is a serious and under-recognized threat to women’s health. Epithelial Ovarian Carcinoma origins are difficult to ascertain, because the majority of cases are diagnosed at late stages. As with many other tumors, the origin and development of ovarian cancer is constituted by several molecular mechanisms, many of which are still unknown. Furthermore, data in the literature are incomplete and often contradictory. Growth factors are the major stimulators of cell proliferation upon binding to their specific high affinity cell-surface receptors. They are the major regulators of all subsequent steps of tumor progression, namely clonal expansion, invasion across tissue barriers, angiogenesis, and colonization of distant niches. Fibroblast growth factors (FGFs) constitute a large family of polypeptide growth factors found in a variety of multicellular organisms, including invertebrates. There are 18 mammalian fibroblast growth factors (FGF1–FGF10 and FGF16–FGF23) which are grouped into 6 subfamilies based on differences in sequence homology and phylogeny. FGF-16 was shown to be involved in the proliferation of brown adipocytes and limb bud development in zebrafish. Previous reports suggest significant role of FGF-16 in cardiomyocyte proliferation and development of coronary vasculature in the embryonic mouse. However, its association with cellular proliferation and cancer in adult tissue has not been reported so far. We were keen interested to investigate the expression of FGF16 in

human ovary. Here the biological effect of FGF-16 in human ovary cancer was studied, so we have overexpressed the FGF-16 gene in human ovary cancer cell line – OAW42 by following transfection method (chemical method). For this, FGF-16 gene was cloned in three plasmid vectors: pcDNA 3.1/Myc-His A, B & C. cDNA from isolated RNA from untreated and treated human ovary cancer cell line – OAW42 with FGF-16 gene cloned in pcDNA3.1/Myc-His A, B & C, was transcribed in RT PCR and the level of expression of FGF-16 gene at cellular mRNA level was evaluated against control after normalization with the expression of 18S rRNA in Real Time PCR. Further protein was isolated and concentration was estimated spectrophotometrically by Folin Lowry method. It was reported that there is increase in level of expression of mRNA of FGF-16 in human ovary cancer cell line: OAW42

SUSTAINABILITY OF THE RURAL RESORTS IN THE PERIPHERAL REGION OF UNESCO HERITAGE SITE, AJANTA & ELLORA CAVES IN AURANGABAD, INDIA POST COVID – 19

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Purpose: The aim of the research is to identify the severe impact of COVID 19 on the Sustainability of the Rural resorts located in the Peripheral areas of world-famous UNESCO Heritage sites i.e. Ajanta and Ellora caves in Aurangabad district, India. Rural tourism has been the only ray of hope for the rural community in and around the Ellora caves for many years and since this is on the verge of closure, it is going to affect them emotionally, psychologically and economically.

Design/Methodology/Approach: A Qualitative research method will be used for the current research by taking the help of the case study method of three rural resorts located in the close vicinity of the heritage site. Detailed Interview schedules and telephonic discussions with the prior appointments of the owners, employees and the local community members will also be administered to get an insight of actual condition during/post COVID 19.

Findings: The findings of the research would be highly useful and would present in depth and real challenges related to the sustainability of the rural resorts during and post COVID 19 and the steps followed by these small operations to survive and re - innovate their rural products.

Originality/Value: This will be the first systematic and high-level analysis presenting the ground level situation of the rural resorts and their sustainability issues at UNESCO site. Moreover, this paper will also analyze the different steps and innovative solutions been used by the rural resorts and the local communities.

Keywords: Sustainability, Rural Tourism, Community, UNESCO Heritage Site

SUSTAINABLE LAND USE FOR A BETTER TOMORROW

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Advancement in the fields on technology and construction have improved lifestyles and generated a plethora of employment opportunities that have made cities, the hub of these innovations, very attractive for migration. This has led to the exponential increase in the graphs of urbanization around the world. Especially in Asia, which houses over half of the world's mega cities and hence a large chunk of the world's population, catering to the needs and comfort of their growing citizenry is of top priority with the latter taking precedence. Cities have cleared large tracts of agricultural land to accommodate their infrastructural mega projects. But this must not be achieved at the expense of the environment or the future's needs. Many cities, though prosperous do face many environmental and socio- economic issues. The possibilities of food shortage which plagues many parts of the world today, looms large. Giving importance to agricultural land and forested areas through zoning helps preserve the environment as well as prevent any food shortages.

Thus, it is the need of the hour to implement sustainable land use zoning so as to ensure that no more valuable, cultivable land gets razed into a metropolis or used for purposes that don't agree with the environment. This paper explores the existing literature and work done on this topic and how it can be implemented for a better tomorrow.

Keywords: Sustainable land use, zoning

FOREST PATH USE AND RESOURCE EXTRACTION BY LOCAL COMMUNITIES IN THE FIRST ADDITION TO MANAS NP, ASSAM

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The First Addition to Manas National Park covering 350 km² was notified by the Govt. of Assam in August 2016. The fringe villagers around the park largely dependent on the forest resources for their livelihoods and sustenance for centuries before notification of the park. The area was adjacent to Manas NP on the east and home to species like Asian elephant, tiger, leopard, wild buffalo, gaur, Greater one-horned rhino, golden langur, pigmy hog and such other globally threatened species. The local communities around the park call it '*Game*' because, it was the hunting ground in the nineteenth century for the kings of Cooch Behar, Abhayapuri and Gauripur of western part of Assam. Therefore, the area had been largely inclined to various anthropogenic pressure for centuries. The notification of the area as Protected Area, the imposed of abrupt restrictions by the park authority may invite conflict with the local communities. Wildlife Trust of India (WTI) assisted the Forest Department with technical support in the process of notification of the park. After notification of the park, the organisation executed various conservation programmes with the local communities to

address the various issues including human-elephant conflict as priority with support from Chester Zoo and International Fund for Animal Welfare. The study of forest use paths by the fringe villagers were taken to see the result. Data was generated using survey method in the 13 identified forest use paths for both winter and summer seasons for three years 2019 to 2021. The result showed a decline of 58% of number of individuals. The combined approach like, community managed solar powered fence, involvement of fringe villagers through formation of Eco Development Committee, livelihood supports to critically forest depend households and the change in protection measures adopted by the park authority largely contributed in bringing this change among the fringe villagers of a newly established park.

Keywords: local communities, livelihoods, conservation, protected area, Manas

SEMANTIC SEGMENTATION BASED CLASSIFICATION OF AERIAL IMAGERY USING MACHINE LEARNING

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Deep Convolution Neural Network have been used to achieve state of the art performance on numerous Computer Vision Task like object recognition object discovery and Semantic Segmentation, in this paper we borrow lately popular frame for segmentation in computer vision for pixel position Semantic Segmentation of Aerial Imagery. In this paper model is trained with image patches of size 256x256x3 of Images and their Masks patches are cropped from original image which aren't same size, to estimate the model either resize or crop due to different in their size, resize will lead the loose the important features of the original image objects so that we will crop them to nearest size separable by 256 and also divide all images in to patches not to resize the image to minimize the noise. We estimated our network on data set consists of upstanding imagery of Dubai attained by MBRSC satellites and annotated with pixel-wise semantic segmentation in 6 classes. The Model efficiency in term of IOU is 0.58.

Keywords: Deep Learning, convolution Neural Network, Semantic Segmentation, Aerial Imagery

THE REAL TIME STUDY OF SUSTAINABLE LAND DEVELOPMENT MECHANISM - A CASE STUDY OF SURAT CITY

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T.P.S. is a tool for sustainably implementation of City Development plan approved by State Authority. Statutory provision of pooling together all the land under different ownership and redistributing in a properly reconstituted form after deducting for roads and public purpose like open spaces, social infrastructure, services, housing for the socially and economically

weaker section and road network. The process enables the local authority to develop land without fully acquiring it and gives it a positive control over the design and the timing of the urban growth sustainably. In Gujarat, T.P. Scheme is implemented under the Gujarat Town Planning and Urban Development Act. -1976. T.P. Scheme ensures to promote efficient, sustainable and equitable land development with planned and sustainable growth through Co-operative Public Participation. It is also financially sustainable mechanism. This paper will provide an understanding of the sustainable impact of Town Planning Schemes in Surat City. The Town Planning Scheme has proved to be the best and most effective tool for the overall development of Surat which has enabled it to set new benchmark. TP Scheme allows the authority to obtain land for public purposes without compulsory land acquisition. It is proven to be an alternative to the conventional land acquisition approach. The plots allotted to appropriate authority for various public purposes in the TPS cater to the basic needs of the public in the scheme area. There has been hardly any instance of population being deprived of basic infrastructure because of infrastructure projects getting delayed or shelved due to unavailability of land. As a matter of fact, conceptualization and eventual execution of major projects like Outer Ring Road, Metro, Tapi Riverfront Project, Biodiversity Park, etc have been made possible without encountering any land related issues. The implementation of Town Planning Schemes creates an equilibrium between the landowners and the appropriate authority by providing incentives and compensation in form of infrastructure facilities and increase in land value against the possession of land for roads and public purpose. The sale of Public purpose plots & Betterment Charges is the source of revenue for authority through Town Planning Scheme. Infact, the cost of infrastructure projects within the scheme area is fulfilled in large part by the incremental contribution. This process makes Town Planning Schemes a financial self-sufficient. This paper will attempt to highlight T.P.S as best practice to aid development without any excessive finance burden to the appropriate authority.

AFTER COVID-19 CHANGES IN SOCIETY

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In 2020, There is a worldwide spreading disease called ‘CORONA’ world health organization declare it as an Epidemic. Corona Virus has a great impact all over the world. The first known infections from Covid-19 virus were discovered in ‘Wuhan’ China. Present studies aims to focus on difference aspects of Corona. There is a widespread of Corona Virus in whole world. During this pandemic period, many families has suffered from Cough, Cold to breathing problems too. This virus transferred one person to another.

Due to increasing effects of corona we should take some precetive rapid growth of COVID-19 Virus.

After Covid-19 Changes in Society:

1. After Covid-19 people started maintaining hygenic life. Regularly washing hands etc.
2. Working from home lead to the popularity online work.

3. People realised the importance of daily workers.
4. Indian culture has got place in the society.
5. People got started communicating with friends and relatives.
6. Family relation got strong.
7. Simple traditional marriages got place in society.
8. Wastage of money got stopped.
9. Buying of things beyond the needs has been stopped.
10. Wastage of food in different functions got stopped.
11. Many Factories has closed due to this environmental pollution has decreased.
12. People got attention more in Yoga, Meditation and Spiritual activities.
13. There is development of brotherhood during this period.
14. People started giving importance to their health more than work.
15. Ayurvedic got some more importance in society.
16. Due to decrease in finical condition people suffered from mental health too.

Keywords: Corona, Epidemic.

A STUDY ON EFFECTS OF INNOVATION IN EDUCATION AND ITS SUSTAINABILITY

Kalyani Bante¹ and Bhumika Dange²

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Education has been an integral part of society since ancient times. The process of sharing knowledge in every field through education has undergone many changes over time. Education is the backbone of our society, and for the sustainability of education, new and interesting innovations are always attracted by society. Directly or indirectly we got an idea of inspiration from the various societal movement. For the development of the people living in the society, education is the only source to overcome the burden of economic as well as environmental issues. The most possible way is to develop new and interactive skills with proper usage of ICT tools which will grab the attention of youngsters and increase consciousness in our society. Education for sustainable development provides values & skills, creates an attitude to shape the future, and can achieve growth by innovating new technology, new opportunities will also increase in the context of jobs, social awareness, and overall upliftment of society with improvement in spiritual, social or intellectual conditions both personally as well as professionally. New avenues of education take society towards betterment. In all education can only lead to sustainable growth. Innovative ideas in education puts a positive effect on society and create a healthy wealthy environment where every individual get benefitted.

INNOVATIVE EDUCATION IN SUSTAINABLE DEVELOPMENT

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Sustainability remains a crucial issue to the world endangering activities happening around the world. The word sustainability and sustainable development, although sounds similar but are different. The “sustainability” refers to the meeting of earth’s need with every complex system, be it biodiversity or humanity. The sustainability takes into consideration various factors such as economic and social feasibility. The economic dimension because consumption of needs of the human depends on the economic status of the residents whereas the social dimension to support the humanity. The sustainable development on the other hand, is the development contributed from the society towards the environment with the help of their socio-economic integrity. The various principles that hold the environment can help us to develop the innovative sustainable environment. Worldwide, there are many organizations and programs are being organised by collaborating with schools and Higher Education Institutes (HEIs) along with policymakers to make the individual and citizens contribute to the environment sustainably by considering it as their responsibilities.

Keywords: Sustainable development, education, socio-economic stability, DESD

EVALUATION OF DAG BASED SCHEDULING ALGORITHMS FOR BOUNDED NUMBER PROCESSOR

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Scheduling in parallel and distributed system is considered as NP-complete problem, and heuristic is one of the best ways to solve NP complete problem in polynomial time under some assumption. This paper focused on one of the classes of heuristic scheduling known as BNP (Bounded Number Processor). BNP scheduling algorithm, often deal with DAG based task set where priority is set by b-level, t-level, SL etc. BNP scheduling algorithm is useful in the allocation of tasks to the distributed database. Subsequent to the review of various research works related to the BNP scheduling algorithm it is observed that most of the research work focused on Homogeneous systems and dependent task model, according to this review approximately 47% of papers cover the homogeneous system model in their study and 39% of research work related to the heterogeneous system model, while only 19% of work based on distributed system. Various BNP scheduling algorithms are available for different environment in which HLFET, DLS, MCP, ETF and HFET are widely used in diverse scenario for study and research purpose.

Keywords: BNP, DAG, b-level, t-level, SL, ALAP

IMPACT OF EMPLOYABILITY SKILLS FOR CAREER ENHANCEMENT

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The present research article deals with the bundle of skill, abilities and knowledge areas that are most likely to be important in the future employability and also the skill investments that will have the greatest impact on occupational demand and information for educators and government can use for strategic and policy making purposes. This effort is made to highlight the importance of employability skills requirements.

Keywords: Employability, skills, occupational demand, career enhancement, policy making.

A STUDY OF NEW EDUCATION POLICY 2020 - YOGA BECAME THE FIRST CHOICE OF STUDENTS

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Implementation of New National Education Policy has only begun, but its positive effects are also visible. In the midst of all the negativity enveloping the world as a result of the challenges given by the Covid-19 pandemic, the government of India's New Education Policy (NEP-2020) was a welcome shift and fresh news learning and studying are fairly cognitive and psychological activities that need sound mental wealth including inner peace, calmness, easiness, positivity, curiosity, interest and self-motivation, development of personality is an important issue. Personality starts developing since birth, but it assumes great importance during adolescence, yoga is an invaluable gift of India's ancient tradition. Even the modern education system gives the utmost importance on yoga education helps the individual in respect of both internal and external ways. The increased interest in yoga teaching and practices in recent decades is primarily due to the expectancy that it can calm the mind and increase the overall health and well-being of the students. The policy covers elementary education to colleges in both rural and urban India.

PASSIVE DESIGN TECHNIQUE IN HOT DRY CLIMATE

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This paper describes importance of passive design techniques to improve the indoor built environment which is also energy efficient as it reduces the use of mechanical systems. Today, our built environment is filled with mechanical systems that enhance our lives. But these systems have an environmental impact, requiring energy to operate, creating heat and noise, and occupying space. Building sector holds significant responsibility for implementing strategies to increase energy efficiency and reduce carbon emissions. Multiple building configurations have better wind conditions when compared with a single standing structure. Careful consideration and application of the findings can potentially lead to considerable decrease of energy consumption and save energy and the environment at the same time.

This paper will help in understanding that a thermally comfortable environment can be achieved with the minimum use of mechanical methods and with maximisation of daylighting and passive cooling methods. Design strategies appropriate for hot dry climate will be talked about in thermal context i.e., specifically passive cooling as well as in daylighting context. During summers, buildings are exposed to high solar radiation, leading to overheated conditions, exceeding comfort levels in the interiors. Adapting ideas, styles and technologies have led us to the immense use of mechanical equipment, to most of the cooling needs, even if they can be fulfilled through traditional methods. It is necessary to use the daylight as much as possible as it not only cuts off the extra energy consumption but daylighting is also responsible for having positive impact on the health of the occupants.

The paper thus explains the significance of passive design techniques and their feasibility in the hot dry climate. Passive design has become increasingly popular in architecture and design, as architects and designers seek to create more comfortable, robust, energy-efficient buildings. The ethos of passive design is all about minimizing energy consumption and reducing environmental impact in order to make our society more sustainable (Windegger, 2016).

Keywords: Energy Efficiency, Natural Ventilation, Thermal comfort, Climate Responsive design.

PHYTOCHEMICAL AND FATTY ACIDS PROFILE OF *Soymida febrifuge* (Roxb.) A. Juss. SEED

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The seed of *Soymida febrifuga* was analyzed to determine its chemical composition. Analysis of these seed and seed oils will help group them and make their best use in medicinal and nutritional significance. The cations composition (Cu^{++} , Zn^{++} , Fe^{+++} , Mn^{++} , Ca^{++} , Na^{+} , K^{+} , Mg^{++}) of the seed was determined using AAS and flame photometer, while the fatty acid composition was evaluated using gas chromatography. The phytochemical analysis determined the qualitative and quantitative analysis of seed and oil. The seed oil carried 34.4% fat, an iodine value of 57.1gm/100gm, a saponification value of 42.04mg KOH/gm, an acid value of 29.92mg/g, and unsaponifiable matter of 5.97%. The results show the

presence of Palmitic acid 34.37%, Stearic acid 10.21%, Linoleic acid 20.01%, α -Linolenic acid 15.63%, and Oleic acid 15.55% are abundant in seed oil.

Keywords: Phytochemicals, qualitative and quantitative analysis, fatty acids, seed.

GREEN MANUFACTURING: MINIMIZING THE WASTE AND POLLUTION

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Industrialization in India has somehow created chaos in terms of pollution. The industries operate and compete as per the increasing public demand and requirements. In this process, manufacturing units & industries consumes resources and energy leading to climate change. Green Manufacturing will not only reduce the degradation of the environment and save energy, wasted on large scale, but also give a positive impact towards the economic progress along with the conservation of the resources. The main objective of this paper is to explain innovative techniques of manufacturing processes that will lead to minimum production of waste and pollution and will incorporate sustainable development in the field of industries. There are various physical changes which are helpful in the development but will prove time-consuming like Better Land Use practices which will help manufacturers in conserving energy and waste disposal easier to manage or Realistic Policies and Regulations where issue of political disagreements which led to both deregulation and over regulation of industrial pollution controls can be solved. Therefore, using techniques like Lean Management can bring more profit with less consumption of energy and resources. This technique will provide a way to do more work with less human effort, fewer materials, less time, and less space and will improve the use resources making it minimum. It will help in meeting the needs of the present without compromising the future to meet its need and will also lead to the economic and sustainable development.

UTILIZING A THREE TIER RESPONSE TO INTERVENTION MODEL INBUILT WITH UNIVERSAL DESIGN OF LEARNING AND DIFFERENTIATED INSTRUCTIONS TO CREATE EQUITY IN SCHOOLS - A CASE STUDY

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Problem Specification: The study sought to examine the question “would an inclusive and equitable classroom be created by building a three tier Response to Intervention Model inbuilt with Universal Design of Learning and Differentiated Instructions, collaboratively built by General and Special Educators receiving training on Universal Design of learning, Differentiated Instructions to enhance skills in diverse learners in general classroom?”

Methodology: In a school containing diverse learners comprising of grade level learners, at risk learners, learners with learning difficulties and diagnosed learners, a support based multi-level system was created in the school utilizing Research Base Response to Intervention (RTI) model. Learner placements in levels were done after teacher referrals, assessments by special educators, parent concerns and at times during admissions of learner possessing a diagnosis. Degree of support to be given to the learner by each stakeholder was determined, implemented, monitored with a learner capacity building perspective.

An intensive and continuous teacher training was provided to General and Special Educators to work on a collaborative model at the lowermost tier of RTI applicable for mainstream classrooms where both stakeholders are equally responsible for their learners. 5 days teacher training 5 hours daily were given by experts per year to gain theoretical knowledge through simulated learning of UDL Principles and that of the techniques of Differentiated Instructions.

Three principles of UDL -i.e., Multiple Means of Engagement- to maximize learner involvement; Multiple means of Representation - to cater to all learning styles and Multiple means of Action and Expression – to assess each learner readiness have been followed in mainstream classroom.

To establish equity in classroom of diverse learners' differentiation, a strategy that supports instructors in addressing each student's individual level of readiness, interest, and learning profiles (Nelson, 2014) has also been linked with above mentioned UDL practices in tier 1 itself. Creating three level goals in each class through continuous assessment of, abilities, interests and needs, setting up learning centers within the classroom to cater to different interests, readiness and learner profile and setting learning stations to measure outcomes as per readiness was also practiced.

The tier 2 of Response to Intervention consisted of learners requiring moderate support who receive, along with classroom instructions additional support in the form of small group instructions, specialized teaching learning resources, specific skill development program from the special educators and are provided with accommodations to reduce the barriers of learning.

The tier 3 of Response to Intervention consisted of learners who require intensive support in the form of specialized vocational program designed by and implemented by special educators following the principles of curriculum modification.

Discussions: Equity has been established in the school by utilization of three research-based strategies-Response to Intervention (RtI). Universal Design Of Learning (UDL) and Differentiated Instructions (DI) where the support needs have been identified in a scientific manner , supports have been provided and learner progress have been monitored to all these learners to function at their optimal level within the school set up. At the end of 4 years of, use of a support based three-tiered Response to Intervention model has successfully established inclusive classrooms resulting from collaborative efforts of General and special educators from pre -primary to eighth standards. The 25 learners in 2018 have increased to 45 learners with varying needs who are with their same age group peers studying in the school.

Use of UDL and DI at tier 1, support and skill -based intervention at Tier 2 and vocational curriculum at tier 3 have led to an equitable and inclusive school environment.

Keywords: diverse learners Teacher training Response to Intervention (RTI), Equitable Environment, Principles of Universal Design of Learning (UDL), Differentiated Instruction (DI), general Educators, Special Educators. research based teaching strategies. Curriculum modification

STUDY OF PHYSICO-CHEMICAL PARAMETERS OF GROUND WATER QUALITY IN BILASPUR DISTRICT OF CHHATTISGARH STATE

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The quality, quantity and availability of drinking water are one of the most important Environmental, social and political issues at a global level. Monitoring of drinking water quality and decision making is a challenge. ground water nature of Bilaspur region with regard to twelve physio-synthetic boundaries was analysed for consistently to survey its reasonableness for drinking purposes. Water samples were collected from three wellspring of drinking water (Hand pump water, bore well water, Tap water). Twelve physio compound boundaries were dissected thinking about every one of the different seasons (Summer, Rainy, Winter) were conducted. A systematic study has been carried out between different analysed parameters and noticed qualities were contrasted and standard qualities suggested by Word Health Organization (WHO). It was found that accessible water particularly tap water is not appropriate for general wellbeing.

Keywords: Ground water, physiochemical, bore well, water quality.

SUSTAINABLE LAND MANAGEMENT TECHNIQUES IN INDIA

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Technological advancements in the medical fields have enabled humans to have longer life expectancy. Due to which population growth rate has been rising exponentially. As a developing country, India is witnessing urbanization at unprecedented rates. It has resulted in increased demand of land for development. So, in order to meet the demand for land, various landmanagement techniques are used to promote efficient, impartial, and sustainable growth in a city. Many advancements have been made in the techniques used to develop the land. Implementing these techniques allows the developers to make the land available as per the needs of people. Thispaper will go through the various land management techniques used in India and how they have changed over time.

Keywords: Urbanization, land management techniques

INTERNET ADDICTION AMONG ADOLESCENTS AS IMPACT OF TECHNOLOGY

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Internet has emerged as a necessary part of our life. Adolescent have become entirely dependent on the internet to search for information, social website, recreation, online purchasing and online gaming. Educational institutions around the world are making use of the internet to upgrade teaching and studying indoors or outside the classroom using the internet. As India is overrunning towards digitalization, and along with showing technological advancement and usefulness. It has also presented some deplorable outcome for the adolescents. The present research work is to find out the impact of technology advancement focusing the internet usage, with reference to positive and negative effect. The researcher has attempted to recognize the several factors having influence on youth's internet addiction level and also analysis the effects. To overcome all these negative effects of internet and technology, the parents needs to monitor their children on regular basis.

Keywords: Internet, Internet addiction, Adolescents, Technological advancement, Digitalization.

IMPACT OF INDUSTRIAL EFFLUENTS ON ENVIRONMENT AND MEASUREMENT OF RIVER WATER QUALITY, BASED ON DIFFERENT PARAMETERS

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Industrial effluents affect physical and chemical water quality and these changes are harmful for living organism, bad impact of human health and biodiversity. Water is universal solvent and water is never pure it contains useful and harmful both things, "If there is magic on this planet, it is contained in water" (loren eiseley). Earths provide enough to satisfy everyone need but not everyone greed. Save environment to save If the river water temperature raises the DO level decreases. Fly ash dumping zone people face many problems. Water samples were collected from different places located Korba and Janjgir – Champa river area looking green and beautiful view, site 2 odor is not good. The parameter such as Odor Temperature,

pH, TDS, DO, COD have been studied using standard protocol APHA. Pre sampling on spot testing have been done on the different site.

Keywords: Temperature. pH, TDS, DO, COD, fly ash etc.

EFFECT ON TEACHING EFFECTIVENESS OF TEACHERS OF ATTITUDE TOWARDS EDUCATIONAL MEDIA

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The objective of this study is to study effect on teaching effectiveness of teachers of attitude towards educational media, for which a total of 300 teachers from private and government higher secondary schools of Durg-Bhilai block were selected, which 150 teachers from government schools (Out of 75 male teacher and 75 female teacher) and 150 private schools (75 male teacher and 75 female teacher) teaches were randomly selected, result is that after studding found the positive effect on teaching effectiveness of teachers of attitude towards educational media.

PRIORITIZING USER NEEDS USING MULTI CRITERIA DECISION APPROACH FOR WALKABILITY IN INDIAN CONTEXT

Aarti Bhadreshkumar Desai and Dr. Krupesh A. Chauhan

Empowering individuals to walk can be a useful approach to handle social and natural issues related with transportation. To promote walking as a choice of mode, users habits need to be address. Developing countries like India need to understand the local culture and habits of users to have a successful planning of walkable infrastructure and streets. With this background, it is essential to understand the concept of user needs for a safe and comfortable walking environment in Indian cities and provide a framework for planners to develop proper design guidelines. The present study enhances the comprehension of decision-making process of users using Stepwise Weight Assessment Ratio Analysis (SWARA) to acquire priorities for various criteria that affects choice of walking. A questionnaire survey was conducted in 09 zones of Surat city (Gujarat, India) to recognize user's priorities for walking characteristics within four main criteria: 'Planning,' 'Engineering,' 'Psychology' and 'Environment' identified based on literature review. The study found that users perceived psychology as the most important factor than conventionally used pedestrian infrastructure design factor 'Engineering.' This paper also found a possible approach to quantify the importance of qualitative attributes that are applicable to user decision process. These results will help urban planners and experts to rank the attributes defining the hierarchy of user needs and allocating investments into walking facilities based on the needs and expectations of users.

Keywords: Walkability, MCDM Technique, Smart Cities

FACTORS AFFECTING WALKABILITY IN INDIAN SMART CITIES

Aarti Bhadreshkumar Desai and Dr. Krupesh A. Chauhan

This study is an attempt to develop an alternative model for assessing walkability condition of two Indian cities Nashik and Udaipur. Questionnaire survey was conducted at 08 locations from two cities that included various land uses. Factor analysis was used to condense pedestrian perceptions into important variables that affected walkability. Principal Component analysis (PCA) was undertaken to define walkability as a function of pedestrian perception. Pedestrian perceptions from land use of two cities were analysed using PCA to assess factors affecting walkability in residential location. Safety from traffic, Safety from crime, Accessibility, Landscape, Traffic speed, crossing facilities, walkable distance to commercial area and bus stops, potential vehicle conflict, curb cuts along sidewalks are identified as the main factors that contribute to walkability of a residential land use. Research results indicate that walkability can be improved by giving more attention to the factors that are identified important in the model.

Keywords: walkability, pedestrian perceptions, factor analysis, principal component analysis

PAVEMENT RECYCLING – CONSERVING EXHAUSTIBLE RESOURCES

Meet Tabiyar

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Increasing urbanization has called for Deforestation, Economic crisis, Land unavailability, Lack of resources etc. While there is increasing urbanization, there is also need to maintain the prior developed infrastructure. In doing so, a lot of waste material is obtained because of lack of technology and using fresh resources. Finding to places to dump this waste or get permissions to make such land available is getting difficult day by day. Also, the awareness of people to save our environment and resources is on the rise. This calls for us to find innovative techniques to help this cause. At every urbanization rise, connectivity is a must infrastructure which will require maintenance at intervals as well. For which Pavement recycling comes in. Pavement recycling is a process which allows us to make new roads by utilizing old road pavement after inclusion of few rejuvenators and sometimes partial fresh material. The process can be done on site or away from the site and mainly two ways which are cold recycling and hot recycling. Utilization of this technology has proven to reduce emission of greenhouse gases from the process, construction traffic and construction time. This will help to not only save natural resources but have better economic efficiency.

VERTICAL CITIES – A WAY OF LIFE

Meet Tabiyar

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Human's average life expectancy has increased due to healthy lifestyles choices and advanced medical facilities causing rise in population and overcrowding. Because if which a need for living spaces increases. Looking for habitable land causes rise in urbanization leading to deforestation, land degradation, endangerment to flora and fauna etc, this leads to increasing urbanization causing deforestation, land destruction and endangering flora and fauna as well. Urbanization and overcrowding is also causing larger urban agglomerations to be developed. This causes for people to have hectic lifestyle because of long travel hours to work, no space/time for recreation etc. With exponential growth of population, the need of habitable land can't be overlooked otherwise nature will reach its limits. To overcome these issues, this paper focuses to enlighten the concept of vertical cities. These are to have higher heights, short time neighborhoods of 5-15 minutes which will include not only recreational spaces, institutional buildings and daily needs but also work stations, shortest travel time to ends etc. The outcome of these planned vertical neighborhoods will be convenient for people as time saving, economical and resourceful, this will help to increase happiness index and have a sustainable life.

उच्च माध्यमिक विद्यालय के विद्यार्थियों के स्व - बोध पर सचेतना गतिविधि के प्रभाव का अध्ययन

केमलता साहू

सहायक प्राध्यापक (शिक्षा), प्रिन्स स्कूल आफ एजुकेशन महकाखुर्द, उतई, दुर्ग, (छ.ग.)

प्रस्तुत शोध अध्ययन में उच्च माध्यमिक विद्यालय के विद्यार्थियों के स्व-बोध पर सचेतना गतिविधि के प्रभाव का अध्ययन किया गया। सचेतना जागरूकता की वह स्थिति है, जिसमें व्यक्ति अपने मन एवं कर्म को नियंत्रित करके अपने लक्ष्य पर ध्यान केन्द्रित कर लक्ष्य की प्राप्ति करता है। प्राप्त निष्कर्ष के आधार पर यह पाया गया कि उच्च माध्यमिक स्तर के विद्यार्थियों पर सचेतना गतिविधि के पश्चात् आनंदता उत्प्रेरण गतिविधि के पश्चात्

स्व-बोध का स्तर उच्च एवं सकारात्मक प्रभाव पाया गया।

की वर्ड्स – सचेतना, आनंदता उत्प्रेरण गतिविधि, स्व-बोध, उच्च माध्यमिक विद्यालय, विद्यार्थी

शोध निर्देशक : डॉ. सिद्धार्थ जैन (प्राचार्य) अपोलो महाविद्यालय, अंजोरा, दुर्ग, (छ.ग.)

EFFECT OF PESTICIDE & EXCESS FERTILIZERS IN PRESENT AND FUTURE ECOSYSTEMS

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Rising in the usage of pesticide and chemical fertilisers in agriculture Is an important concern for environment extensive use of pesticides can possess serious consequences to every living thing dependent on agriculture ecosystem directly or indirectly. Less than 0.3% of all the pesticides affect their targeted pests, and the remaining 99.7% accumulates in the environment. From disease like cancer, leukemia, asthma kidney and liver damage in humans and animals like hawks' birds, owls, squirrels, deer, foxes can be killed by pesticides even though they are not the target. Pesticides enter in aquatic ecosystem causes undesirable loss which causes decline of aquatic micro-organisms, fish and other aquatic species, like prawns, frogs, turtles, water birds etc. The deleterious effect of the chemical fertilizers starts from the manufacturing where chemicals gases like NH₄, CO₂, CH₄ are formed which causes air pollution. When added in soil, its continuous use degrades the soil health and quality hence causing the soil pollution. The usage of pesticide and chemical fertilizers are important for agriculture but in other hand its slowly affecting every ecosystem who are dependent on agriculture.

Usage of organic fertilizers and using old alternative method when pesticide was not there in market like companion-planting marigolds keep away many insects, natural pest control product is a big challenge in 20th century because of the amount of food we need to feed our 138 crores + population.

The purpose of the study is to investigate the chemical that are used in pesticide and chemical fertilizers effect Human, animals, environment and which chemical doesn't so that it will help us to regulate usage of poisonous pesticide.

COMPARATIVE STUDY ON AEROBIC AND ANAEROBIC PERFORMANCE IN DIFFERENT TEAM GAMES

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Background: Aerobic and Anaerobic capacity plays an important role in influencing the performance of a player. Team games are sports where size, shape, body composition and fitness all play an important part in providing distinct advantage for specific playing

positions particularly at the highest levels of performance where there is a high degree of player specialization.

Objective: The prime purpose of this study was to investigate the significant difference of aerobic and anaerobic performance among Football, Handball and Basketball Players of Manipur.

Methods: To accomplish the objective, total Ninety (N= 90) players, 30 each from Football, basketball and handball games, between 18 to 25 years of age, those were representing Manipur in national championship within last two years and regularly attending the respective continuous training were purposively selected. The aerobic and anaerobic performance of the players was chosen as independent variables of the study. Cooper's 12 min. run-walk test and Sargent Jump test were administered to obtain the data. The Analysis of Variance (ANOVA) was used in 0.05 levels of significance.

Results: To find out the significant difference, ANOVA was employed and tested at 0.05 level of confidence. Significance differences was found among the football, basketball and handball players of Manipur in the case of Aerobic Performance as the calculated F values ($F = 47.75$) was interestingly higher than the table value $F_{0.05(2,87)} = 4.85$ at 0.05 level of confidence whereas no significant difference was found in anaerobic performance as the calculated F value ($t = 3.94$) was lesser than the tabulated F value. Further, Scheffe post hoc test was employed to identify the exact differences among the selected games on aerobic performance.

Keywords: Football, Handball, Basketball, aerobic and anaerobic performance

COMPARATIVE STUDY ON INVOLVEMENT OF STUDENTS IN SPORTS BETWEEN THE GOVERNMENT AND PRIVATE SCHOOLS OF MANIPUR

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The purpose of the study was to see and compare the involvement of students in sports between the government and private schools of Manipur. For this study, three hundred and fifteen (N=315) schools were selected, One hundred and eleven (N=111) Government Schools; Two hundred and four (N=204) Private Schools from different Districts of Manipur were selected by using the probability random sampling method. The pertaining data was collected by administering the survey type of questionnaire. The data were analysed statistically by using one sample & two samples Chi-square test (ordinal and nominal data) was employed. The finding of the result reveals that there is a significant difference in the

involvement of students in sports between the government and private schools. Private schools are significantly higher involvement of students in sports as compared to Government schools.

Keywords: Involvement, Student in Sports, Government school, Private school and Questionnaire.

ASSESSMENT OF VO₂MAX OF SOCCER PLAYERS IN DIFFERENT COMPETITION LEVELS

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The purpose of the study was to assess the VO₂max of soccer players in different competition levels. For this study, forty-five (N=45), fifteen (15) each for I-league, state league and inter-universities participant players. The ages of the subjects ranged between 18 to 25 years and were randomly selected. Yo-Yo Intermittent Recovery Test Level-1 (YYIRT1) was administered to collect the pertaining data for VO₂max and distance covered. To calculate VO₂max value was determined in ml/kg/min unit by the formula of Bangsbo et al. (2008): VO₂max (ml/kg/min) = YYIRT1 distance (m) × 0.0084 + 36.4 and distance covered expressed in the unit of meters (m). Descriptive and analysis of variance (ANOVA) statistical techniques were employed to find out the characteristic of data and significant differences of VO₂max and distance covered of soccer players in different competition levels. Further post hoc test was applied by using the Scheffe's method to determine the paired mean differences of soccer players in different competition levels. The level of significance was set at P < 0.05. A significant mean difference in VO₂max and distance covered was found between the Inter-university and I-league players. There were insignificant differences of VO₂max and distance covered was found between the I-league and state-league players; and state-league and inter-university players respectively. So, the results of the findings show that VO₂max and distance covered of soccer players are significantly different according to their competition levels. Higher competition levels have high VO₂max levels compared to the lower competition levels.

Keywords: VO₂max, Distance Cover, YYIRT1 and Soccer

ASSESSMENT OF YOGIC EXERCISE INTERVENTION ON AEROBIC CAPACITY (VO₂MAX) OF WOMEN SOCCER PLAYERS

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The study's main objective was to investigate the significant changes in aerobic capacity (VO₂max) of Women Soccer following the progressive yogic exercise intervention. A total of fifty (N=50) women soccer players between 18 to 30 years of age from the KRYPHSA and YWC), Imphal, were selected randomly and divided into experimental (N1=25) and control (N2=25) groups. The experimental group only had been assigned the yogic exercise intervention 6 times in a week for duration of 12 weeks in the morning before attending the regular football training and the control group was not treated with any specific intervention exercise except regular football training. The yogic exercise intervention composed of Asanas, Pranayamas, Om-chanting and Meditation. Cooper's 12 minutes Run-Walk test was administered to assess the VO₂max in pre-intervention, 4th, 8th, and 12th weeks. The Repeated Measures Two-way Analysis of Variance (ANOVA) was adopted to determine the overall significant changes in aerobic capacity (VO₂mx) and the level of significance was set at 0.05 to interpret the substantial differences. The result of the study showed a progressive improvement of 4, 8, and 12 weeks of yogic exercise intervention on the VO₂max within the experimental group. There were significant improvements in the control group from pre-intervention to 12th week, 4th to 12th week, and 8th to 12th week in VO₂max. But, no gradual improvement was evidenced at all within the control group. Further, the result showed non-significant difference in the aerobic capacity (VO₂max) between the experimental and control groups after the course of 12 weeks. The result might be because of the control group players evolved the same periodized regular soccer training except for yogic exercise intervention. They might acquire the chance to improve aerobic capacity (VO₂max). The present study concluded that there was found the gradual increase of aerobic capacity (VO₂max) of women soccer players during the course of 12 weeks yogic exercise intervention.

Keywords: Yoga, exercise intervention, VO₂max, Soccer.

PHYSICO-CHEMICAL, FATTY ACID PROFILE AND MINERAL NUTRIENTS OF DIPLOCYCLOS PALMATUS (L.) C. JEFFERY (SHIVLINGI) SEEDS

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Diplocyclos palmatus (L.) C. Jeffery Syn. *Bryonia laciniosa* ((L.) is commonly known in Chhattisgarh as ‘Shivlingi’ due to its seed resemblance to ‘Shivling’, which is abstract or symbolic representation of the Hindu God ‘Lord Shiva’. Traditionally *Diplocyclos palmatus* (L.) C. Jeffery has been used for treatment of various ailment since generations. These seeds have been found to be rich in oil content, high calorific value and high protein value. Proximate analysis of full fat seed reveals Moisture – 4.15%, Ash - 3.81%, Volatile Matter- 80.34%, Fixed carbon-11.70% and Ultimate analysis reveals N – 2.31%, C- 60.03%, H – 8.759%, S - 0.16%. Atomic absorption analysis of full fat seed powder of seeds indicated the presence of Na⁺, K⁺, Ca⁺⁺, Mg⁺⁺, Fe⁺⁺⁺, Co⁺⁺, Ni⁺⁺, Cu⁺⁺, Zn⁺⁺, Pb⁺⁺ cations. Fatty acid composition of seed oil of *Diplocyclos palmatus* (L.) C. Jeffery by GC-FID reveals presence of Palmitic Acid (C16:0) - 28.78%, γ -Linolenic Acid (C18:3n6) - 17%, Linoleic Acid (C18:2n6c) - 16.47%, Oleic Acid (C18:1n9c) - 16.26%, Stearic Acid (C18:0) – 8.20%, Behenic Acid (C22:0) – 4.50%, Nervoinic Acid (C24:1n9) – 2.97%. Results reveal that *Diplocyclos palmatus* (L.) C. Jeffery may be a rich source of nutritional and medicinal properties due to their phytochemical constituents.

Keywords: Physico-chemical, Proximate-Ultimate Analysis, Atomic Absorption Spectroscopy, Fatty Acid Composition, *Diplocyclos palmatus* Seed.

INNOVATIVE MANAGEMENT FOR SYSTEM FOR DEVELOPMENT

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Introduction - Innovation can be seen as a process involving the invention of something and the exploration of its results (Roberts 2007) Sustainable innovation is the possibility that organisation must introduce services but also in their business model to active a balance between economy, social and environmental factors.

Aim - The aim to drive a sustainable innovation process or culture within an organization. Often these innovation management initiatives utilize a disruptive method to transform business. In the age of digital transformation, organisations are faced with the need to innovate more and quickly. Innovation drives business growth and help organisations stay ahead of their competitors. Innovation management helps in generating new business models and creates new products, sevicees and technologies designed for the changing market.

Key pillars - Four key pillars to competency structure, culture and strategy. As any new idea can be viewed as innovation, it helps to have these pillars in mind to stay organised.

Strategy - Strategy also involves resource allocation and it should inform your innovation management process based on your available resources. This allocation may change over time as you shift more (or less) resources towards developing ideas

Conclusion - Innovative- management for system for development is the important factor of every organisation to grow and to lead the future in the present market. Techniques and technologies are also playing a major role just like an appropriate well organised plan. Changing the old structure of operating any business process and the functionality of the existing business system needs to do periodically. It's very important for every individual for if they want to bring the change they should bring in themselves.

LOAD-BASED MEETING POINT FOR ANOMALY DETECTION IN DATA-MINING APPROACHES

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This paper appraised data-mining methodologies their applications and development, through an analysis of literature and the taxonomy of article, from 2002 to 2022 in order to find how the Data-Mining applications and its techniques have developed. In Data mining there are more than enough number of stratagems are handled to discriminate the inconsistency (outlier/anomaly) by affecting the collections of information and subsequently to be acquainted with the exclusion from them. In all Clustering technique presumes a trivial task in information-mining. Clustering implies gathering the relative data disputes together reliant on the compose they have. Exclusion Detection is a momentous matter in Data mining; especially it has been equipped to distinguish and wipe-out strange information or data from given object sets where anomaly is the information/data/object set whose importance falls exterior the limits. In this work we have proposed a combination-based anomaly finding calculation for powerful object mining which upgraded the clustering estimate to group the object-collections and load-based meeting point approach. In proposed approach, two procedures are consolidated to effectively discover the anomaly from the informational index. Edge worth can be determined automatically by taking supreme estimation of least and most extreme estimation of a specific group. The test results show that upgraded technique takes least computational time and focuses on decreasing the exception that could improve proficiency of k-implies grouping for accomplishing the better-quality clusters.

Keywords: Data mining, K-means clustering, density-based outlier detection.

PROPER SUM COLORING FOR SUM OF THE GRAPHS

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In this paper, we find for any two graphs G_1 & G_2 the sum of the graphs, $G_1 + G_2$, where G_1 is a complete bipartite graph and G_2 is any complete graph. Also we find the chromatic number for the sum graph $G_1 + G_2$, and thereby generalizing its chromatic polynomial. Also we find that the sum coloring of $k_1, n + k_m$ exceeds $2m$ times than that for sum coloring of k_1, n and k_m .

Keywords: Coloring, chromatic number, chromatic polynomial, sum coloring.

IMPLEMENTATION OF GREEDY KRUSKAL'S ALGORITHM FOR TRAVELLING SALESMAN PROBLEM

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The purpose of this paper is to present a modified algorithm for solving travelling salesman problem. For this ground, Greedy Kruskal's algorithm is adopted along with a new modified technique, by which obtains the optimal cost for the travelling salesman problem without using the traditional Hungarian algorithm. The primary benefit of this suggested approach is the use of spanning trees to determine the optimal cost for the notion of time-consuming problems. Furthermore, the implementation of the proposed algorithm is demonstrated by numerical examples and shown the minimum paths with minimum cost.

Keywords: Kruskal's Algorithm, Travelling salesman problem, Hungarian Algorithm, optimum cost.

SUSTAINABLE FIBRE REINFORCED CONCRETE: A GREEN ALTERNATIVE TO CONVENTIONAL CONCRETE

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Concrete is weak in tension and has a brittle character. Fibre Reinforced Concrete is one of the most promising construction techniques of modern times and steel fibre is, by far, the front runner in the field of reinforcing fibres. A very recent investigation on the properties of locally available Galvanized Iron wire (GI wire) which is basically mild steel wire with a thin coating of Zinc has discovered that it has the potential to be a viable low-cost alternative of commercially available steel fibres. Therefore, research has been conducted to study the performance of locally available GI wire fibre reinforced concrete (GWRC). This paper

presents the findings of the research that made an effort to explore several basic characteristics of GWRC primarily related to strength, ductility and durability. The prime focus of the study was on the effect of fibre content on the foregoing properties of GWRC. Coconut fibre is available in abundance at the test site, which makes it quite viable as a reinforcement material in concrete. Further, it acts as a new source of income for the coconut producer who gets the benefits of the new demand generated by the construction industry. In addition to this, it is an effective method for the disposal of coir mattress waste which will reduce the demand for additional waste disposal infrastructure and decrease the load on existing landfills and incinerators. The problem of high rate of water absorption of the fibre could be reduced by coating the fibres with oil. Moreover, the fibres being natural in origin is ecologically sustainable and can bring down the global carbon footprint quite effectively. The concept of using fibre to improve the characteristic of construction material is very old. Early applications include addition of straw to mud bricks, horse hair to the reinforced plaster and asbestos to reinforced pottery. Use of continuous reinforcement of concrete increases strength and ductility, but requires careful placement and labour skill. Alternatively, introduction of fibres is discrete from in plane or reinforced concrete may provide a better solution. The modern development of fibre reinforced concrete (FRC) started in early sixties. Addition of fibres to concrete makes it a homogenous and isotropic material. When the concrete cracks, the randomly oriented fibres start functioning, arrest crack formation and propagation, and thus improve strength and ductility. The failure modes of FRC are either bond failure between fibres or matrix or material failure. In this paper, the state of the art of fibre reinforced concrete is discussed and results of intensive test made by the author on the properties of fibre reinforced concrete using a local material are reported.

PERFORMANCE ANALYSIS OF LSTM-CNN FOR SPECTRUM SENSING IN COGNITIVE RADIO NETWORKS

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Spectrum sensing is a primary task for Cognitive Radio Networks. Deep Learning Models have proven its efficiency in SS and currently lot of research is focused on implementing it in practical Scenarios. However, for practical implementation, it is necessary that spectrum sensing should be from assumptions that are made by deep learning models. CNN is a very powerful model for extracting spatial characteristics such as sample covariance matrix. On the other hand, LSTM uses predictive sensing by extracting time series data. For efficient Spectrum sensing -Deep learning model, this paper proposes LSTM-CNN model to extract temporal as well as spatial data from the incoming signal. According to simulation results, LSTM-AlexNet outperforms CNN and the LSTM method separately. To further prove efficiency of the model we have compared the result from ML techniques like SVM and LR also.

Keywords: CNN, LSTM, Spectrum sensing

FULL-LENGTH RESEARCH PAPERS:

SUSTAINABLE TOURISM: A KEY DRIVER TO ECONOMIC GROWTH AND ITS PRACTICES

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Abstract: The research paper consists of the measures for the sustainable development of tourism in a city. Sustainable tourism takes the following factors in account such as socio-economic, environmental, cultural etc. This new type of development in tourism is encouraged by educational institutions, environmental as well as international organizations. It is expected that the industry would expand at an average annual growth rate of 10.35% between the years 2019 and 2028 in the country of India. It is expected that the medical tourism business would expand at a compound annual growth rate of 21.1% between the years 2020 to 2027. The research emphasizes how the sustainable development and its principles can reduce the ongoing concerns regarding tourism in a city. These practices can help in reducing the use of natural resources such as water and energy. These practices followed by the hotels can also be helpful in sustainable development by encouraging the locals and providing employment to them and also buying raw material from the locals will lead to economy generation for that area. As tourism is an activity that uses natural resources and at its peak there is very high exploitation of the resources. On the other hand, it has the potential to generate employment for inclusive growth with the help of sustainable practices.

Keywords: Sustainable tourism, Concept, Economic Growth, Social-Economic-Environmental aspects

I. INTRODUCTION

The growth and development of India's tourism industry are crucial. According to the World Travel and Tourism Council, in 2018 tourism contributed \$42.673 billion, or 16.91 lakh crore, to India's gross domestic product. By 2028, the tourist industry is expected to reach 32.05 lakh crore, growing at an average annual rate of 6.9% [1]. According to estimates, tourism employs around 260 million people worldwide, has the highest rate of growth in the globe, and accounts for roughly 9% of global GDP. Our global culture includes tourism, which enables us to go to other locations, interact with people from all backgrounds, and take part in new customs and pastimes. It may typically be viewed as a force for good because it offers several advantages to both travelers and communities. According to 2018 research by Nature Climate Change, tourism is thought to be responsible for 8% of the world's greenhouse gas emissions, which is a significant portion when all potential sources of emissions are taken into consideration. We are having this conversation today because it is obvious that we

need to transition to a more sustainable tourist strategy. Today, sustainability is both a pressing issue and a huge trend. We must take into account everything, including buildings, transportation, tourism, and other factors, in order to achieve it. A style of tourism that has more positive than negative effects, particularly on the environment, the economy, and local people, is referred to as sustainable tourism. People should be able to live better lives and go to better places thanks to truly sustainable and ethical tourism.

II. CONCEPT OF SUSTAINABILITY

For the concept of sustainability, we need to understand the principles, objectives and definition of sustainable development. The term "sustainable development" means the improvements that meets the demand of current generation and able to provide scope for future generation to meet their own needs.

The principles of sustainability in tourism are:

Protection of the environment, natural resources and wildlife

- Providing socioeconomic advantages to tourism destination communities
- Conserving cultural treasures and developing genuine tourism experiences
- Bringing together visitors and local communities for mutual gain
- Creating tourist options that are accessible and inclusive [2]

The sustainability concept is centered on three things: social, economic, and environmental growth. The vast majority of regional development programs currently include principles related to sustainability; the phrase is even mentioned in the Polish Constitution [3]

All tourist-related activities, management, and development that ensure the protection of the environment and cultural resources are referred to as sustainable tourism.

All types of tourism, including mass tourism and other specialized segments of tourism, are subject to the principles and management practices of sustainable tourist development.

As a result, in order to adopt sustainable tourism concepts, the best possible use of environmental resources, which is essential to the growth of the tourism industry; maintenance of fundamental ecological processes; and support for the preservation of the natural world.

III. OBJECTIVES OF SUSTAINABLE TOURISM

The following are the objectives of a city's sustainable tourism program:

- collaboration between all parties involved in the growth of tourism in the area; an inventory of the region's tourism-related goods;
- incorporating environmental concerns and local community interests when creating new tourism products and marketing initiatives;
- a review of marketing and how prospective customers see the product;
- developing a vision, mission, and marketing strategy for the strategy's longevity;
- creation of a regional identity brand;
- creation of tools for monitoring the success of strategy implementation

The goals of sustainable tourism must be broken down into these three categories as well because sustainability is evaluated in three different contexts: economic, environmental, and sociocultural.

IV. ECONOMIC ASPECTS OF SUSTAINABLE TOURISM

Ensuring long-term existence by ensuring success and competitiveness in the markets and regions;

The quantity and quality of jobs associated to tourism in the area, including non-discriminatory pay, working conditions, and employment possibilities; the increased economic benefits of tourism for the residents, including the tourists' spending;

Ensuring the equitable distribution of the positive social and economic effects of tourism.

V. ENVIRONMENTAL ASPECTS OF SUSTAINABLE TOURISM

Environmental aspects of sustainable tourism are as follows:

- maintaining and improving the landscape's quality in both urban and rural locations while preventing pollution of the environment and the eyes;
- promoting and protecting the environment, animals, and natural ecosystems, as well as reducing the negative effects of tourism on the environment;
- minimizing the development of tourism's use of rare and nonrenewable resources;
- reduction of trash generation by visitors and tourism-related businesses, as well as contamination of the water, air, and soil.

VI. SOCIOCULTURAL ASPECTS OF SUSTAINABLE TOURISM

Sociocultural aspects of sustainable tourism are as follows

- construction of social infrastructure, improvement of resource access, improvement of environmental quality, and prevention of social corruption and resource exploitation;

- maintaining and fostering the unique qualities, local culture, and cultural legacy of the host community;
- supplying a welcoming, entertaining, and accessible tourist experience that satisfies visitor needs.
- Local communities have the power to plan and make decisions on the management of tourism.

VII. IMPACTS OF TOURISM [4]

Proper development in tourism can be a great opportunity to reduce poverty in a region by generating income and providing employment.

A. Economic impacts

- The GDP contribution of travel and tourism in 2019 was Rs. 1,368,100 crore (US\$ 194.30 billion), or 6.8% of the entire economy.
- By 2028, there will likely be 30.5 million foreign visitors.
- Foreign Tourist Arrivals (FTAs) increased by 177.9% from 123,179 in March 2021 to 342,308 in March 2022, a positive growth rate [1]
- USA (24.58%), UK (14.01%), Bangladesh (11.78%), Canada (6.86%), Australia (5.68%), Sri Lanka (4.30%), Nepal (3.10%), Germany (1.94%), Singapore (1.79%), France (1.69%), Maldives (1.51%), Portugal (1.27%), Russian Federation (1.00%), Oman (0.95%), and Italy (0.93%) are the top 15 source countries for foreign tourists entering India in March 2022 [1]
- It is widely acknowledged that the growth of tourism in a nation or region presents a significant economic opportunity to eliminate poverty through increased income and employment. But the actual economic advantages may be far lower than anticipated if tourism is not created and managed responsibly, taking into account local needs and concerns.

- The three primary economic advantages of tourism are: a decline in unemployment, the improvement of infrastructure, and the generation of both financial and non-financial income for the area.
- The boosted purchasing power of workers and their families as a result of more tourism-related jobs. Additionally, economic advantages can occasionally be generated far from the tourist attraction or vacation spot. For instance, workers on cruise ships frequently transfer their pay back to their home nations.
- Like all other industries, tourism requires a strong infrastructure network. This includes social and cultural infrastructure, such as restaurants, bars, hospitals, theatres, cinemas, and entertainment venues, in addition to highways and train tracks.

B. Environmental effect

The impacts on environment are as follows:

- Water, and especially fresh water, is one of the most important natural resources that we have. The hospitality and tourist industry often wastes much too much water due to individual guest water consumption as well as water usage at hotels, swimming pools, and golf courses. It is possible that this may result in water shortages, the degradation of existing water sources, and an increase in the amount of waste water produced.
- Land resources include minerals, fossil fuels, fertile soil, forests, wetland, and animals. Building tourism and recreational services has increased pressure on natural resources and landscapes. The use of land for housing and other infrastructure, as well as building materials, can affect renewable and nonrenewable natural resources in tourism.
- The ecosystem can suffer from wide-ranging and occasionally permanent effects of tourism. In some of the most extreme

instances, environmental deterioration over time has rendered useless the very attributes that formerly drew tourists to a location, causing tour operators and their customers to forego the older location in favor of newer, undamaged ones.

- Areas with high natural assets that are regarded particularly vulnerable to deterioration include coastal regions, alpine regions, freshwater ecosystems.
- Tourism causes garbage to be created by both tourism-related businesses and tourists themselves, which contributes to the imbalance of water. Through the carbon dioxide emissions of airplanes and other kinds of transportation, which aid in human-induced climate change, travel to tourist sites has an influence on the entire world.
- While there may be environmental costs associated with tourism, there may also be environmental advantages. The money made by the tourist industry may make a major difference in the protection of protected areas like forests and coral reefs. Ecotourism may also aid in the promotion of environmentally sustainable leisure.
- At this point, it should be noted that tourism, like all other industries, will always have a detrimental impact on the environment. Even while they cannot all be removed; it should still be a top goal to reduce the negative impacts as much as possible.

C. Socio-cultural impact

- Changes in the local social environment are linked to the unfavorable effects of tourist growth. Foreign visitors frequently disrupt the social structures, customs, and way of life of the host country.
- Local culture is becoming less authentic as it becomes more commercialized. Social tensions and pathology inside the community are both on the rise. By supporting local businesses and promoting proper visitor conduct, tour operators may

aid in promoting beneficial cultural changes and preventing adverse effects.

- The tourist business and its effects on sustainability are primarily influenced by three factors: travel objectives, lodging services, and transportation. These three, taken independently, each have an effect on the final location, but taken collectively, they offer a broader perspective on the model. The approach emphasizes the significance of careful management of visitor flow.

VIII. UDAIPUR CASE STUDY [5]

Here are the practices that are carried out in Udaipur which leads to sustainable tourism

- Governmental initiatives to guarantee the city's tourist industry develops sustainably include: In Marble Industries, the government recycles water as it relates to sewage treatment facilities.
- The organization is striving to revive traditional arts and crafts as part of its efforts to promote rural tourism by making ready marketing possibilities for rural craftsmen.
- The E- Rickshaws are being marketed in terms of clean transportation fuel.
- By launching Jeep Safaris in the district's several wildlife sanctuaries, including Kumbalgarh, Bassti, and Sita Mata, the forest department will also play a significant role in promoting wildlife tourism.
- To lessen the inconvenience caused by traffic to neighboring residents and to prevent noise pollution, various methods are being made to alternate the traffic on locations like Fateh Sagar and Surajpole.
- A little more than half of the city's tourist attractions and other locations are kept clean on a daily basis thanks to the initiative of the trash disposal plan under the Swatch Bharat program, which provides work to the underprivileged.

- Since the tourism industry makes up a significant portion of Udaipur's economy and new roads are being built as part of that mission to improve connectivity, the central government chose the city for its smart city project. Initiative policies to conserve water and electricity are also being made as part of this mission.
- Hotels are generally moving toward adopting sustainable practices, but one of the most crucial aspects that they need to emphasize is acting in accordance with their corporate social responsibility to end hunger and poverty by purchasing locally grown food in order to reduce costs as well as to increase the opportunity for locals to earn income.
- Selling the rooms that are exposed to natural light in cases of low occupancy can also be ascribed to the allocation of rooms for sale in order to reduce power costs.
- The study also found that hotels are unable to fully utilize the significant solar energy that is available. One of the most important jobs is involving the staff in the operations, and this may be accomplished by giving them frequent training.

In order to achieve complete equality between visitors, locals, and the environment, Udaipur's tourism industry may expand in a way that is both healthy and environmentally beneficial.

IX. CONCLUSION

Practices for sustainable tourism can be as follows:

- It is important to educate people about ecotourism. As well-informed people who are acutely conscious of the impact that our actions have on the natural world, it is our duty to teach others about the importance of ecotourism by spreading knowledge of its benefits. We, as individuals, organizations, communities, groups, corporations, and even governments, should serve as a model for others to emulate by bringing this issue to the attention of policymakers in order for

them to be able to effect systemic and sustainable change.

- When you visit to a new location, it is important to show support for the local companies by purchasing some of the local mementos. You will be providing support to the actual crafters as well as the locally manufactured items that they make if you do this. Try to steer clear of purchasing things that will be discarded fast or mementos that have a large carbon imprint. Explore the areas surrounding your home to find unique local commodities such as artwork, ceramics, and textiles. If you do this, you will not only be contributing to the growth of the local economy, but also to the promotion of local talent and the expansion of job prospects for local citizens.
- Walking is the easiest and most practical technique for exploring a new region, and it also benefits the environment by reducing your carbon footprint. This is because walking uses less energy than other modes of transportation. For assistance, speak with the tour guides, and pay attention to the advice they give on the areas where it is safe to walk. In addition, several wild animals may become startled or flee when they hear loud noises, such as those produced by motor vehicles. You won't bother the animals if you get out of the van at the entrance and just take a stroll through the park.
- Most often when they are deemed beneficial, sustainable development concepts are used in the tourist industry. Entrepreneurs in the hospitality sector (i.e., those who offer lodging services) propose environmentally friendly solutions mostly for financial reasons. It may also be seen positively from a marketing perspective.
- Tourists may be drawn by eco-labels to particular locations. Native communities may suffer from tourism if outsiders meddle with the local culture. But from another angle, tourism may support the preservation of cultural assets. While they will remain in

their original locations for future generations, historical landmarks are being restored and safeguarded in order to draw tourists.

- It is advised to place more of a focus on visitor education when it comes to their interactions with local populations. It is important to treat the hosts with more consideration and respect.
- Entrepreneurs in the hospitality industry should also take into account future community demands in addition to the needs of their customers now. They should be aware that they cannot remain a desirable tourist destination without the support of the host society and concern for the environment.
- Avoid flying or opt for nonstop routes. The majority of a plane's carbon emissions, along with significant heat emissions, are produced during takeoffs and landings. Therefore, nonstop flights should be attempted whenever possible to ensure the most efficient use of fuel and the lowest possible level of carbon emissions from the aircraft. If at all possible, you should steer clear of flying and opt instead to take the train. Your carbon footprint will be reduced, you will have more time to spend with your travel companion, and you will have the opportunity to get a deeper comprehension of the area to which you are travelling.
- Make more local trips. Try to visit additional nearby places. According to research on sustainable tourism, there are a number of advantages to travelling within one's own nation for the first time. You won't have to take a plane, you can ride the train or take use of the public transit system, you'll be helping out local businesses, and you'll end up spending more money inside your own nation. You will also gain information about your nation, fight against unethical activities in the tourism industry, motivate yourself and the people around

you, and be driven to promote sustainable tourism and legislation linked with it in your own nation.

- This is consistent with our goal of educating the public about sustainable vacation options. Spread the word by telling your friends and family about your experiences online. The more you tell others about your travel habits, the more you'll stress the need of being responsible while on the road. Through shared experiences, you might come to share the same values and commitments as another person.
- Contribute to the solution by selecting locally produced, filtered water in recyclable glass bottles and bringing tote bags to use while browsing shops and markets. As a result, there will be less plastic trash and less greenhouse gas emissions. It has potential as an alternative to petroleum-based materials, which are widely employed in the plastics industry. Take part in the effort to eliminate plastic, which is a global problem.

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SUSTAINABLE LAND MANAGEMENT – TECHNIQUES AND PRACTICES IN INDIA

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Abstract: Technological advancements in the medical fields have enabled humans to have longer life expectancy. Due to which population growth rate has been rising exponentially. As a developing country, India is witnessing urbanization at unprecedented rates. It has resulted in increased demand of land for development. So, in order to meet the demand for land, various land management techniques are used to promote efficient, impartial, and sustainable growth in a city. Many advancements have been made in the techniques used to develop the land. Implementing these techniques allows the developers to make the land available as per the needs of people and follow the different Sustainability Development Goals (SDGs) listed under the Rio Conventions. This paper will discuss different land management models and land supply models evolved over time and how they are affecting Sustainability Development Goals regarding end of poverty, good health and wellbeing and Life on land.

Keywords: Urbanization, land management techniques, land supply models, Sustainability Development Goals.

I. Introduction

Throughout the history, majority of human activities have taken place on land which is suitable for agriculture habitat and other natural resources. The provision and regulation of resources, as well as other essential ecological and environmental activities, are given by land. It is also linked with well-being of human and affects food security and livelihood. Over exploitation and deterioration of resources of land have negative effect on quality of life and can result in food insecurity, job losses, displacement or conflict. Therefore, maintaining and supervising the capability of the land to continue producing commodities and services for public is necessary for improving social, cultural and economic quality of life [1].

Sustainable land management can support the objectives of the three Rio Conventions (UNCCD, UNFCCC, and CBD) and have positive effects on productivity, increased climate change resilience, decreased greenhouse gas emissions, and the conservation of biological diversity. This is because it

provides opportunities for collaboration and the integration of approaches.

SLM also contributes directly to achieving multiple Sustainable Development Goals, including:

- SDG 15(Life on Land), focuses on the attainment of land deterioration neutrality, by providing a variety of targeted, suitable land management techniques that prevent the loss of good land and preserve or improve land's productivity.
- SDG 1(end to poverty), SDG 3(good health and well-being), can be achieved by improving food security and other livelihood benefits, and by boosting the durability of the land and the people who depend on it.

India has used a variety of land management strategies over the years to improve quality of life and sustainability. Different states use various land management techniques depending on the physical, social, and economic conditions [1].

II. Literature Review

A. Definition of Land Management

Land management is the process of controlling how land resource is used and developed, both in urban and rural areas. Sustainable land management balances the complementary goals of presenting environmental, economic, and social opportunities for the benefit of both current and future generations while preserving and enhancing the quality of land resources. [2].

B. Practices in India

Zoning, density, and building codes are the most typical methods used by the authority to restrict land use in metropolitan areas. These guidelines are detailed in each city's master plan. In India, land management is carried out using the three methods listed below.

1. **Compulsory Land Acquisition:** Land is compulsorily acquired from public, which is a laborious process and sometimes result in everlasting litigation cases.
2. **Land Pooling/readjustment:** Owners' land is temporarily taken, developed, and then returned to them after paying for public areas and infrastructure through the sale of developed land.
3. **Guided land development:** Guided land development, which is carried out in collaboration with landowners who contribute their property for public infrastructure [3]

These land management techniques are used as models for land supply in several Indian states.

C. Land supply Models

Keeping in mind the urban poor, different governments have applied different land supply models based on SLM techniques to make the land available to the poor. In this research paper we will be discussing about different land management models of different states and their impact on sustainable development goals.

Gujarat: Instead of compulsory Acquisition of Land now-a-days the state of Gujarat follows T.P. Scheme to supply land for development activities as it is faster and financially affordable. Gujarat endorsed the town planning Scheme to develop the land fast which was restricted before because of the then applicable Land Acquisition act which was time consuming and expensive. Land Acquisition faced many legal Problems and local authorities had to pay heavy compensations to the landowners. [4]

To overcome these problems Gujarat adopted T.P. Scheme which is a form of land pooling. In this method irregular plots are pooled together and portion of land returned to land owners are made in regular shapes to avoid wastage of land resource while constructing. The portion of land taken from the land owners is used to provide Infrastructure, amenities etc. to the public and housing to people in the Economically weaker sections. [5]

Haryana: Haryana followed the compulsory land Acquisition act-1894. Amendment was made in 2015 which forced the authorities to get 80% vote from the landowners to acquire the land and develop [6]. This made the Acquisition of land and development very difficult.

In 2019, Land pooling Policy was made to offer the land owners a fair share in the deal through land pooling. After developing the land, authorities give the portion of land to the landowners according to the rates of the land in that particular area. The rest of the land is used to give Infrastructure and amenities to the public. Some plots are also reserved to sell on no profit no loss basis to the poor section of the society. [7]

Greater Mumbai: According to Regulation 34 of the Development Control Regulations for Greater Bombay, 1991, the Municipal Corporation of Greater Mumbai has adopted the Transferable Development Rights (TDR) mechanism. TDR is a method of land development that allows for the usage of a specific piece of land elsewhere within the city's designated zones while separating it from its potential for development. It allows the owner to transfer the development rights of particular parcel of land to another party or person. The entitlement, which allows the proprietor to build additional built-up area on his existing building or unoccupied land, is over and beyond the standard FSI available for receiving plot in compliance with the current laws and regulations. This method is typically applied to the development and reconstruction of inner-city areas. [8]

Conclusion: Gujarat follows the TP Scheme model to supply urban land, which ensures that all the amenities are provided to the landowners and the land-use is distributed according to the guidelines. It is ensured that the healthy land with potential to be developed is preserved and improved if needed. To help the people falling under economically weaker section is allotted

special land for housing at 10% of the total tp scheme area.

The state of Haryana follows land pooling policy which focuses on developing sectors in the city and providing all the necessary amenities and services. This policy attempts to improve quality of life and develop land with maximum productivity keeping in mind it's potential. Unlike TP scheme, few plots are kept reserved to sell with no profit no loss basis for economically weaker section of the society. Also, some plots are kept reserved to sell on no profit no loss basis for the poor section of the society. These rules are followed in order to achieve Sustainability Development Goal 15,1,3.

The concept of TDR in greater Mumbai allows transfer of development rights or increase the FSI of a building. Past experiences with this method have brought traffic congestion, high density areas and degraded quality of life. If not done carefully, this might result in non-sustainable planning.

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