

## ANALYSIS OF VARIOUS MECHANICAL PROPERTIES FRICTION STIR PROCESSED OF AISI 4337 STEEL

*\*Harmandeep Singh \*\*Rajbir Singh*

*\*Department of Mechanical Engineering, Amritsar group of Colleges, Manawala, Amritsar*

*\*\*Department of Mechanical Engineering, Amritsar group of Colleges, Manawala, Amritsar*

*Corresponding Author: Email ID: harmansingh201194@yahoo.com*

### ABSTRACT

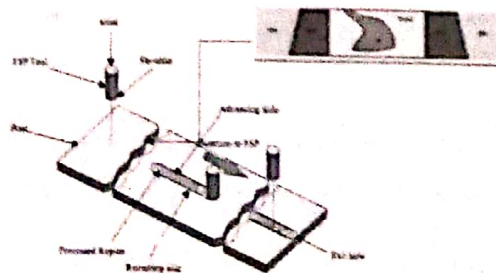
Friction Stir Processing (FSP) of AISI 4337 steel was done with Tungsten carbide (wc) tool under two different rotational speeds 100rpm and 200rpm, with feed rate of 30 mm/min and plunge depth of 1 mm. The mechanical properties like micro hardness, tensile and bending were studied. After annealing process, the carbide particles were observed in original martensite phase. According to the increase in grain size. Good strength-ductility observed with YS of 650 Mpa and 970 Mpa. This may be fact that increase in the grain boundaries decreases in the grain size. Friction stir processing also modified the properties of AISI 4337 steel microstructure.

**Keywords:** Friction Stir Processing, Mechanical Properties

### INTRODUCTION

All things considered, the automotive industry having different experience sorts of surface dislikable like wear and corrosion. In oil hardware parts in Hydro turbine and gearbox. FSP is a method to change and microstructural control of surface thin layers of control steel parts for property improvement. It is powerful innovation for microstructure refinement, densification, and homogenization. FSP is a great way to deal with improving the refinement of the microstructure and mechanical properties of the material [1, 2]. In FSP the deserved parameter is used with the speed of rotational and longitudinal. It has been seen in the parameters that to handle the level of microstructure refinement of a grain. To control the calculated information and level of tensile in the material where the microstructure of the prepared material.

FSP is a new solid-state technique. In FSP as shown in figure.1 has four local the phases which are the district that is a thermo-mechanically prepared zone in which the grains measured is refined and homogenized. The thermo-mechanically affected zone (TMAZ) in which the grain is lengthened like it was mechanically distorted. The heat affected zone (HAZ) that as a same grain structure of the base material (BM) is the local that was unprocessed material. The unprocessed material incorporating the HAZ, its unique pre-prepared state i.e. parent material (PM) [3]. The examined on FSPed steels is as yet constrained because of the controlling and the founding stage change [4, 5]. In another side, the ultrafine grains changed their stage structure can be acquired in medium carbon steel by means of FSP and its great mechanical properties [6-7]. In the further examination on FSP of steels, the development of microstructure is the impact on the FSP steel mechanical properties.



**Figure 1: Schematic of Friction Stir Processing Process**

# PERFORMANCE OF MICROWAVE PROCESSED INCONEL-625 CLADS FOR VICKER'S MICROHARDNESS

Prabhjit Singh<sup>1</sup>, Gurbhej Singh<sup>2</sup>, Jugjit Singh<sup>3</sup>

<sup>1,2,3</sup> Amritsar Group of Colleges, Amritsar, India

Corresponding Author: Email ID: singhprabhsingh90@gmail.com

## ABSTRACT

In this study, an efficient and affordable microwave technique was used to clad a stainless steel (SS-316) substrate with Inconel-625. For the cladding process, a household microwave oven with operational ratings of 900 W and 2.45 GHz was employed. The mean microhardness of the obtained clad was considerably better than that of the substrate (SS-316).

**Keywords:** Microwave Cladding, Inconel-625, Microwave Hybrid Heating

## INTRODUCTION

A superalloy based on nickel called Inconel-625 (IN625) has numerous advantageous properties. These include its resilience to corrosion in harsh chemical conditions, exceptional creep resistance at high temperatures, and resistance to strain age cracking. Additionally, Inconel-625 has higher formability and better welding workability compared to other highly alloyed nickel-based alloys. Because of these unique characteristics, this superalloy is a fantastic option for the materials that are utilized in a wide range of sectors, including the chemical, power generation, aerospace, petrochemical & marine industries [1]. However, the expensive price of Inconel-625 has limited its use in large-scale manufacturing. One of the widely utilized techniques for the improvement of surface properties, as well as material function without modifying the majority of properties, is known as surface engineering. Various engineering applications use Stainless steel as one of the common material. Various methods can be used for ferrous alloy's surface modification are thermal spraying, CVD, PVD, heat treatment, laser cladding and microwave cladding etc. [2, 3]. Because of the factors like easiness in operation as well as being able to build a variety of materials on substrate, one of the most common technique that is used widely nowadays is thermal spraying. Although, limitations associated with thermal spray technique includes porosity and splats' poor mechanical bonding [4-6]. Furthermore, when high accuracy is required for performing the cladding on the small components then laser cladding is used, which has a high cost of operation. Furthermore, in the laser cladding process, during the rapid melt pool solidification there exists a crack formation tendency [7-8]. Presently, there exists one more popular technique namely, microwave processing of materials, as it has various advantages like volumetric heating, uniform heating a well as because of the enhanced microstructural characteristics it possesses improved mechanical properties. Furthermore, in the materials' microwave processing, at the atomic level heat is produced, which further results in the enhanced productivity as well as lower consumption of energy. Also, during this process the material which owed to the atomic level interaction resulted in generation of volumetric heat inside it in comparison to the conventional surface heating techniques where conductive mode of heat transfer is used. Thus, material resulted in decreased thermal gradient inside it which results in enhanced functional properties along with decreased residual stresses inside the material. Firstly, gave the microwave heating application as microwave cladding for enhancement of metallic material's functional properties in a patent form. MHH(Microwave Hybrid Heating) technique's principle was used by the authors for microwave clad development.

## EXPERIMENTAL DETAIL

### DETAIL OF MATERIAL

Superalloy Inconel-625, Ni-based based powder Purchased from (M/S Metallizing Equipment ), Jodhpur (India), was selected for cladding due to high hardness and corrosion resistance. Fig 1 SEM micrograph shows that display the morphology of Inconel-625 powder. The majority of the powder particles with a diameter of 40

# OPTIMIZING THE WEAR AND CORROSION PERFORMANCE OF THERMAL SPRAY COATING PROCESS PARAMETERS ON Ti-6Al-4V ALLOY

\*Navdeep Singh<sup>\*\*</sup> Ranjit Singh

<sup>\*</sup>Department of Mechanical Engineering, Sant Baba Bhag Singh University, Jalandhar

<sup>\*\*</sup>Department of Mechanical Engineering, Sri Guru Granth Sahib World University, Fatehgarh Sahib

Corresponding Author: Email ID: navdeep079@gmail.com

## ABSTRACT

The study you described utilized a factorial design experiment, specifically a  $3^3$  factorial design, to investigate the effects of various variables on the quality of HVOF (High-Velocity Oxy-Fuel) Ni-based self-fluxing alloy coatings concerning their corrosion behavior in a 3.5% NaCl solution. Here's a breakdown of the methodology and findings: Experimental design the  $3^3$  factorial design implies that three factors were studied at three levels each, resulting in 27 experimental runs (3 levels for each of the 3 factors). The factors investigated were the spraying distance, the fuel-to-oxygen ratio, and the powder feed rate. Response surface methodology (RSM) was employed to model and analyze the empirical relationships between the variables (spraying distance, fuel-to-oxygen ratio, powder feed rate) and the properties of the HVOF coatings, specifically focusing on corrosion resistance in the given NaCl solution. Optimization using the response surface methodology, maps was generated to visualize the relationships between the variables and the desired specifications of the coatings for optimal corrosion resistance. By analyzing these maps, the researchers were able to identify the optimum operating conditions that would yield the desired properties of the HVOF coatings. Significant factors the analysis of the results revealed that the spraying distance, the fuel-to-oxygen ratio, and the powder feed rate significantly influenced both the porosity and corrosion resistance of the coatings. This suggests that controlling these parameters during the HVOF coating process is crucial for achieving coatings with desirable properties, especially in terms of corrosion resistance in a 3.5% NaCl solution. The findings of this study contribute to understanding the factors that affect the quality and corrosion resistance of HVOF Ni-based self-fluxing alloy coatings. By identifying the optimal process parameters, manufacturers and researchers can enhance the performance and durability of these coatings in corrosive environments, which is valuable for various industrial applications.

**Keywords:** Experimental design; Corrosion; HVOF thermal spray coatings; Response surface methodology.

## INTRODUCTION

Optimizing the wear and corrosion performance of thermal spray coating process parameters on Ti-6Al-4V alloy involves a systematic approach combining experimental design, material characterization, and performance testing. Ti-6Al-4V alloy is a popular titanium alloy known for its high strength, corrosion resistance, and lightweight properties, often used in aerospace and biomedical applications [1]. Thermal spray coating techniques such as plasma spraying, HVOF (High-Velocity Oxy-Fuel), and flame spraying can enhance the surface properties of Ti-6Al-4V by applying coatings with improved wear and corrosion resistance.

Various steps to optimize the process parameters for thermal spray coating mention firstly material characterization of the Ti-6Al-4V alloy substrate to understand its surface morphology, microstructure, mechanical properties, and corrosion behaviour [2]. Determine the desired properties for the coating, such as hardness, porosity, microstructure, and chemical composition. Second steps to experimental design use design of experiments (DOE) techniques such as Taguchi methods, factorial designs, or response surface methodologies (RSM) to systematically vary process parameters. Key process parameters may include spray

# RESOURCE MANAGEMENT: ADVANCES IN WASTE MANAGEMENT

*\*Rajbir Kaur\*\* Devkaran Singh Sarkaria*

*\* Assistant Professor, Amritsar Group of Colleges, Amritsar*

*\*\*Research Scholar, Department of Computer Science and Engineering, Punjab Engineering College (Deemed University), Chandigarh*

*Corresponding Author: Email ID: stem2024@acet.edu.in*

## ABSTRACT

This study focuses the current practices related to various waste management initiatives taken for human well-being. The objective of study is to do a comparative analysis of performance indicators to evaluate the existing waste management system. This study looked the different pathways of contamination and risk associated to choose the remedial options. The focus is at the ways to strengthen the existing level of attenuation towards the remedial measures. The study of manuscript is concerned with the major aspect like hazard identification, toxic compounds, reference doses or daily intake levels for non- carcinogens and carcinogens, Exposure routes and characterization of human exposure points are of main concern. The methodology used for the study covers both quantitative and qualitative approach. The study is to look at effective strategies and measures at local, regional and global levels to save nature for our survival and sustainable development. The main thrust is on the prevention, minimization, reuse, recycling, recovery and the safe disposal of the waste generated. Effective responses to risk assessment will cover aspects like Hazard identification, Data collection, Toxicity assessment, Dose behavior response, Exposure assessment and Risk characterization.

**Keywords:** Hazard Index, Deterministic Approach, Bioaugmentation, Potential Carcinogens, Engineered Microbes, Plume

## INTRODUCTION

Waste production is directly related to human activities [1] The number and variety of waste grows every year. In addition to municipal waste, the second group consists of industrial waste [2]. Problems related to waste management may include, negative impacts on the biosphere, water, soil and air pollution [3] Each of the decisions made regarding the disposal of waste has an impact on where the waste will go and whether it will be possible to subject it to the recycling process. That is why it is important to properly implement activities related to the waste management sector in places where they are generated [4].

Besides contaminating surface water another devastating effect of dumping site is on the groundwater quality by the formation of leachate [4,5]. Leachate is a liquid that leaches from a landfill /dump [6,7] It varies widely in composition along with its age [8]. Municipal solid waste leachate contains a large microbial population, and may be heavily contaminated with pathogenic microorganisms. [9-10]. The most typical detrimental effect of leachate discharge into the environment is groundwater pollution. Leachate by seepage and infiltration not only deteriorates soil quality but also renders the associated aquifer unreliable and unfit for drinking purposes [7] Discharge of raw municipal leachate into streams impact aquatic life and causes degradation of water quality [11,12] India being slowly transitioning from an agricultural economy towards an industrial economy. The more and more industrial clusters are in proximity of human cluster or densely populated areas. Ghaziabad, the major industry involved in the production of fans releases considerable heavy metals into the subsurface. Due to greater contamination at the site, there was an outcry then the relevant regulatory agencies looked at the relevant aspects and they noticed that heavy metal concentrations were remarkable high, specifically for chromium. The study here is the case of a landfill in the US, that was typically used both for municipal solid waste and some industrial waste. The heavy metals are leaching from the landfill into the relevant, groundwater and surface water stream.

# COMMUNICATION SKILLS' SIGNIFICANCE FOR ENGINEERS

*Varun Mehra*

*Assistant Professor, Department of Applied Sciences, Amritsar Group of Colleges, Amritsar*

*Corresponding Author: Email ID: mehruvarun18@gmail.com*

## ABSTRACT

Global human society's expansion and civilization progress are closely linked to the broad field of engineering. The process of communicating thoughts, feelings, desires, actions, etc. with one another in order to achieve a certain goal in life, either individually or in groups, is known as communication. It is a system that has been devised and put into place. The communication system is the only tool used in all sectors related to the growth, development, and transmission of knowledge. Similar to the fields of medicine, the arts, and science, engineering tools greatly contribute to the advancement and development of a nation's civilization. The method of communication, whether it is in English or another language, is the only way that engineering knowledge is conceptualized and developed. Teaching English to engineers may be a sensitive and challenging subject in terms of content, approaches, and strategies, and figuring out which are appropriate for this specific field of engineering and English. The goal is to become proficient in professional and relevant communication skills, with an emphasis on using English as a tool and sort of mediator to help shape the next generation of engineers. Without language skills, especially in English, to provide a common platform for exchanging research and ideas, we are unable to envisage Engineering Paradigm. If people do not comprehend the goal of a designed solution, it will not have a significant influence. To make sure their concepts are understood, engineers should be as explicit as they can be [1]. In order to compete in the modern technical world, an engineer must maintain both his technical and communication skills in order to compete. This article aims to assess the current state of the technical world, as well as the function and significance of communication in it.

**Keywords:** Communication, skill development, education, professional importance, development of civilization, communication System, engineering knowledge, engineering paradigm, linguistic proficiency.

## INTRODUCTION

Education is widely acknowledged as a crucial tool for promoting sustainable development. In order to bring about the necessary transformation in the attitudes, behaviors, and ways of thinking of both individuals and organizations, it is necessary to make sustainability a primary focus of all forms of education. For an extended period, the general public has been exposed to a stereotype of the working engineer. This individual creates odd graphs and computations while spending 10 hours a day in front of his computer. However, he starts talking, saying he has a lot of stuff to do and that he is trying to get away as quickly as possible. This image might be a bit over the top, but that's how television and the media portray it. The demands of industry are directly impacted by globalization; a global engineer must be able to easily navigate national and cultural boundaries. This has a direct bearing on engineering education. In this context, professional engineers surely need exceptional and effective communication skills. There is a rising expectation that academic institutions will directly address industry norms and produce globally qualified engineers with non-technical abilities like communication. Many engineering faculties at universities overlook the necessity of offering these courses. Due of their lack of confidence and weak communication skills, many Indian engineering graduates are reported to be unemployed.

Among today's youth, engineering is one of the most profitable job options. A person's career trajectory is determined by their professional communication and associated skills. This is the case since most of the time in the professional world, professionals communicate. These days, students can acquire their ideal careers through efficient English communication. Transmitting a message with significance and comprehension is communication's main goal. Order, motivation, counsel, suggestion, education, negotiation, and persuasion are the primary objectives of communication. Engineering professionals' tools, such as conferences, seminars,

## KNOWLEDGE AND INNOVATION MANAGEMENT IN HIGHER EDUCATION

Pooja Puri

Professor & Head, Department of Management Studies, Amritsar Group of Colleges, ASR  
Corresponding Author: Email ID: poojapuri2530@gmail.com

### ABSTRACT

This is the study about the universities and institutions of higher education and their role in knowledge management and innovation management. Every higher education institution is situated with the service to make the society progressive. Knowledge Management helps the higher education institutions to improve their capacity of gathering and sharing the knowledge in the best way. Innovation is the process which helps the higher education institutes by creating new ideas, methods and devices. In past the higher education system had faced many difficulties but now it has progressed well.

Keywords: Knowledge, Innovation, Education Institutes, New Ideas, Progressive, Methods.

### INTRODUCTION

Knowledge management is the process of acquiring, sharing and effectively using knowledge. Knowledge Management includes courses taught in the field of business administration, information system, management, library, and information science (Michael E.D. Koenig). Knowledge Management is important for universities as well as organizations. The knowledge Management is hastily being popular in the field of education. It has great ability and is very representative in the field of education. The higher education (HE) sector is facing global challenges from the rapid technological change and the increasing demands of today's world. Academic institutions need to develop their abilities and respond to these challenges and demands like business organizations [16].

**Innovation Management:-** In common parlance, the term innovation refers to the introduction of a new idea, method, or device. From a management perspective, Peter Drucker suggested that innovation is a "change that creates a new dimension of performance". Innovation is the successful exploitation of

**Knowledge and Innovation Management in Higher Education:-** Universities and colleges are the oldest education institutions. Their main work is to inculcate education and research. Apart these now a day service to the community and research valorization are the other works being done by these education institutions. Recently information society is being transformed into a knowledge society. (Kari Laine)

Higher education institutions are traditionally seen as producers of new knowledge and technology. Today they are more and more supposed to be platforms of co-created innovations and improvements in society. This is a challenge for all higher education institutions. The creation of technological, economic and social innovation requires new types of actions and collaboration from institutions of higher education as well as from their management, teachers and researchers. Co-creation of innovations is both the process and outcome. It requires action and application in context. (Matti Labdeniemi, et.al). Higher education continues to evolve worldwide. Higher education is evolving and improving to meet the challenges of the contemporary landscape. These include closer examination of quality, novel uses of technology, ways to reach learners with disabilities, and curricular innovations (Susan C. White, et. al).

Higher education's value proposition has many components. The actual effectiveness of the educational experience is of course a key component, but other aspects such as location and academic focus, emphasis on traditional students or adult learners, price, and breadth of student activities provide variations that appeal to different student demographics.. In fact, higher education has in general strongly opposed efforts to create such measures. As a consequence, the educational component of higher education is often used by economists as an

# EMPOWERING TOMORROW'S INNOVATORS: A COMPREHENSIVE EXPLORATION OF SKILL-BASED ENTREPRENEURSHIP IN THE MODERN BUSINESS LANDSCAPE

*Hardeep Singh*

*Professor, Amritsar Group of Colleges (Autonomous) Amritsar, Punjab, India*

*Corresponding Author: Email ID: dr.hardeepsinghsodhi@gmail.com*

---

## ABSTRACT

In an era characterized by rapid technological advancements and dynamic market landscapes, the role of entrepreneurs has evolved beyond traditional business models. This paper, titled "Empowering Tomorrow's Innovators: A Comprehensive Exploration of Skill-Based Entrepreneurship in the Modern Business Landscape," delves into the paradigm shift towards skill-based entrepreneurship and its pivotal role in shaping the future of business. The abstract begins by highlighting the unprecedented pace of change in the business world, emphasizing the need for a new breed of entrepreneurs equipped with diverse and specialized skill sets. It explores the concept of skill-based entrepreneurship as a catalyst for innovation and adaptation in an increasingly competitive global economy. The paper navigates through case studies, industry analyses, and success stories, examining how entrepreneurs leverage their unique skills to identify opportunities, overcome challenges, and create sustainable ventures. It sheds light on the symbiotic relationship between individual skill development and entrepreneurial success, emphasizing the importance of continuous learning and adaptability. Furthermore, the abstract discusses the implications of skill-based entrepreneurship on economic growth, job creation, and societal advancement. It addresses the role of education, mentorship, and support systems in nurturing the skills essential for entrepreneurial endeavors. As the business landscape continues to evolve, this paper provides valuable insights into the significance of skill-based entrepreneurship as a driving force for innovation and economic development. It aims to inspire and guide aspiring entrepreneurs, policymakers, and educators towards fostering a culture that empowers individuals to harness their unique skills for creating a sustainable and prosperous future.

**Keywords:** Economic Growth, Entrepreneurship, Innovation, Sustainable Ventures, Skill-based Entrepreneurship, Technological Advancements.

## INTRODUCTION

Skill-based entrepreneurship in modern business is a dynamic and adaptive approach that emphasizes leveraging individual skills, expertise, and talents to thrive in today's rapidly evolving economic landscape. In the contemporary business environment, characterized by technological advancements, globalization, and changing consumer preferences, skill-based entrepreneurship offers a personalized and agile way for individuals to establish and grow successful ventures. Modern businesses heavily rely on technology, and skill-based entrepreneurs are often at the forefront of adopting and adapting to technological advancements. Whether it's utilizing digital platforms for marketing, employing automation in processes, or staying updated on industry-specific software, technology plays a crucial role in enhancing the efficiency and reach of skill-based businesses. With the advent of the internet and the rise of remote work, skill-based entrepreneurs have the opportunity to tap into a global market. Digital communication tools, online marketplaces, and remote collaboration enable entrepreneurs to offer their skills and services to a diverse and international clientele. The gig economy, characterized by short-term, flexible jobs, is closely aligned with skill-based entrepreneurship. Many individuals choose to work as freelancers or independent contractors, capitalizing on their specific skills to provide on-demand services to businesses or individuals. The fast-paced nature of modern business demands constant innovation and creativity. Skill-based entrepreneurs often thrive by continuously refining and expanding their skill sets, embracing new ideas, and finding innovative solutions to meet evolving market needs. Skill-based entrepreneurs can easily reach their target audience through e-commerce platforms, social media,



# HARMONIZING LIVES FOR SUSTAINABLE DEVELOPMENT: THE INTEGRAL ROLE OF WORK-LIFE-BALANCE IN ACHIEVING THE SDGS

*Hardeep Singh*

*Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

In the pursuit of sustainable development, the global community has embraced the Sustainable Development Goals (SDGs) as a blueprint for a better and more sustainable future for all. Amidst the multifaceted challenges encompassed by the SDGs, achieving a harmonious work-life-balance emerges as a pivotal yet often overlooked factor. This paper delves into the intricate interplay between work-life-balance and the attainment of the SDGs, offering a comprehensive analysis of its significance across various dimensions. Drawing upon interdisciplinary literature, this paper elucidates how fostering work-life-balance contributes to the advancement of key SDGs, including but not limited to Goal 1 (No Poverty), Goal 3 (Good Health and Well-being), Goal 5 (Gender Equality), Goal 8 (Decent Work and Economic Growth), and Goal 10 (Reduced Inequalities). It underscores the profound impact of work-life-balance on individual well-being, social equity, economic productivity, and environmental sustainability, thereby serving as a linchpin for sustainable development at large. Moreover, this paper explores the challenges hindering the realization of work-life-balance at both individual and organizational levels, encompassing issues such as overwork culture, gender disparities, inadequate social support systems, and technological disruptions. It advocates for a holistic approach that integrates policy interventions, organizational practices, and societal norms to cultivate an environment conducive to work-life-balance. Furthermore, the paper examines promising strategies and best practices from diverse contexts worldwide, highlighting innovative policies, flexible work arrangements, supportive workplace cultures, and technological solutions that promote work-life harmony while advancing the SDGs. It emphasizes the imperative of collaborative efforts involving governments, businesses, civil society, and individuals to mainstream work-life-balance into the broader discourse and implementation of sustainable development initiatives.

**Keywords:** Economic Productivity, Work-Life-Balance, SDGs, Social Equity, Sustainable Development.

## INTRODUCTION

In the quest for global prosperity and well-being, the Sustainable Development Goals (SDGs) have emerged as a beacon of hope, guiding nations toward a future characterized by sustainability, equity, and resilience. Encompassing a broad spectrum of economic, social, and environmental aspirations, the SDGs underscore the interconnectedness of global challenges and the imperative of collective action. Amidst this complex landscape, the role of work-life-balance (WLB) has garnered increasing attention as a critical determinant of sustainable development outcomes. Work-life-balance refers to the equilibrium between professional responsibilities and personal pursuits, encompassing various dimensions such as time allocation, psychological well-being, and social integration. While traditionally viewed as a matter of individual preference or organizational policy, the significance of work-life-balance extends far beyond the confines of the workplace. Indeed, it intersects with multiple SDGs, influencing outcomes related to poverty alleviation, health and well-being, gender equality, economic growth, and social inclusion. At the heart of the SDGs lies a commitment to leave no one behind, addressing the needs of the most vulnerable populations while advancing the collective welfare of humanity. Achieving this ambitious agenda necessitates a holistic understanding of the interconnected factors shaping human development and societal progress. In this context, work-life-balance emerges as a linchpin, shaping individuals' capacity to thrive, contribute meaningfully to society, and participate in the pursuit of sustainable development objectives. The linkage between work-life-balance and the SDGs is multifaceted and nuanced.



# A COMPREHENSIVE ANALYSIS OF WOMEN'S PARTICIPATION IN THE WORKFORCE IN INDIA

*Ramandeep Kaur*

*GGNIMT Ludhiana (Punjab) India*

## ABSTRACT

This paper delves into the multifaceted dynamics surrounding women's participation in the Indian workforce. It examines the historical context, societal perceptions, governmental policies, economic factors, and cultural influences impacting women's engagement in employment. This paper also provides Governments initiatives for supporting women participation in workforce. It also underscores the significance of women's participation in the Indian workforce as a catalyst for inclusive growth and sustainable development.

## 1. INTRODUCTION:

Women's participation in the workforce is a critical indicator of societal development and economic progress. In the context of India, where cultural traditions, gender norms, and socio-economic disparities intersect, understanding the factors influencing women's engagement in employment is imperative. India's workforce is predominantly male. For a country that is seeking to harness its demographic dividend, with the largest working-age population in the world—expected to touch nearly 70 percent by 2030—we simply cannot afford low participation of women in the workforce anymore. India is poised to become the biggest contributor to global growth. A recent report has forecast that the next five years are crucial for the country to achieve a GDP growth rate of 8 percent, and to ensure that growth, women must account for more than half of the new workforce which will be created by 2030. The decline in female workforce participation in the country has historical precedence. The female labor force participation rate (FLFPR) was recorded at 24.1 percent shortly after Independence in 1955. In 1972, the FLFPR had increased to 33 percent, after which it steadily declined and fell to its lowest level in 2017 at 23 percent. The gender gap in India's labor force, attributed largely to conservative social norms and due to both demand side (work opportunities) and supply side (availability of women for work) factors, remains the most persistent paradox of recent decades. This is despite increased economic growth, a decrease in fertility rates and increased enrolment of women in higher education over decades. The exclusion of women from paid work has resulted in perpetual gender inequality in the economy. Traditionally, women in India have largely been employed in labor-intensive, low-paid, informal work without social security.

There has, however, been an improvement in the FLFPR in the last six years and new trends are emerging. Data from the Periodic Labor Force Survey (2022-23) indicates that FLFPR is at 37 percent, an increase of 4.2 percentage points from the last survey (2021-22).

## 2. HISTORICAL PERSPECTIVES:

The historical evolution of women's participation in the Indian workforce reflects the interplay of colonial legacies, socio-cultural norms, and economic transformations. 73 years after its independence, India is considered among the economic powerhouses of the world. A recent report released by India's Department of Economic Affairs suggests that even though downside economic risks remain, the worst may be over. This report also states that India's future growth is likely to emanate from rural areas. However, for unlocking the full potential of India's rural economy, the role and contributions of women in the rural economic landscape cannot be ignored, many of whom work unacknowledged as farm hands, as family helpers, as frontline service providers (anganwadi workers, ANMs and ASHAs), and who lead the millions of micro-enterprises started as part of India's self-help group programme, bringing valuable income to their households.

Many studies conducted around the impact of the pandemic state that the social and economic implications of COVID-19 fall harder on women than on men. This makes the need of focusing on women and pushing the agenda of women's economic empowerment more imperative, so they can help in picking up the threads and

*Gurveen Kaur*

*Assistant Professor, Department of Management, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

This article's goal is to examine green banking practices, their adoption strategies, and the significance of doing so. The UN Sustainable Development Goals and the role and contribution of banks to environmental sustainability are also included in this study. The current study article is conceptual in nature and is based on a number of sources, including websites of financial institutions, literature evaluations, and an extensive review of the literature. Numerous research journal papers have been added to this study. The State Bank of India's websites was examined and used to learn about the different national and worldwide green banking practices and how they contribute to sustainability. The severe effects of the recent droughts, flooding, and extremely high temperatures that have affected many people worldwide have forced everyone to consider the effects of global warming and take all necessary action to address the issue. Governments, companies, and everyone has a role to play in stopping global warming and building a more sustainable world. People must interact with financial institutions, especially banks, which are essential in this context because they support the growth of a strong and prosperous low-carbon economy. When giving credit and choosing investments, they ought to rely more on environmental data. The research greatly aids the banking sector in assessing the extent of green banking programmes related to sustainable development. This study, which goes beyond green banking practices, is a leading effort in India to link the banking sector to sustainability and two other UN SDGs of financial institutions. This article has identified the areas in which banks might advance more environmentally friendly and sustainable business practices.

**Keywords:** India, SBI, Sustainable development, Environment-friendly, Green banking, UN Sustainable development goals

## INTRODUCTION

Green banking is quickly becoming the industry standard as a means of implementing ecologically and socially responsible corporate practices. By halting environmental degradation and improving earth's habitability, this banking is ecologically friendly. In the most recent, field of sustainable banking, "green banking" has gained popularity in the last several decades. In actuality, sustainable banking, or "green banking," is acknowledged as contributing to global environmental protection in order to ensure sustained economic development (Islam, Roy, Miah, & Das, 2020). We need to take some concrete steps to preserve and improve the environment. These steps should be business-related, with a proper focus on environmental issues and corporate-level greening programmes.

Islam (2020). Natural and industrial disasters have been caused by unbalanced industrialization, which has also damaged the ecosystem (Rehman et al., 2021). Green banking is a type of banking that aims to safeguard the environment and promote sustainable development (SD) while taking into account all social and environmental factors, according to Bangladesh Bank, 2020, [www.bb.org.bd](http://www.bb.org.bd). As a result, the phrase "sustainable development" has become widely utilised in the development community and is currently employed by international organisations, planners for development, scholars, and supporters of the environment and SD (Ukaga, Maser, & Reichenbach, 2011). Since 1992, SD has evolved into a new growth model for achieving the fundamental long-term objective. Broadly speaking, sustainable development (SD) is described as "long-term cultural, socioeconomic, and environmental wellness," emphasising the need for combining the welfare of our social, economic, and environmental domains. (Rahman & Rahman, 2020) believed that SD frequently addresses the triple bottom line of social, economic, and environmental problems and is founded on enlightened self-interest. In developing countries, environmental sustainability, sustainable development, and climate change

## SUSTAINABLE GOAL 12: A REVIEW OF PROGRESS AND CHALLENGES IN INDIA

*Arjinder Kaur*

*Associate Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar*

### ABSTRACT

The Sustainable Development Goals (SDGs) have become a ray of hope for global advancement in a world impacted by urgent social and environmental challenges. The materialistic consumption has posed major problems to global economy in form of natural resource depletion and environmental degradation. United Nations Proposed SDG 12 as a way to reduce ecological footprints by changing the ways people consume and produce. Sustainable Development Goal is one out of 17 Goals set in Agenda 2030 by United Nations. But it is critical in ensuring a better future for upcoming generations. This paper analyses, how much progress India has made in the SDG 12 targets set up Globally and Locally. India has made significant improvements in some indicators such as food availability, hazardous waste treatment and renewable energy capacity installed. Still, the position in other indicators is not clear due to non-availability of data. While finding the reason, it was established that there are lot of challenges that need to be addressed to ensure implementation and effective monitoring of SDG12. The data sources used are reports published by NITI Aayog, Ministry of statistics and implementation programmes and United Nations Department of Economic and social affairs.

**Keywords:** Sustainable Development Goals, SDG 12, Sustainability, Sustainable consumption.

### INTRODUCTION

Overuse of natural resources and unsustainable growth strategies by countries worldwide have created significant socioeconomic and environmental problems (Guo et al. 2022). The United Nations established the 2030 Agenda for Sustainable Development in 2015, which outlines 17 Sustainable Development Goals (SDGs) to address these socioeconomic and environmental problems (Jain 2020, Mazza 2021). The five Ps—people, planet, prosperity, peace, and partnership—were highlighted as the key elements (Yeh et al., 2022). The goal of SDG is to put forth novel solutions to some of the most challenging social, environmental, and political issues confronting mankind such as poverty, inequality and climate change (Hales et al. 2023). The Sustainable Development Goals (SDGs) covers an extensive array of vital issues that demand immediate action, from guaranteeing access to affordable energy and clean water to eradicating hunger and advancing gender equality. SDG's serve as a blueprint for nations to create a more sustainable and fair future.

### SDG 12: RESPONSIBLE CONSUMPTION AND PRODUCTION

The term "sustainable consumption" refers to the use of products and services that can meet the basic needs of people everywhere while having minimal negative influence on the environment, society, and the economy (Sharma & Rani, 2014). SDG 12, responsible consumption and production, is a critical component of the Sustainable Development Goals (SDGs) framework. Using environmentally friendly production techniques and lowering the quantity of waste are among the objectives of Goal 12 (Jain, 2020). It emphasizes the need to enhance resource efficiency, promote sustainable practices, and reduce waste generation across sectors. This goal in particular aims to provide accurate knowledge to all people worldwide so they can develop sustainable patterns of production and consumption (Maryanti et al., 2022). Interactions between SDG 12 and other goals, as highlighted in (Adhikari et al., 2023), underscore the importance of recognizing the interdependencies across the sustainable development agenda. While SDG 12 aims to promote responsible consumption and production patterns, its relationship with goals such as economic growth (SDG 8) and climate action (SDG 13) illuminates the need for integrated approaches to address environmental and social challenges. Moreover, (Nichols et al., 2017) emphasizes the significance of tailored interventions and educational initiatives, indicating the potential for capacity-building and awareness-raising efforts to enhance the implementation of sustainable practices.

# MEASURING WELL-BEING: EXPLORING THE HAPPY PLANET INDEX FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOAL

*Sandeep Kaur*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges,  
Amritsar (Punjab) India*

## ABSTRACT

The Happy Planet Index (HPI) serves as a comprehensive measure of sustainable well-being by integrating ecological footprint, life expectancy, and subjective well-being indicators. This index offers a holistic approach to assessing societal progress, emphasizing the importance of environmental sustainability alongside human happiness and longevity. It is one of the more recent ways to evaluate the success of the world's nations. This value goes beyond looking at capitalistic metrics of the success of a country. The HPI aims to show how countries can achieve high levels of well-being while using fewer resources. It highlights the importance of sustainable development and the need to balance human well-being with environmental conservation. This paper explores the methodology behind the HPI, highlighting its significance in guiding policies towards achieving a balanced and fulfilling quality of life within planetary ecological boundaries. By prioritizing happiness and sustainability, we can create a happier and healthier planet for everyone.

**Keywords:** Ecological Footprint, Human Happiness, Sustainable Development, Well Being

## INTRODUCTION

There are many attempts to compare the level of development of world countries from different points of view. The best-known and oldest characteristic is the human development index (HDI) which has been published by the United Nations Development Programme (UNDP) since 1990. It is an aggregated measure that is based on four criteria: life expectancy at birth, adult literacy rate, combined enrolment ratio, and GDP per capita. One of the newest global indicators of countries is the Happy Planet Index (HPI). This index was introduced in 2006 by the **New Economic Foundation (NEF)**; an independent think tank that promotes social, economic, and environmental sustainability. The Happy Planet Index provides a compass to guide nations, and shows that it is possible to live good lives without costing the Earth. (Ecological Footprints), so the calculation of welfare and happiness is not seen from the level of income or salary (GDP) alone. Ecological footprint is actually very significant, because it involves the health and comfort of the city where its residents live.

## LITERATURE REVIEW

**Julia Bondarchik (2015)** in paper entitled: '**Improving the objectivity of sustainability indices by a novel approach: Happy Planet Index**' states that HPI aggregates information on positive qualities like life-expectancy and human well-being with negative ones like ecological footprint to rank countries according to their sustainability. It has been acknowledged that focusing on the monetary value and using GDP as the one and only progress indicator is not appropriate anymore. The Happy Planet Index (HPI), is one of the most successful global measures to assess such a subjective matter as sustainable well-being. HPI uses global data on experienced well-being, life expectancy, and ecological footprint to generate an index revealing which countries are most efficient at producing long, happy lives for their inhabitants, whilst maintaining the conditions for future generations to do the same.

**ZAHARIA MARIAN (2023)** in paper entitled: '**Happy Planet Index, An Analysis of Sustainable Development**': The sustainable development of the planet and ensuring a sustainable future for future generations requires harmonizing the relationship between wellbeing and natural resources consumed, between happy life expectancy and the biocapacity of the planet. It evaluates the efficiency of using natural resources for sustainable development and is calculated based on three indicators. The first two refer to the average life

# CROP PROTECTION FROM CHEMICAL FERTILIZERS AND PESTICIDES BY NATURAL EXTRACTS OF PLANTS FOR QUALITY FOOD AND SAFETY

*Rajbir Kaur*

*Assistant Professor, Department of Applied Sciences, Amritsar Group of Colleges, Amritsar*

## ABSTRACT

The emerging demand for organic agriculture is a great concern globally. Consumers at the priority level are demanding green food produce. That is the food crops produce without the use of pesticides, chemical fertilizers or chemical residues. Organic agriculture for sustainable development will produce abundant food without depleting the earth's resources or polluting the environment and will secure long term ecological productivity without degradation of their natural resource base and impoverishment of human health.

Modern agriculture is in demand of more sustainable, more productive, and more eco-friendly food production. Food quality degradation and safety tend to shift agriculture practices to organic farming to overcome health-related issues generated by the frequent use of pesticides and chemical fertilizers. The use of chemical residues has degraded the edaphic factors of soil, water, and nutrient requirements by crop plants. Techniques of use genetically modified crops have enhanced crop production and resistance to some diseases. The use of genetically modified crops poses a threat to human health in the way of allergic reactions, not only this it leads to disruption of biodiversity, and its cost of production is a barrier on the way. Pesticides like Acephate, Acetamiprid, Beta cyfluthrin, Bifenthrin, Glyphosate, Metaldehyde, Propoxur, Boric acid, Diazinon, Deltamethrin, Malathion, etc., and Chemical fertilizers like Urea, Diammonium Phosphate, Nitrogen, Potash, Sulphur and Single Superphosphates are used to increase the yield of crops and also to maintain the shortage of nitrogen, phosphorus, and potassium in the soil. Various species loss including birds, beneficial insects, and non-target plants results due to direct exposure to pesticides and chemical fertilizers on crops. Maintenance of ecological balance of nature, reduction in the loss of biodiversity, and pest-crop natural relationship can be achieved by the way of applying organic agricultural practices. Organic agriculture will target growing crops via naturally beneficial means that will lead to sustainable development. Growing Staple, Edible oil, Fibre, and vegetable crops such as Wheat, Paddy, Maize, Barley, Cotton, Jute, Sugarcane, Chilies Okra, Potato, Tomatoes, Peas, Grams, Sunflower, Mustard, Groundnut, etc. without using pesticide and fertilizers but by means of natural plant extracts and replenishing the soil by the help of naturally occurring microbes to step further sustainability.

## INTRODUCTION

Past generations tried to solve the problems related to different crops in natural ways. These practices ensure maximum profits, no harmful effects, and minimum risks. About sixteen essential nutrients are required for growth of crops which includes Nitrogen, Phosphorus, Potassium, Magnesium, Sulphur, Calcium, Manganese, Boron, Molybdenum, Zinc, Copper, Chlorine, Nickel, and Cobalt, etc. These nutrients are vital for crop production, the agriculturally beneficial microorganism may also contribute directly (biological nitrogen fixation, Sulphur oxidizing bacteria, proteolytic microorganisms, phosphorus solubilization, and phytohormone production). The use of microbes for the replenishment of soil and enhancing production of foodgrains promote sustainable development and eco-friendly entrepreneurship. The use of organic extracts obtained from plants by different means can be beneficial to supplement the growing demands of organic farming. To meet the requirement of organic farming different practices are to be followed such as Conversion, Mixed Farming, Cropping pattern, Planting, and Manuring. Inorganic fertilizers use chemical compounds to increase the yield of crops if the same is met by replenishing in natural ways then health-related issues can be reduced by producing good quality food, the need of the hour and ensuring what is being eaten must be pure, safe, and nutritious. The role of different fertilizers, how they promote growth, how they affect, and how their role can be overcome.

## GENDER & DEVELOPMENT: RELATIONSHIP

*Baljeet Verma*

*Associate Professor (English), Amritsar Group of Colleges (Autonomous), Amritsar (Punjab), India*

### ABSTRACT

The Gender and Development (GAD) approach focuses on the socially constructed differences between men and women, the need to challenge existing gender roles and relations, the creation and effects of class differences on development. Gender and development are an interdisciplinary field of research and applied study that implements a feminist approach to understanding and addressing the disparate impact that economic development and globalization have on people based upon their location, gender, class background, and other socio-political identities. A strictly economic approach to development views a country's development in quantitative terms such as job creation, inflation control, and high employment – all of which aim to improve the 'economic wellbeing' of a country and the subsequent quality of life for its people. In terms of economic development, quality of life is defined as access to necessary rights and resources including but not limited to quality education, medical facilities, affordable housing, clean environments, and low crime rate.[1] Gender and development considers many of these same factors; however, gender and development emphasizes efforts towards understanding how multifaceted these issues are in the entangled context of culture, government, and globalization. Accounting for this need, gender and development implements ethnographic research. [Ethnography is a qualitative method for collecting data often used in the social and behavioral sciences. Data is collected through observations and interviews, which are then used to draw conclusions about how societies and individuals' function]. The history of this field dates back to the 1950s, when studies of economic development first brought women into its discourse, focusing on women only as subject of welfare policies. The focus of women in development increased throughout the decades. In this regard feminist economist Ester Boserup's pioneering book *Women's Role in Economic Development* (1970) was published, radically shifting perspectives of development and contributing to the birth of what eventually became the gender and development field.[2]

**Key Words:** Gender Development, Disparate impact, Feminist Approach, Ethnographic Research, Economic Development.

### MEANING OF GENDER AND DEVELOPMENT

"Gender and Development (GAD)" refers to the development perspective and process that are participatory and empowering, equitable, sustainable, free from violence, respectful of human rights, supportive of self-determination and actualization of human potentials.

The GAD approach seeks to analyse the causes of gender inequality within the context of relations between women and men and social structure, and to change stereotyped division of labour as well as institutions and systems that bring about gender disparity.

Gender refers to the characteristics of women, men, girls and boys that are socially constructed. This includes norms, behaviors and roles associated with being a woman, man, girl or boy, as well as relationships with each other. As a social construct, gender varies from society to society and can change over time.

### KEY OBJECTIVES OF GENDER AND DEVELOPMENT: RELATIONSHIP

Through the writing of this research paper, I intend to reach my readership so that they are able:

1. To understand the socially constructed differences of genders i.e., men and women (boy and girl).
2. To understand the existing gender role and relations.
3. To know the impact of class differences on sustainable development.

# A REVIEW: SUSTAINABLE DEVELOPMENT ON RENEWABLE RESOURCES

*\*Tejinder Sharma \*\*Narinder Sharma*

*\*Associate Professor, Department of Computer Science and Engineering, Amritsar Group of Colleges, Amritsar, Punjab, India*

*\*\*Dean, Research & Development, Amritsar Group of Colleges, Amritsar, Punjab, India*

## ABSTRACT

The renewable energy is the key factor to propel economic growth, enhance energy security, expand energy access, and reduce climate change impacts. By prioritizing sustainable energy solutions, country aims to ensure that all its citizens have access to affordable, reliable, modern, and sustainable energy. This commitment has positioned India as a leading player in the global renewable energy sector, thanks to strong government support and favorable economic conditions. This paper explores the substantial progress and future outlook of renewable energy sector, including electricity generation, while also acknowledging the needs and objectives. It also discusses the energy consumption details of the various countries. The insights and recommendations provided aim to inform the users including innovators, project developers, investors, industries, relevant stakeholders and departments, researchers, and scientists to use the resources optimally, and procure it for their future use too.

**Keywords:** Sustainable, Renewable, Energy, Power, Initiatives, Recommendations, Renewable Energy Sources, Technology

## INTRODUCTION

Energy acts as the dynamic foundation of technology, enabling the seamless operation of modern society. A mere 24-hour disruption in electricity supply can starkly reveal our deep reliance on this critical resource, as cities falter with halted computers, immobilized elevators, and dimmed hospital operations. As global populations increase, often at rates surpassing 2%, the demand for energy intensifies, particularly as living standards improve. This growing need underscores a significant disparity: while only 25% of the world's population resides in affluent, industrialized nations, these countries account for 75% of global energy consumption [1]. Addressing energy supply and usage involves more than mitigating global warming; it encompasses tackling a host of environmental issues including air pollution, acid rain, ozone layer depletion, deforestation, and radioactive emissions. These challenges are interconnected and must be addressed collectively to pave the way for a sustainable energy future with minimal ecological footprint. There is compelling evidence suggesting that the ongoing environmental degradation will adversely affect our future unless significant changes are made. As awareness of environmental impacts has grown, both the energy industry and consumers have begun to acknowledge their roles in contributing to and mitigating pollution. This shared responsibility is increasingly reflected in energy pricing, which in some regions has risen over the past two decades to incorporate environmental costs. With global population expected to double by mid-21st century and economic development set to continue its upward trajectory, the demand for energy services could surge by as much as tenfold by 2050, with primary energy demands increasing by 1.5 to 3 times. This anticipated growth amplifies the urgency for comprehensive strategies that address not only the demand for energy but also the resultant environmental concerns such as acid rain, ozone depletion, and climate change. Effective management and innovative solutions will be crucial in balancing these challenges with the growing global need for energy [2]. The promotion of renewable energy as a key solution to our energy challenges is enthusiastic, but it must be tempered by practical considerations such as engineering feasibility, reliability, cost-effectiveness, resource availability, and public acceptance. While the zeal for renewables often leads to optimistic claims, it's essential to approach these technologies with a balanced view of their potential and limitations. It's crucial to acknowledge that essentially all Earth's energy originates from the sun. Solar energy not only warms us but also

# STEAM FOR K-12: BEST PRACTICES

*\*Rashmi Tyagi\*\*Hardeep Singh\*\*\*Nirupma*

*\*Academic Director, Ashevilli World School, Mohap, Mumbai, Maharashtra India*

*\*\*Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar*

*\*\*\*Director, Ras Gurukul, Arrah, Bhojpur, Bihar*

## Abstract

STEAM education is an approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student's inquiry, dialogue, and critical thinking. As quoted by an educator, STEAM focusses on a paradigm shift from traditional education philosophy, based on standardized test scores, to a modern approach which focuses on valuing the learning process as much as the results. It empowers teachers to employ **project-based learning** that crosses each of the five disciplines and fosters an **inclusive learning** environment in which all students are able to get engaged and participate. This is also a prerequisite of the National Education Policy 2020. STEAM schooling activity in India is studied and its impact on teaching and learning is researched. Studies on STEM pedagogies in India are being developed to make teachers proficient to teach the same. Empowerment of teachers in **steam** is the need of the hour. Surveys indicated that capacity building trainings are required for teachers. It was observed that after STEAM training, numerous science teachers embraced STEAM in science subject. Project Urban Aquaponics taught through STEAM methodology to higher secondary students in our school indicated that the impacts of STEAM learning methodology was having far reaching consequences. The learners having studied through STEAM were successful in both psychological and emotional learning.

**Keywords-**STEAM, project-based learning, Inclusive learning, Urban Aquaponics

## Introduction

A lesson in a STEAM module involves finding a solution to a real-world problem that challenges the student in a project scenario. For example, a typical STEAM lesson may start with the conceptual explanation of wheel design of the potter's wheel -how its invention changed the world forever. Once explained, it may leave a student to ergonomically design a wheel with the provided resources. It may then introduce the student to the concepts of circumference of a wheel, revolutions per minute, and how to measure the distance travelled using revolutions made by the wheel as is done in modern day automobiles. From there it may also introduce the concept of friction and ask students to modify the wheel to achieve optimum friction on-road safety. As per the NEP 2020, STEAM education should play an integral role in Science classrooms.

## The benefits of STEAM education

1. it fosters engaged learning amongst learners
2. it helps brainstorm projects -swap ideas
3. it enables learners to create STEAM projects which illustrate concepts
4. it gives better test scores
5. it brings in fun filled collaborative learning in a real classroom scenario.
6. Robotics as one of the components of STEM has been included as one period in a week in some schools with experts (trained teachers) who make children not only understand the concepts but think critically and have a hands-on experience. On the other hand, there are schools which have included Robotics for children in summer camps where an expert enthusiast conducts such fun filled, creative learning classes. Many school textbooks by well-known publishing houses# have incorporated



## TEACHERS' ROLE FOR PROTECTING ENVIRONMENT

*\*Rashmi Tyagi\*\* Hardeep Singh\*\*\* Nirupma*

*\*Academic Director, Ashevilli World School, Mohap, Mumbai (Maharashtra) India*

*\*\*Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar, Punjab, India*

*\*\*\*Director, Ras Gurukul, Arrah, Bhojpur, Bihar*

### ABSTRACT

Today's YOUNG GENERATION will decide the fate of the destination ultimate **THE LIVING PLANET EARTH**. Teachers are the **FACILITATORS** who have the great responsibility to make residents of the planet earth aware of their habitation which is the only space for their existence i.e. for living beings. To protect and conserve the earth's environment, teachers have to address a number of issues: e.g. climate change; protecting the world's remaining flora and fauna; calling for the elimination of nuclear weapons; generating safer alternatives to hazardous chemicals; managing agriculture by encouraging ecologically safer farming practices. It is never too late to do our part for the wonderful earth we live in by taking steps towards preserving and protecting the environment with all its beauty. Many small actions on our part can have a great effect on preserving the environment. Actions must be taken to minimize the harmful waste. School creates a lot of waste each year by throwing away multiple garbage. Classrooms use a lot of paper: lined paper, chart paper, news paper etc. A waste paper box can be used to save large pieces of paper that can still be used after recycling for arts and crafts. Lined paper should be written on both sides before being recycled. If students can copy it quickly and easily into a notebook, it doesn't need to be photocopied. This cuts the amount of paper into half. Recycling Everything. Schools should maintain recycle bins separately after segregating different type of garbage. By Teracycle, even tetra pack garbage can be re-cycled by collecting juice pouches, wrappers, and a lot of other such non-recyclables. They may be used to create new products like backpacks, pencil cases, and folders. Students need to understand why recycling is necessary. The landfill is limited and garbage is created every day. And with each person creating few kilos of garbage a day, students can quickly see why everyone needs to recycle. They should see the planet as their home and protecting it should become their responsibility. Only then will environmental education reach its rightful place at school and ultimately to society at large.

**Keywords:** Earth, Planet, Recycling, School, Teachers.

### INTRODUCTION-

Environmental Education is a new focus for education. It is a way of helping individuals and societies to resolve fundamental issues relating to the current and future use of the world's resources. However, simply raising awareness of these issues is insufficient to bring about change. Environmental Education must strongly promote the need for personal initiatives and social participation to achieve sustainability.

The formation and development of right habits in students, with regard to the protection of the environment in the school and its surroundings, contribute to linking theory with practice and familiarize them with these tasks and local requirements. This makes it easier to understand the importance of environmental protection and other factors, regional and national level, and how a company can plan and control the influence of the environment for the benefit of the community.

SUSTAINABLE DEVELOPMENT GOALS (SDGs): AN ERA FOR LONG LASTING FUTURE DEVELOPMENT

## ROLE OF SMALL AND MEDIUM SCALE ENTERPRISES IN CREATING EMPLOYMENT THROUGH SUSTAINABLE DEVELOPMENT

\* Pooja Puri\*\*Srishti Gupta

\* Professor and Head, DMS, AGC, Amritsar

\*\*MBA Student, AGC, Amritsar, Punjab

### ABSTRACT

This research will investigate the role of small and medium scale enterprises in creating employment with the sustainable development Goals. There are some objectives that are to be considered. To achieve that objective, research hypothesis should be made on the primary data, survey should be conducted from the various SMEs businessman with 100 respondents., regarding employment generation with the sustainable goals kept in mind. The main aim of the study is to SMEs focus on creating new products or services; hence, they are capable of adapting faster to the changing requirements of the market. SMEs play a vital role in shaping a country's economy. They can be considered an attractive and huge innovative system.

**Keywords:** Economy, Employment, SME, Sustainable Development Goals.

### INTRODUCTION

Small scale industries are those industries in which production, manufacturing and providing the services are executed on a small or micro scale. In a country like India, the small scale industries play a very important role in generating employment, improving the financial status of people, development of rural areas and removing the regional imbalances. The role of small scale industries is one of the important features of the planned economic development of India. In India this sector has been assigned with the significant role in the industrialization and economic development of the country and subs-serving the national objective of growth with justice. Its crucial role has been increasingly recognized as a solution for the country's problems of scarce capital, wide spread unemployment, regional imbalance of industrial development, inequitable distribution of National Income etc

### Role of SMEs in India

1. SMEs employ a good chunk of India's workforce. This amounts to almost 40%, which makes up around 80 million workers.
2. They make up almost 40% of India's export business and a significant chunk of the country's manufacturing output (45%).
3. India has the second-largest number of SMEs in the world, eclipsed only by China.

### LITERATURE REVIEW

1. **Hall, Lotti and Mairesi (2009)** founded that the favour of positive impact of R&D decisions on process Innovation in SME's and variability in R&D innovation productivity relationship is much Greater for Italy than for other countries as well. Another result of is that size of firm is negatively associated with the intensity of R&D. In other words, they found dual nature of R&D. The R&D investment contributes to develop the firm's Ability to identify and exploit the Information from other private and public research Organizations. The results of their study show that product innovation has positive impact on Firm's labour productivity. They had emphasized on process innovation due to its higher Impact on productivity.
2. **Italy Cravo (2010)** had analyzed the impact of strong SME's sector on economic growth of Brazilian economy. The author examined the relationship between the small and medium Enterprise (SME) sector

# FEMINIST PATHWAYS TO SUSTAINABLE DEVELOPMENT: HARNESSING GENDER EQUALITY FOR GLOBAL PROGRESS

*\*Kiranpreet Kaur \*\*Hardeep Singh*

*\*MBA Student, Department of Management Studies, Amritsar Group of Colleges, Amritsar  
(Punjab) India*

*\*\* Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar  
(Punjab) India*

## ABSTRACT

This abstract examines an overview of the gender and development from a feminist standpoint. Acknowledging the meaningful contribution made by liberal feminists, it ventures into new articulations on development where the issue and interests of marginalized women in developing countries such as India take center stage. The article follows the synthesis of theory and praxis of development alongside the emergence of feminist thought that shaped the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs). With comprehensive and integrated global frameworks such as the SDGs, has the gender agenda finally arrived? The authors argue that the gender agenda is far from complete and hopelessly fragile. Read against the background of COVID-19 and its impact on women's work, this article serves to make the case that the reversals in the gains in gender agenda due to the pandemic are but deafening echoes of generational fragilities embodied within gendered narratives on global development. Moreover this abstract provides several clarifications which are not been discussed earlier and no clarification has been provided for these topics. Apart from this this abstract will examine various conclusions and discussions which are considered as an important topic amongst all.

**Keywords:** Feminist, Gender Equality, MDGs, Peer Recognition, SDGs

## INTRODUCTION

Gender and development are considered important areas in the study of social sector issues in development. The historical development of societies has placed women at distinctively disadvantageous position. Historical studies reflect that women have played a marginal role in the, development of societies. However, modern development theories attribute significant participation by all sections of society, including women as a gender category, in the development process, Women constitute almost half of human population, and their role in the development process has critical significance in the success of failure of nations. The digital revolution is transforming how humanity lives, works and relates with one another. The growth and uptake of information and communications technologies (ICTs) have the potential to improve access to information and services or enable collective action for social justice. But there is also the risk this revolution will carve stark inequalities in terms of who benefits and whose voice is heard. In this issue, Gender & Development focuses on ICTs from the perspective of women's rights and gender justice. Technology mirrors the societies that create it, and access to (and effective use of) technologies is affected by intersecting spectrums of exclusion including gender, ethnicity, age, social class, geography, and disability. Gender-based violence (GBV) and its links to digital is a key concern for many contributors. Online spaces offer the potential to develop new forms of violence, curbing freedom of expression in a much gendered way. They can lead to physical violence too. Eighty-two per cent of the female parliamentarians in a 2016 study by the Inter-Parliamentary Union reported having experienced some kind of psychological violence, mainly through social media, while in office. As a development approach, GAD seeks to equalize the status and condition of and relations between women and men by influencing the process and output of policy-making, planning, budgeting, implementation and monitoring evaluation so that they would and deliberately address the gender issues.

# SUSTAINABILITY AND SUSTAINABLE STRATEGIES: THE SIGNIFICANCE OF COMMUNICATION

Varun Mehra

Assistant Professor, Department of Applied Sciences, Amritsar Group of Colleges, Amritsar (Punjab) India

## ABSTRACT

The exchange of ideas, thoughts, or feelings between a speaker and a listener via spoken or non spoken means is known as communication. In the corporate world, especially in the service industry, this transfer acquires significant relevance because service providers work with people through communication. Any strategy or plan that aims to be sustainable must include communication. People need to use the appropriate mode(s) of communication to communicate both internally and externally. Consequently, in order to establish effective communication, administrators in an organisation must, whether speaking orally or in writing, concisely and directly communicate their intentions to the other participant. They should also look at how different genders and cultures communicate in order to achieve this. Additionally, sustainability communication is a useful tool for demonstrating to investors and clients how far you've come towards meeting your sustainability goals. It is believed that showcasing how you generate company value through sustainability will increase shareholder value. The company's sustainability action plan and its broad strategic objectives are in line with sustainability communication, which successfully involves investors, customers, and employees as the main stakeholders. The role that communication plays in sustainable development should be outlined in an action plan. The article places a strong emphasis on the development and management of communication skills in the business sector and the attainment of organizational goals through strategic planning.

**Keywords:** Communication, Sustainable Strategies, Business Management, Gender and Cultural Communication Difference

## 1. INTRODUCTION

In the most general manner, sustainability communication refers to the strategies and messaging that businesses use to inform the public about its eco-friendly policies programmes, and objectives. By acting as a link between institutions, authorities, and people, this communication promotes awareness and motivates action in the direction of a more sustainable future. Aside from this, communication is crucial in practically all contexts, including the workplace and the household. Even with training in economics, management, or an other field, one does not always acquire communication skills. It's a social process that, in human words, begins at birth and ends with death. Effective communication is essential for any sustainable plan or strategy, both locally and internationally. It takes an internal expression of self for individuals to conceive and build applications for sustainable acts within their organisations. After completing the internal function, it's just as crucial to express oneself outside of the organisation. To put it another way, planning and constructing sustainable plans require people to express themselves both internally and outwardly using the appropriate mode(s) of communication. Some jobs that demand less communication skills than others—like being a receptionist or hotel administrator—include computer programming and truck driving.

Smithson makes the case that good communication is the cornerstone of managerial success in his book *Business Communication Today* [4]. In spite of its importance, a lot of workers in the hospitality sector overlook this reality in the workplace. Though not much is done about it, there is a lot of chatter. Even though there are many different definitions of communication, they all agree on some terms, such "sharing with others," "transferring," and "interaction." To communicate is, in Baguley's definition, to exchange ideas, information, and feelings between individuals or groups of individuals with deliberate intent [2]. It requires adjusting wants, feelings, ideas, and perceptions in addition to facts. "The communication that an organisation needs to have in both its internal and external environments" is what Wikipedia defines as "business communication" [3]. Internal communication in business can be classified into three categories: upward with superiors, downward

# A REVIEW ON DIFFERENT EDUCATIONAL SUSTAINABILITY APPROACHES

*Paramjeet Singh*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

In order to enable pupils to make decisions that are sensitive to the multifaceted contexts (environmental, social, and economic) of sustainability concerns, this paper aims to propose a methodological framework based on the case study approach. It is the duty of engineers to recognize worldwide problems and create sustainable, culturally appropriate solutions. The goal of the effort is to uncover sustainability viewpoints based on cultural, educational, and geographic variations. It is a worldwide partnership. This document outlines the steps taken so far to fulfill these objectives. As a result, an engineering education needs to cultivate the information, abilities, and mindset required to identify workable, appealing, and sustainable solutions. Nonetheless, determining a suitable model to teach pupils about sustainability is one of the biggest issues facing engineering education. There are two main pedagogy-based outcomes: 1) Case study courses that can be used continuously throughout an engineering course of study, and 2) An active learning approach that requires students to work on virtual teams made up of students throughout the global to solve the case study modules.

**Keywords-** Sustainability, Environmental, Culture, Solutions, Economy, Social, Economics, Education, Case Study Approach, Engineering Education

## INTRODUCTION

The ability to assess and apply knowledge from a variety of fields, such as economics, engineering, environmental science, social sciences, and public policy, is a requirement for these students. In the field of engineering, sustainability is having relevance. In twenty-first century it is need of the time to understand how to design sustainability in addition to knowing about it. Students also need to comprehend that sustainability is a worldwide problem influenced by regional realities that are different everywhere in the world. To make environmentally friendly choices, learners need to evaluate and take into consideration culturally appropriate points of view in addition to assessing and analyzing multifaceted elements. Although the significance of comprehending sustainability as an intricate problem is acknowledged, the majority of current curriculum produce graduates who are "not properly trained to be effective at socially conscious design" that is, technical competence has historically taken precedence over comprehension of social consequences and global consequences of global practice's in education. This suggested educational research has two main pedagogy-based outcomes. Firstly, it's an organized, hands-on learning method where students collaborate in virtual groups with peers from throughout the global. In order to solve case study lessons that support the development of social, ethical, and managerial skills pertinent to sustainability in addition to the understanding of design paradigms and concepts, the approach establishes a global framework for learning. This paper provides historical background by reviewing the research on case study pedagogy, educational methods for teaching sustainability, and current sustainability assessment criteria. In relation to the research project, the article outlines the theoretical framework, goals, and methodology in addition to providing a specific case study, an implementation strategy, and learning outcomes as preliminary findings. The implementation strategy wraps up the article.

## LITERATURE REVIEW

Since it suggests that it focuses on numerous distinct, overlapping layers from the very small and immediate to the huge realities labeled with phrases like "global society" and "global community," Ballin et al. use the term "global education" to include the entire field. Additionally, it suggests a comprehensive approach to education that takes into account students' feelings, connections, and sense of self in addition to their research and

# ROLE OF WOMEN AT TOP MANAGEMENT POSITIONS AND ITS IMPACT ON SOCIETY

*\* Pooja Puri \*\* Jasmeen Kaur*

*\*Professor and Head DMC, AGC, Amritsar, India*

*\*\*MBA Student, AGC, Amritsar, Punjab, India*

## ABSTRACT

The emergence of women in key leadership positions has gained attention in recent years as organizations and societies strive to achieve gender equality and inclusion. This study explores the diverse and complex roles of women in leadership positions and examines their impact on society at large. This study conducted a critical review of the existing literature to examine the challenges faced by women seeking to achieve leadership positions. It also examines measures taken to overcome barriers such as gender discrimination, glass ceilings and corporate fraud. This study examines the many ways in which women's participation in leadership positions improves organizational effectiveness, innovation, and financial success. This highlights the need to implement comprehensive measures to overcome structural barriers and foster inclusive organizational cultures that encourage women to advance into leadership roles. This study will ultimately improve our understanding of the importance of women in senior management roles and their wider influence on society. This research provides valuable insights for policy makers, organizational leaders and gender equality advocates working to build equitable and inclusive societies. We do this by highlighting the benefits of seeking gender diversity in leadership and addressing the barriers that prevent women from advancing.

## INTRODUCTION

This research aims to provide a comprehensive understanding of the influence of women in high-level management roles and its effects on society. Its goal is to offer valuable insights to policymakers, organizational leaders, and advocates for gender equality, assisting them in their endeavors to establish more inclusive and fair workplaces and societies. By conducting thorough analysis and engaging in deep contemplation, the objective is to make a valuable contribution to the current discussions about the future of leadership and the dynamics of gender in the business world and beyond. Women entrepreneurship involves recognizing career advancement chances by business research and obtaining profits through company operations. Punjab region women people are suffering so many challenges. The concerns include women poor literacy rate, Scarcity of resources, insufficient infrastructure amenities, unemployment, starvation, child marriages. My study concentrates on women entrepreneurship in Punjab. My inquiry focuses on women entrepreneurs how to maintain the company, business difficulties, business operations and strategies, current days women entrepreneurs interested with excitement on entrepreneurship development and startups. Women entrepreneurs playing essential part in economic growth and development of the country. Entrepreneur implies recognize the next market prospects, creative ideas, knowing personal strengths and limitations and identify the risk in order to develop new business. The entrepreneurship is identical to male and female, although many problems experienced by the males, including societal issues, gender discrimination, family obligations, work life balance, government assistance. Entrepreneurial women do market research to uncover profitable company prospects and then turn those chances into financial gains. The ladies in the Punjab region have it rough. Low levels of female education, resource scarcity, insufficient infrastructure, high unemployment, poor nutrition, and early marriage are all contributing factors. The study's focus is on female business owners in the state of Punjab. My research focused on modern women company owners and their interest in, and strategies for, entrepreneurship development and starting businesses, as well as the challenges they face in doing so. The contributions of women business owners to the nation's economic progress and prosperity cannot be overstated. To be an entrepreneur is to foresee and seize possibilities in a market, to generate novel ideas, to know one's own capabilities and limitations, and to take calculated risks. Male and female entrepreneurs face the same obstacles such as societal reasons, discrimination based on gender, balancing work and family life, and lack of government backing. A woman who

# INCLUSIVE GROWTH AND SUSTAINABLE DEVELOPMENT: INDIAN PERSPECTIVE

*Radhika Kapoor*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges,  
Amritsar (Punjab) India*

## ABSTRACT

This article addresses sustainable development from an Indian perspective. The Sustainable Development Goals (SDGs) have gained popularity in this cutthroat world because every nation is vying to be the most developed, and as a result, they are neglecting their carbon footprints, the number of people living in urban areas is rising, and resources are becoming scarce. Some examples of unsustainability in India or the rest of the world include shrinking or declining of resources, affecting food security, increasing water and air pollution, shortage of land affecting both agriculture and biodiversity, and these are affecting the quality of life. It is crucial to find a way to live sustainably with Mother Earth. The Sustainable Development Goals (SDGs) support development that satisfies current needs without sacrificing the capacity of future generations to satiate their own needs attaining equilibrium or harmony between socio-political, economic, and environmental sustainability is the aim of which. The public and commercial sectors must work together to accomplish sustainable development goals in this cutthroat environment for the 17 United Nations. The article concludes with a discussion of how India's techniques of indigenisation aid in the country's pursuit of sustainable development.

**Keywords:** Economic Development, Environmental Protection, Natural Resources, Poverty, Sustainable Development Goals (SDGs)

## INTRODUCTION

The Brundtland Report, published in 1987 by the WCED, introduced the phrase "sustainable development" as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Development must be sustainable in both the economic and ecological senses; this means that planning for development must take this into consideration. "We do not inherit the Earth from our ancestors; We borrow it from our children" Lakota. About 170 nations and territories are served by UNDP, which seeks to end poverty, lessen in equality and marginalisation, and develop resilience so that nations can continue to advance. UNDP, the UN agency for development, is essential to nations' efforts to meet the Sustainable Development Goals. The United Nations approved the Sustainable Development Goals (SDGs), commonly referred to as the Global Goals, in 2015 as a global call to action to end poverty, safeguard the environment, and guarantee that by 2030 all people live in peace and prosperity. The 17 SDGs are interconnected; they acknowledge that decisions made in one area will have an impact on other areas and that development must strike a balance between environmental, social, and economic sustainability. Nations have pledged to give the most backward people's advancement priority. The SDGs aim to eradicate discrimination against women and girls, hunger, AIDS, and poverty. Entire society's inventiveness, expertise, technological know-how, and financial resources are required to accomplish the SDGs in every situation.

## NEED OF STUDY

Inclusive growth is important for India's overall progress and to achieve targets related to poverty, education, and more. It aims to address the country's socio-economic disparities by focusing on the equitable distribution of resources and providing access to basic services and opportunities for all citizens.

## Objectives of Study

1. To study the concept of Sustainable Development from Indian Perspective, Its loopholes and areas of concern.
2. To study the social, economic and environmental growth in India.

# CHALLENGES AND DEVELOPMENTS IN APPLICATIONS OF ICT BASED TECHNOLOGIES FOR EDUCATION SYSTEM

Ramandeep Kaur

Faculty, Department of Management Studies, Amritsar Group of Colleges, Amritsar

## ABSTRACT

This paper discusses various views and conceptual frameworks put forward in the discussion of ICT and sustainable development: An optimistic and a pessimistic view of ICT with regard to sustainability, the three-pillar approach to sustainable development, the three-level approach to ICT impacts, the claim of human, social and ecological compatibility of ICT and the plain use of ICT for development. We show that each of these approaches has its problems and limitations and conclude with formulating the challenges of finding an analytical approach which will effectively support decision-makers in using ICT in the service of sustainable development. Sustainable development is the type of development that satisfies the current needs without compromising the resources needed for future generations. Although the term "sustainable development" is frequently associated with the environment, it encompasses a wide range of factors beyond just environmentalism. In fact, the relationship between the two is so close that the term "synchronous" is more appropriate. Sustainable development operates under three key dimensions: the environment, the economy, and society. The use of ICT in the classroom is very important for providing opportunities for students to learn to operate in an information age. Studying the obstacles to the use of ICT in education may assist educators to overcome these barriers and become successful technology adopters in the future.

**Keywords:** Sustainable Development, Goals, Ethics, Technological Determinism, Life Cycle Assessment, Green ICT, Rebound Effect, ICT for Development.

## INTRODUCTION:

### Sustainable development

Sustainable development, including in the digital field, can best be achieved if actors work together and contribute their experience, expertise and resources to realizing the common goals. Sustainable development refers to a pattern of economic growth and development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. It involves balancing the economic, social, and environmental aspects of development in a way that promotes long-term well-being and sustainable use of resources.

### Sustainable Digital Goals

A series of studies have been conducted so far on the relationship between digital technology and sustainable development. To illustrate, in 2015 the Internet Society issued a report 'The Internet and Sustainable Development' where it described the Internet as a 'critical enabler of social and economic change' and explored the link between the SDGs and the WSIS.

Global, regional and local solutions such as e-banking and e-money can increase access to financial services in particular in rural areas, whereas AI and machine learning can improve energy efficiency and reduce electricity costs.

### The Ethics of Sustainable Development and the Role of ICT

The most-cited definition of "Sustainable Development" was given by the World Commission on Environment and Development: In order to be considered sustainable, a pattern of development has to ensure "that it meets the needs of the present without compromising the ability of future generations to meet their own needs" [1]. This definition, also known as the "Brundtland definition", combines two ethical claims:



# CROSS CULTURAL TEAM- AN INCLUSIVE GROWTH AND SUSTAINABLE DEVELOPMENT

*Sharanjot Kaur*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

Cross-culture research is a scientific method which focuses on systematic comparisons that compares culture to culture and explicitly aims to answer questions about incidence, distribution, issues arising in cross culture teams and complex problems across a wide domain, usually worldwide. Critical perspectives on cross-cultural management are increasingly present in our research community; however, they are spread over multiple research fields (e.g., international business, International Human Resource Management (IHRM), diversity, and gender and/or race studies). Critical researchers tend to have agendas and foci that address topics others consider beyond its scope, such as gender in intercultural training, religion in the multi-cultural workplace. The paper discusses the barriers and its analysis among the team in a multicultural organization. The study aims to deal with multiple domestic and foreign pressure groups or international conflict demand.

**Keywords-** Cross Culture, HRM, Language, Culture, Issues, Barriers.

## INTRODUCTION

The cross-cultural team-working is a hindrance to effective multicultural team leadership across many industries. Cultural differences among project team members cause conflict, misunderstanding, and poor project performance. The absence of competent leaders is a problem because business in the future will rely increasingly on the use of multicultural project teams. Multicultural teams also mean complying to laws and regulations of various countries and making sure that in the course of the operations, no sentiments of any culture are hurt. Thus, it is very difficult to manage the variations due to the changing demographics of members in multicultural teams and adhere to the challenges in order to be on the top.

## NEED OF THE STUDY

I've chosen this topic for the study because if we carefully go through the extract that was given to us for the purpose of making this portfolio; I've seen how the opinions of various team members clash when that particular team is cross cultural. The reason behind this variance in their viewpoints is due to the differences in various laws, rules and regulations of their respective countries, or cultures and this in turn, plays an instrumental part in shaping their ideology. This difference in various ideologies of team members leads to a change in dynamics of the team's working and hence the term, cross cultural team working.

### Objectives

1. To study the concept of cross- culture worldwide.
2. To discuss the issues arising among the different team groups in the multicultural environment.
3. To study the various policies, rules and regulation of different nations.
4. To study the cross- cultural team face numerous challenges due to different culture.

## RESEARCH METHODOLOGY

This study is based on secondary data. The information has been collected by referring different websites, research paper, magazines, numerous articles, journals and various online resources available.

## STRATEGIES FOR SUSTAINABLE DEVELOPMENT

*Simran Kaur*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges,  
Amritsar (Punjab) India*

### ABSTRACT

We borrow the Earth from our children; we do not inherit it from our ancestors." Lakota

Development that satisfies current demands without jeopardizing the capacity of future generations to satisfy their own needs is known as sustainable development. Despite housing 16% of the world's people, India only occupies 2.4% of the planet's land area. For many generations to come, the cumulative effect is an extremely unsustainable usage of natural resources. At frightening rates, India is currently witnessing widespread and fast environmental degradation. The land and natural resources of the nation are under extreme strain to accommodate the vast overpopulation. This study focuses on sustainable development tactics that are essential to the survival of both the current and future generations.

**Keywords:** Food security, organic food, biodiversity, sustainable agriculture, and traditional agriculture

### INTRODUCTION

It has been clear over the past few decades that socioeconomic progress and the environment are inextricably linked. Countries must work together to map out a sustainable path of growth due to the nature of the problems we face and the growing interdependence of nations. The Conference of the United Nations on Environment and Development (UNCED), which took place in Rio de Janeiro in June 1992, was a historic occasion that successfully brought attention to the environmental and development issues that the entire globe is facing. With the aim of putting the world in position to achieve the long-term goals of sustainable development, the Summit brought together representatives from international agencies, non-governmental organizations, and governments from all around the world. It has been clear over the past few decades that socioeconomic progress and the environment are inextricably linked. Given the nature of the problems we face and the increasingly interdepartmental Agenda 21 that was approved at the conference, these challenges reflect a global consensus and high-level political commitment to environmental cooperation and socioeconomic development. The primary duty for spearheading this transformation was assigned to national administrations. It was required of every government to create national strategies, plans, and programs for sustainable development that took into account the unique circumstances, resources, and objectives of each nation. This was to be carried out in collaboration with businesses, non-governmental organizations, state, local, and international governments, as well as citizen groups. The Agenda acknowledged that developing nations require fresh support as well to encourage the additional costs associated with taking action to address global environmental issues and to hasten sustainable development. Governments and international organizations have worked hard since UNCED to include social, economic, and environmental goals into decision-making processes by either creating new policies and strategies for sustainable development or by modifying current ones, and schemes. The Summit gave India, a country devoted to improving the lives of its citizens and actively participating in the global alliance for sustainable development, a chance to reaffirm its commitment to the developmental ideals that have long served as the nation's compass. Since these ideas are ingrained in the nation's planning process, there was no perceived need for a separate national policy for sustainable development. The phrase "sustainable development" has many distinct origins and definitions, but the Brundtland Report, published in 1987 by the World Commission on Environment and Development, is by far the finest and is currently one of the most frequently accepted definitions. "Development that satisfies current demands without jeopardizing the capacity of future generations to satisfy their own needs is referred to as sustainable development." Global issues such as poverty and exclusion, unemployment, climate change, conflict and humanitarian aid, establishing inclusive and peaceful communities, strengthening institutions of governance, and promoting the rule of law are the key obstacles to sustainable development.

# GREEN FINANCING: AN EMERGING CONCEPT OF SUSTAINABLE DEVELOPMENT IN INDIA

*Gagandeep Kaur*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges,  
Amritsar (Punjab) India*

## ABSTRACT

Green finance is an emerging concept that refers to sustainable development projects and initiatives, environmentally friendly products and policies that encourage financial investment to stimulate more sustainable economy. It is essential in establishing connections among the financial sector, environmental improvement and economic progress. In India, factors like high capital costs, lack of adequate debt financing and short-term maturity of loans have always acted as a hindrance for financing of renewable energy projects. This paper aims to study the importance of green finance and types of green financial products and services being offered by Indian markets. This paper also addresses current developments as well as potential and difficulties in the field of green financing in developing India. The research is based on the secondary data.

Keywords: Economy, Environment, Green Finance, India, Sustainable Development.

## INTRODUCTION

The environment is greatly threatened by climate change, primarily as a result of the overuse of fossil fuels. The planet's temperature will probably rise by 4 to 6 degrees if fossil fuel use keeps up its current rate. A lot of governments have become more aware of this issue and have committed to upholding and adhering to the Sustainable Development Goals (SDGs) and the 2015 Paris Agreement, which stipulate that countries should work toward keeping global warming well below 2 degrees Celsius. The real prerequisite is a rise in long-term funding for eco-friendly and environmentally beneficial initiatives.

## WHAT IS GREEN FINANCE?

The term "green finance" describes financial agreements designed specifically to be used for climate change adaptation or environmentally beneficial projects. The goal of green financing is to raise the amount of money coming into sustainable development initiatives from the public, private, and not-for-profit sectors through banking, micro credit, insurance, and investment.

Renewable energy production from solar, wind, biogas, and other sources; clean transportation with reduced greenhouse gas emissions; energy-efficient projects like green buildings; and waste management involving recycling, efficient disposal, and energy conversion are examples of environmentally sustainable projects. Furthermore, projects that meet the criteria for being considered sustainable under the Green Debt Securities disclosure requirement include biodiversity conservation, sustainable land use, including sustainable forestry and agriculture, sustainable waste and water management, and climate change adaptation (SEBI 2017).

## Objectives of the study:

1. To study the basic concept of green finance and identify the recent trends of green finance in India
2. To study the various challenges in the area of green financing in India.

## RESEARCH METHODOLOGY

The nature of study is descriptive and secondary data sources are utilized. Required data is collected from various reports research articles, newspaper, journals, magazines, financial Institutions reports and websites. This study is restricted to green finance instruments available in India only.

# GREEN BANKING: NEED AND AVENUES

*Ridhim Pathak*

*Assistant Professor, Amritsar Group of Colleges, Amritsar*

## ABSTRACT

Green finance is significant since it is the first organized effort by the financial industry to link financial performance with a positive environmental impact. Green finance products are being developed appropriately to achieve sustainability. Since it represents the financial industry's first concerted attempt to connect financial success with a beneficial environmental impact, green finance is significant. Sustainability is being attained through the appropriate development of green financing products. In today's environmentally conscious society, the phrase "Go Green" has gained relevance in all facets of business. All business operations are undergoing a wave of transformation that includes a focus on people and the environment in addition to profit. Because of environmental awareness and consciousness, corporations can no longer operate solely for financial gain. There is a shift towards a green economy, and businesses across all industries need to be ecologically conscious. A field like this called green banking. Green banking refers to the use of environmentally friendly procedures in the banking industry, which lowers carbon footprints both internally and externally. A more comprehensive perspective is using green criteria as a lending tenet. In general, the banking sector is not thought to be a polluting industry. However, it has an adverse effect on the environment by increasing energy usage.

## INTRODUCTION

A recent development in finance is the concept of "green banking," in which banks reorient their investment strategies to emphasize environmentally friendly projects and sustainable technologies. These financial organizations are committed to climate change mitigation and clean energy through sustainable banking programs. After the Paris Climate Agreement, it gained a lot of traction among banks and has subsequently assisted in encouraging investments in carbon offsets, renewable energy, and forestry initiatives. However, green banks can also become greener at the local level by implementing eco-friendly financing practices. Being green goes beyond simply investing in climate resilience projects. These mission-driven policies could take the shape of company-wide investment bans in businesses that hurt the environment, like fossil fuels, or loans for electric cars and household solar power systems. There isn't a distinct bank for green banking. Reducing internal and external carbon footprints in the banking industry by implementing environmentally friendly procedures is known as "green banking." In general, the banking sector is not thought to be a polluting industry. However, it has an adverse effect on the environment by increasing the use of paper and energy for air conditioning and lighting. From a wider perspective, this means that the banking sector is connected to the outside world since it gives people money, which in turn funds their activities. Funds can be obtained from banks. Thus, they can protect the environment by guaranteeing investments that are environmentally responsible and lending that has been thoroughly considered. Thus, green banking addresses two facets. The first is the prudent use of energy, resources, and carbon footprint reduction; the second is limited encouragement and funding.

## LITERATURE REVIEW

Sharma, Gopal et al. (2014) attempt to study the level of consumer awareness of Green Banking initiative in India with special reference to Mumbai. From the primary survey they conducted they find that surprisingly even those people who are using online facilities provided by their banks nearly three fourth of them are unaware of the term Green Banking. They find that among those who are aware of Green Banking term consider it mainly related to online bill payment and cash deposit system. Other Green Banking aspects like Green CDs, solar powered ATM, bonds for environment protection are among few of which consumers are not aware of. They also attempt to analyze the gender based difference in awareness of green initiatives by bank specially E-Statements, Net Banking and Green loans. Using Chi-Square test for hypothesis testing they arrive at a result

# CROP PRODUCTION DATASET ANALYSIS USING APACHE PIG

Arshdeep Kaur

Assistant Professor, Department of computer applications, Amritsar Group of Colleges, PTU, Kapurthala, Punjab

## ABSTRACT

This paper presents a review on using Apache Pig as a tool to analyze weather Dataset. To analyze and extract information from dataset Pig Latin which is a Scripting Language has been used. Since data are being produced at an alarming rate, management of data is the need of an hour. The storage, processing and retrieval of such a huge volume of data are an area of concern nowadays. Through this paper, an effort to analyze crop production dataset has been made through various commands written in Pig Latin. The results drawn from an analysis shows the power of Apache Pig as a data analysis tool.

**Keywords:** Data; Data Analytics; Query; Hadoop Cluster; Apache Pig

## 1. INTRODUCTION

The term 'Big Data' refers to extremely large datasets which can be analyzed through various tools to extract different types of patterns, trends and association which can be inferred as information that is valuable. Hadoop is an open source platform to analyze big datasets with various powerful components of its ecosystem. Each component plays an important role in handling big chunks of data from big data production houses like Enterprises. Apache's Pig is one of major projects lying on the top of Hadoop which provides functionality of the Map Reduce. In 2004, Google invented Framework called Map Reduce but it proved to be cumbersome to solve small problems with complex code.[3] So a new Language known as Pig Latin came up which is a high level declarative like SQL and low level Procedural like Map Reduce. It is a Data Flow language which solves difficult problems with a simpler code. Its main features include operating on input files without schema, rich set of operators, flexibility to create UDFs (User Defined Functions). It produces marvelous results when operated on large datasets. [4]

## II. PIG COMPONENTS AND ARCHITECTURE

There are various components in Architecture of Apache Pig which helps the script (sequence of statements) or merely statements to produce required result in an effective manner

[7] First of all user writes Pig Scripts in Grunt shell (Execution Environment) which are converted to various Map and Reduce jobs which acts as an abstraction for user. This conversion is result of various components being in action. Its Architecture can be illustrated by following diagram. [11]

Fig. 1. Apache Pig Architecture.

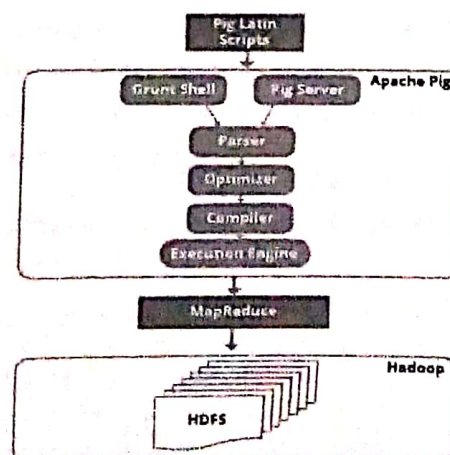


Figure: Apache Pig Architecture

# COMPARATIVE ANALYSIS OF SOLAR, WIND, AND HYDROPOWER TECHNOLOGIES

*\*Pooja Puri \*\*Abhishek Puri*

*\*Professor and Head, DMS, AGC, Amritsar, Punjab, India*

*\*\*MBA 2<sup>nd</sup> Semester Student, AGC, Amritsar, Punjab, India*

## ABSTRACT

This paper presents a comprehensive comparative analysis of solar, wind, and hydropower technologies, examining their potential as renewable energy sources. The study explores the technological advancements, environmental impacts, and energy efficiency of each technology, highlighting their significance in sustainable energy systems. Through an extensive review of literature and case studies, the paper evaluates the feasibility and scalability of solar, wind, and hydropower technologies in meeting global energy demands. Additionally, the research investigates the economic implications and policy frameworks associated with the deployment of these technologies, providing insights into the challenges and opportunities for their widespread adoption. By analyzing the strengths and limitations of each technology, the paper aims to inform policymakers, industry stakeholders, and researchers about the optimal strategies for integrating solar, wind, and hydropower into the energy mix. The analysis reveals that solar, wind, and hydropower technologies have distinct advantages and limitations. Solar power, for instance, is abundant and increasingly cost-competitive, particularly with the advancement of photovoltaic technology. Wind power, on the other hand, is highly scalable and has a relatively low environmental impact, but it is limited by intermittency and geographic constraints. Hydropower, while a mature and reliable technology, faces challenges related to environmental impact and land use. The study concludes by emphasizing the importance of a diversified energy mix that leverages the strengths of each technology to achieve a sustainable and resilient energy future. It calls for continued research and innovation to address the challenges and maximize the potential of solar, wind, and hydropower technologies in the global energy landscape.

**Keywords:** Energy, Environment, Hydropower, Solar, Technologies, Wind.

## 1. INTRODUCTION

The urgent need to switch to sustainable and renewable energy sources is causing a rapid evolution of the global energy environment and the Indian government still needs to invest more in technological innovations that support renewable energy deployment to achieve the SDGs (Destek, M. A., et al., 2023). Technologies like solar, wind, and hydropower have become important participants in this shift by providing clean, renewable alternatives to conventional fossil fuels. According to a World Energy Council prediction, global electricity demand will peak in 2030 (Majid, M., 2020) and a dependable, affordable, and stable renewable energy source must meet almost any future energy need (Gayen, D., et al., 2024). Achieving climate change mitigation targets and guaranteeing energy security depends heavily on their growing use. In order to evaluate the potential contributions of solar, wind, and hydropower technologies to the world's energy mix, this article provides a thorough comparative analysis of these technologies.

# HARMONY IN HABITAT-EXPLORING THE CRUCIAL ROLE OF THE ENVIRONMENT IN SUSTAINABLE DEVELOPMENT: AN EMPIRICAL STUDY

<sup>a</sup>Navneet Kaur <sup>\*\*</sup>Suchi Adhi <sup>\*\*\*</sup>Hardeep Singh

<sup>a</sup>MBA Student, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India

<sup>\*\*</sup>MBA Student, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India

<sup>\*\*\*</sup>Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India

## ABSTRACT

Sustainable development is the type of development that satisfies the current needs without compromising the resources needed for future generations. Although the term 'sustainable development' is frequently associated with the environment, there exists an intimate relationship between the two. Looking at the current situation it is clear that natural resources are depleting at a higher rate, climate change is not taken into consideration seriously, environmental impact due to use of various resources and population growth is still seen as a positive aspect by many countries. Due to these challenges, sustainable development has become an urgent and important topic than ever. This paper aims to throw light on the relationship between environment and sustainable development, to identify the factors influencing it, their connection with other dimensions, problems and implementation of various strategies aimed at promoting sustainable development. It can be concluded that sustainable development aims to build a future model of economic, social, and environmental progress while fulfilling the needs of the current generation and preserving and conserving natural ecosystems. The study explores global best practices for achieving sustainable development goals through recent advances in interdisciplinary studies, with the goal of achieving an effective legal system that is suitable for India's unique legal, economic, scientific, and political environment. In order to manage the contradictions of development and arrive at the possibility of achieving sustainable development, it seeks balance, consensus, and agreement. Natural resources, scientific inventions, and cultural resources serve as both the means and the end of this interconnected process.

**Keywords:** Biodiversity, Environment, Resources, Strategies, Sustainable Development.

## INTRODUCTION

Environment sustainability can be elaborated as a perfect and reliable interaction with the environment to put an end to the exploitation and degradation of natural resources to establish a more positive association with environment. In recent years with global development, the problem of environmental pollution and ecological damage has become a common concern worldwide. To cope with the issue of environmental damage, enterprises as essential participants in protecting the environment should increase their investment in environmental protection and actively assume environmental responsibility. To know the importance of sustainable development is crucial as it aims to encourage the use of products and services in a way that meets the needs of the present, without compromising the ability of future generations to meet their own needs with minimizing its impact on environment. Further, we human are most responsible for the devastating problems in environment and to revive ourselves from natural disasters, one must be involved in the sustainability practices and should maintain ecological steadiness.

# BUILDING RESILIENT FUTURES: A HOLISTIC APPROACH TO SUSTAINABLE DEVELOPMENT IN COMMUNITIES AND CITIES

*\*Subwinder Sokhi \*\*Ishmeen Kaur \*\*\*Hardeep Singh*

*\*BBA 2<sup>nd</sup> Semester Student, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

*\*\*BBA 2<sup>nd</sup> Semester Student, Department of Management Studies, Amritsar (Punjab) India*

*\*\*\*Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

In an era defined by rapid urbanization and pressing environmental challenges, the pursuit of sustainable development has become imperative for the prosperity and resilience of communities and cities worldwide. This paper explores a holistic approach to sustainable development, aiming to address the interconnected social, economic, and environmental dimensions essential for building resilient futures. Through a multidisciplinary lens, it examines the critical factors shaping sustainable urban development, including governance structures, infrastructure planning, community engagement, and technological innovation. Drawing on case studies and best practices from diverse global contexts, the paper highlights strategies for fostering inclusive growth, enhancing environmental stewardship, and promoting social equity within urban environments. By synthesizing theoretical frameworks with practical insights, this paper offers valuable guidance for policymakers, urban planners, and community stakeholders seeking to navigate the complexities of sustainable development and forge pathways towards resilient, thriving cities and communities.

**Keywords:** Cities, Communities, Environmental Challenges, Urbanization, Sustainable Development.

## INTRODUCTION

Sustainable development, as a guiding principle, has gained increasing recognition and importance in the context of global challenges such as climate change, rapid urbanization, and resource depletion. At its core, sustainable development seeks to balance environmental protection, social equity, and economic prosperity to meet the needs of present and future generations. Within communities, the pursuit of sustainability involves integrating environmental stewardship, social inclusivity, and economic resilience into local planning and decision-making processes. By fostering sustainable practices and behaviors at the grassroots level, communities can enhance their adaptive capacity and contribute to broader efforts towards achieving global sustainability goals.

## LITERATURE REVIEW

Scholars and practitioners have proposed various frameworks to guide sustainable urban development efforts. The Brundtland Report's definition of sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs remains foundational (WCED, 1987). Additionally, frameworks such as the Sustainable Development Goals (SDGs) provide a comprehensive agenda for addressing global challenges, including poverty, inequality, and environmental degradation (United Nations, 2015). Effective governance structures and policies play a crucial role in shaping sustainable development outcomes at the urban level. Research has emphasized the importance of participatory decision-making processes, institutional capacity building, and multi-level governance arrangements for promoting sustainable urban development (Gupta & Vegelin, 2016; Bai et al., 2018). The integration of sustainability principles into urban planning and policymaking frameworks is essential for aligning short-term development priorities with long-term environmental and social objectives. The design and management of urban infrastructure profoundly influence the sustainability and resilience of cities. Studies have examined the role of green infrastructure, smart



SUSTAINABLE DEVELOPMENT GOALS (SDGs): AN ERA FOR LONG LASTING FUTURE DEVELOPMENT

# SUSTAINABLE DEVELOPMENT GOAL FOR RESPONSIBLE CONSUMPTION AND PRODUCTION

\*Anuj Kumar \*\*Aditya \*\*\*Bimal Kumar

\*Student, 6<sup>th</sup> Semester, Department of Electrical Engineering, Amritsar Group of Colleges  
Amritsar (Punjab) India

\*\*Student, 6<sup>th</sup> Semester, Department of Electrical Engineering, Amritsar Group of Colleges  
Amritsar (Punjab) India

\*\*\*Associate Professor, Department of Electrical Engineering Amritsar Group of Colleges  
Amritsar (Punjab) India

## ABSTRACT

Responsible Consumption and Production, strives to break the current cycle of economic growth, resource usage and environmental degradation, which has fuel led unsustainable global development for decades. While producing countries bear responsibility for natural resource depletion, pollution and other negative consequences of their production, wealthy countries' practical and legal responsibilities are significantly high due to their high consumption levels. An increase in consumption is often associated with an improved quality of life, which creates a conflict between the pillars of sustainable development and the environmental well-being of the planet. This issue becomes more complicated since cross-border resource management methods are more controversial than cooperative. We should highlight that one use case can be related to more than one SDG and it can make use of multiple emerging technologies.

**Keywords:** - Sustainable development goals Business models Responsible consumption and production Sustainability

**INTRODUCTION:** - Responsible consumption and production are essential for creating a sustainable future. This involves reducing our environmental impact by making conscious choices about the products we buy, use, and dispose of. From minimizing waste and using renewable resources to supporting ethical and eco-friendly businesses, responsible consumption and production can help build a more equitable and resilient world.

In this section, we will explore the principles of responsible consumption and production, including strategies for reducing waste, promoting circular economies, and empowering consumers to make informed choices. We will also examine the social and economic implications of sustainable practices, and how they can create new opportunities for innovation and job creation.

Responsible Consumption and Production (SDG 12) is centered on creating more sustainable patterns of consumption and production. It is about doing more and better with less. The goal addresses the importance of reducing the footprint of our consumption and production activities on the natural environment. This includes the responsible management of resources, reducing waste and pollution, and promoting practices that contribute to a circular economy.

**LITERATURE SURVEY:-** The second aspect of this SDG involves encouraging individuals, businesses, and governments to rethink how goods are produced and consumed. This involves everything from reducing the use of harmful materials and promoting recycling, to creating sustainable business practices and consumer behaviours that contribute to the conservation of our environment.

This study forms part of the project Forms Agenda 2030, which aimed to identify research needs related to the 17 Sustainable Development Goals (SDGs) and to explore options for making structural changes in research policy and funding in order to foster further progress towards the SDGs. The project involved literature reviews and exploratory workshops focusing on three SDGs as examples: SDG 12: Responsible Consumption and



## SCOPE OF SOLAR ENERGY FOR SUSTAINABLE DEVELOPMENT IN INDIA

*\*Praveen Kumar Tiwari \*\*Kawaljit Singh \*\*\*Bimal Kumar*

*Student, 6<sup>th</sup> Semester, Department of Electrical Engineering, Amritsar Group of Colleges,  
Amritsar (Punjab), India*

*\*\*Student, 6<sup>th</sup> Semester, Department of Electrical Engineering, Amritsar Group of Colleges,  
Amritsar (Punjab), India*

*\*\*\*Associate professor, Department of Electrical Engineering, Amritsar Group of Colleges,  
Amritsar (Punjab), India*

### ABSTRACT

In the last few decades, the field of Renewable Energy Sources (RESs) is the most attracting field for researchers as far as the global demand of electricity is concerned, with many innovations, technologies and applications become reality. Solar energy is one of the important categories of Renewable sources of energy which will be helpful for the sustainable development of India. Solar energy is currently fulfilling 5.1% of the total energy need of India which is second highest fulfillment by any category of renewable sources of energy. This paper depicts the current situation and future perspective of utilization of solar energy. In this paper, efforts have been made to summarize the analysis of consumption, current status, and future capability, barriers to implementation and major achievements of solar energy in different states of India. Generation of solar energy has tremendous scope in India. The reason being India is a tropical country and it receives solar radiation almost throughout the year, which amounts to 3,000 hours of sunshine. This is equal to more than 5,000 trillion kWh. Almost, all parts of India receive 4-7 kWh of solar radiation per sq metres. This is equivalent to 2,300-3,200 sunshine hours per year. States like Andhra Pradesh, Bihar, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, and West Bengal have great potential for tapping solar energy due to their location. Since majority of the population live in rural areas, there is much scope for solar energy being promoted in these areas.

**Keywords:** -Non conventional, Solar energy, Wind energy, Sustainable development.

### INTRODUCTION

Energy demand has increased all over the world in correspondence to the growing global population. Access to energy is generally relative and often depict socio-economic and political division of the world. While Europe and North America head the chart in terms of access to energy, Africa and most parts of the Global South suffer the worst rate of energy poverty in the world. Access to Energy is known to be the driving force of all industrialized states in the international system. However, the energy powering economies of the world are dominated by fossil fuel. The genesis of this can be associated to the onset of industrial revolution beginning from the 18th century where we see a breakthrough and shift from the use of human and animal labor to employment of technology and machines that efficiently replaced most forms of labor before this period. Primarily these economies depended on the use of coal to produce transformations that will leave a legacy on all aspects of our world. From this point many states have continuously relied on fossil fuels in powering industries, providing essential services and supporting households.

# HARNESSING RENEWABLE ENERGY FOR SUSTAINABLE DEVELOPMENT: A COMPREHENSIVE REVIEW

*\*Suniksha Surtal \*\*Hardeep Singh*

*\*MBA 4<sup>th</sup> Semester Student, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

*\*\*Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

In the wake of global environmental challenges and the pressing need for sustainable development, renewable energy has emerged as a pivotal solution. This paper presents a comprehensive review of the role of renewable energy in fostering sustainable development across various sectors. The study encompasses an analysis of the current state of renewable energy technologies, their economic feasibility, environmental impacts, and policy frameworks. The paper explores the multifaceted benefits of renewable energy, including its potential to mitigate greenhouse gas emissions, enhance energy security, and foster socio-economic development. Additionally, it addresses key barriers hindering the widespread adoption of renewable energy, such as intermittency, technological limitations, and policy uncertainties. Strategies for overcoming these barriers and accelerating the transition towards a renewable energy-based economy are also discussed. Through a synthesis of empirical evidence and theoretical insights, this paper aims to provide policymakers, researchers, and stakeholders with a comprehensive understanding of the role of renewable energy in achieving sustainable development goals. By leveraging renewable energy technologies effectively, nations can not only address climate change challenges but also promote inclusive growth, energy access, and environmental stewardship on a global scale.

**Keywords:** Energy based Economy, Energy Security, Global Environment, Renewable Energy, Sustainable Development.

## INTRODUCTION

Renewable energy represents a linchpin for sustainable development in the 21st century, offering a pivotal pathway to address pressing environmental, economic, and social challenges. As the world grapples with the urgent need to mitigate climate change, transition away from fossil fuels, and ensure energy security for all, renewable energy emerges as a transformative solution with far-reaching implications. At its core, renewable energy encompasses sources such as solar, wind, hydroelectric, geothermal, and biomass, which are naturally replenished over time. Unlike finite fossil fuel reserves, renewable energy resources are abundant, widely distributed, and inexhaustible, presenting a compelling opportunity to decarbonize the energy sector and mitigate greenhouse gas emissions. The integration of renewable energy into the energy mix holds promise for fostering sustainable development across multiple dimensions. Economically, renewable energy investments spur job creation, stimulate innovation, and drive economic growth, particularly in emerging industries such as solar photovoltaics and wind power. Moreover, by reducing reliance on imported fossil fuels, renewable energy enhances energy security and shields economies from volatile global energy markets. From an environmental standpoint, renewable energy offers a pathway towards decarbonization, mitigating the adverse impacts of climate change and reducing air and water pollution associated with fossil fuel combustion. The deployment of renewable energy technologies also conserves natural resources, safeguards biodiversity, and mitigates environmental degradation, thereby promoting ecosystem resilience and ecological integrity. Furthermore, renewable energy plays a pivotal role in advancing social equity and inclusivity. By decentralizing energy production and fostering community-based energy initiatives, renewable energy enhances energy access for marginalized populations, particularly in remote and underserved regions. Moreover, renewable energy projects

# REVIEW ARTICLE ON JAMUN ( SYZYGIIUM CUMINI ): IT'S MICROSCOPY, PHYTOCHEMICAL CONSTITUENTS, NUTRITIONAL PROFILE

*\*Ekamjot Kaur \*\*Amisha \*\*\*Sorabh Sehajpal*

*\*Department of Pharmaceutical Sciences, Amritsar Group of Colleges, Amritsar (Punjab) India*

*\*\*Department of Pharmaceutical Sciences, Amritsar Group of Colleges, Amritsar (Punjab) India*

*\*\*\*Department of Pharmaceutical Sciences, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

Natural products chemistry is the chemistry of metabolite products of plants, animals, insects, organisms and microorganisms. Jamun is a plant based product which are used to cure many health-related problem. The jamun (*Syzygiumcumini*) also known as *Eugenia jambolana* Lam. and black pulp is a traditional herb native to Asian and Indian subcontinents. The fruit pulp contain vitamin A and C while the leaves are rich in vitamins, flavanols, glycosides and other compounds. The jamun has anti oxidant, anti inflammatory, anti cancerous properties. The microscopy of jamun would involve examining the cellular structure and details about arrangements of cells, presence of specific organelles and any anomalies that might affect on quality and taste. Jamun has anti-bacterial, anti-fungal, antiviral, anti diabetic and many other pharmacological properties. Jamun is used as an dietary source because of its high nutritional value. Jamun includes various phytochemicals such as tannins, anthocyanins, gallic acids etc. The transmission electron microscopy allows for the examination of ultrastructure details with in the jamun cells. The seeds have substantial amounts of dietary fiber and appreciable quantities of anthocyanin, chlorophyll and amino acids. The variations in nutritional profile of jamun depend on the age of fruit, soil types, location, and climate. The jamun seeds are utilized to treat diabetes and digestive problems in Ayur-Veda. Jamun include carbohydrates, protein, lipids, minerals etc. Ellagic acid which is present in jamun is a different polyphenolic compound having anti-oxidant properties can aid in scavenging the body dangerous free radicals. The health promoting properties of jamun seeds confirmed and many bioactive compounds are responsible include phenolics, terpenoids, phloroglucinol derivatives have been identified. The functional attributer of polysaccharides vary with the type of monomeric units.

**KEYWORDS:** Anthocyanins, *Eugenia jambolana*, ellagic acid, phloroglucinol derivates, anti- diabetic

## INTRODUCTION

The study of the metabolite products found in plants, animals, insects, creatures, and microorganisms is known as chemistry. The metabolic products include alkaloids, flavonoids, terpenoids, glycosides, amino acid, proteins, carbohydrates etc. Natural products chemistry has been involved in the investigation of many biological phenomena, such as drug mechanism to gametophytes and receptors, drug metabolism in human body, and protein and enzyme chemistry.

The jamun (*syzygiym cumini*) also known as *Eugenia jambolana* Lam, is a traditional herb native to the Indian and asian subcontinents. It is an evergreen tree of Myrtaceae family, with 1100 species. The plant has been used to treat various illnesses, particularly diabetes. The fruit pulp contains Vitamin A and C while the leaves are rich in vitamins, flavanols, glycosides and other compounds. This plant is rich in compounds containing anthocyanins, glucoside, ellagic acid, Iso quercetin, kaempferol and myrecetin. Jamun is a plant with known ethnomedicinal uses. Various extracts of jamun possess a range pharmacological properties such as anti-bacterial, antifungal, antiviral, antigenotoxic, anti-inflammatory, antiulcerogenic, chemoprotective.

# EMPOWERING HER IN INDIA: A COMPREHENSIVE REVIEW OF PROGRESS, CHALLENGES, AND STRATEGIES FOR ADVANCEMENT

*Bhawna Mehra*

*Assistant Professor, Department of Management Studies, Amritsar Group of Colleges, Amritsar (Punjab) India*

## ABSTRACT

This paper presents a comprehensive review of the concept of women empowerment, exploring its multidimensional facets, socio-cultural contexts, and implications across various domains. Drawing upon a wide array of scholarly literature, empirical studies, and theoretical frameworks, the review synthesizes key findings to offer insights into the concept of woman empowerment, the existing disparities and inequalities between men and women, the root causes of gender-based discrimination, the key strategies for empowering women and the necessary steps taken by Indian Government for women empowerment. The paper underscores the importance of addressing structural barriers, promoting gender equality, and fostering inclusive policies and initiatives to empower women effectively.

**Keywords:** Women Empowerment, Gender Equality, Agency, Capability Approach, Intersectionality, Socio-Cultural Contexts, Economic Empowerment, Political Participation, Social Inclusion.

## INTRODUCTION

Women's empowerment has emerged as a critical agenda in global development efforts, encompassing economic, social, political, and cultural dimensions. Empowerment of women means developing them as more aware individuals, who are politically active, economically productive and independent and are able to make intelligent discussion in matters that affect them. A multifaceted process called empowerment is meant to help women—or groups of women—realize their own potential and identity in all areas of life. Encouraging women to actively engage in the social, political, and economic aspects of life is known as women's empowerment. Empowerment is a multifaceted societal process that gives people more command over their own life. Women are empowered when they have more access to education, which enables them to make critical decisions for both themselves and their family. Pandit Jawaharlal Nehru once said: "If you educate a man you educate an individual, however, if you educate a woman, you educate a whole family. Education is the key factor for women empowerment, prosperity, development and welfare. Education is considered as a milestone for women empowerment because it enables them to respond to the challenges, to confront their traditional role and change their lives.

## LITERATURE REVIEW

Giriappa (1997) examined the degree of discrimination against women and the efficacy of their decision-making in various rural enterprises. She came to the conclusion that women-headed households were capable of making effective decisions regarding work mobility, education, health care, asset creation, employment creation, and social participation in households with lower social status. The informal empowerment gained traction as a result of women becoming members, despite the fact that men discriminated against them to varying degrees. The majority of the women (58) had a medium level of empowerment, while only a small percentage (8) belonged to a high level, and the remaining 54 women had a low level of empowerment, according to Jyothi's (1998) study on the employment patterns and empowerment of rural women in Kolar district. According to Saradha (2001), there were high and low levels of product empowerment among women in self-help groups, with percentages of 35.80 and 35.00 percent, respectively. It showed that although the women have a strong sense of psychological empowerment, their actual degree of empowerment is low. The patriarchal society in which women are viewed as the weaker group may be the cause of this. It has also been found that rural women

## REVIEW ARTICLE ON NANOPARTICLES. IT'S SYNTHESIS, PROPERTIES, APPLICATIONS AND ENVIRONMENTAL CONSIDERATIONS.

*\*Isha \*\*Nikhil Sharma \*\*\*Neetu Verma*

*\*Department of Pharmaceutical science, Amritsar Group of Colleges, Amritsar*

*\*\*Department of Pharmaceutical science, Amritsar Group of Colleges, Amritsar*

*\*\*\*Department of Pharmaceutical science, Amritsar Group of Colleges, Amritsar*

### ABSTRACT:

Nanoparticles (NPs) have emerged as a focal point of research and innovation due to their versatile properties and wide-ranging applications across industries such as environmental research, technology, and medicine. This literature review provides a comprehensive overview of NP synthesis techniques, characteristics, uses, and potential ramifications. Environmental sources contributing to NP formation, including industrial emissions, vehicle exhaust, and occupational settings, are explored, alongside biologically derived and naturally occurring nanoparticles. Following release into the atmosphere, NPs undergo transformations in size and composition, potentially impacting human health and the environment through inhalation exposure and secondary contamination in soil and water.

The synthesis and properties of NPs, with sizes ranging from 1 to 100 nm, are examined, highlighting green synthesis methods utilizing biological entities for environmentally benign production. Various synthesis techniques, including chemical reduction, sol-gel synthesis, precipitation, microemulsion, and electrochemical deposition, afford precise control over NP characteristics. Silver, gold, alloy, and magnetic nanoparticles are discussed for their distinct applications, with examples of their uses in healthcare, environmental remediation, and technology. Furthermore, the review underscores the significant role of microorganisms in synthesizing metallic nanoparticles, providing sustainable and cost-effective alternatives. The diverse applications of NPs, particularly in drug delivery systems, environmental remediation, catalysis, and energy research, are elucidated. However, concerns regarding the potential environmental and toxicological impacts of NPs persist, necessitating comprehensive research on their biological responses and careful management of their utilization and disposal.

In conclusion, the study of NPs represents a promising frontier for medical and technological advances, though balanced innovation and cautious consideration of environmental and health implications are imperative. Further research efforts and regulatory measures are essential to ensure the responsible development and utilization of NPs across various applications.

**Keywords-** Nanoparticles, synthesis method, versatile properties, potential methods, environmental behaviour.

### INTRODUCTION

Recently, there has been a lot of interest in nanoparticles (NPs) due to their versatile properties and applications in a range of fields, including environmental studies, technology, and medicine. The purpose of this study of the literature is to give a general overview of the synthesis techniques, characteristics, uses, and possible ramifications of nanoparticles. As this paper will cover, below figure gives an overview of environmental nanoparticles. First, there are a number of sources that lead to the formation of nanoparticles: stationary industrial sources, which include incinerators and coal-fired combustion systems; mobile sources, which include automobiles and diesel-powered vehicles; and occupational environments, which include places where welding procedures are prevalent and where intentionally synthesised engineered nanoparticles are produced. Numerous biologically derived nanoparticles and natural sources also require serious consideration. For instance, viral nanoparticles can be utilised as vaccinations or have a major role in the propagation of disease, whereas pollen pieces have the potential to induce allergies. After being released into the atmosphere, nanoparticles can be

# MACHINABILITY BEHAVIOUR SUCH AS MATERIAL REMOVAL RATE AND SURFACE ROUGHNESS OF STAINLESS STEEL IMPLANTS (SS L 107.12)

\*Jameel Gull \*\*Rajbir Singh \*\*\*Gurbhej Singh

\*M.Tech Scholar, Inder Kumar Gujral Punjab Technical University, Kapurthala, India

\*\*Assistant Professor, Mechanical Engineering Department at Amritsar Group of Colleges  
Amritsar

\*\*\*Assistant Professor, Mechanical Engineering Department at Amritsar Group of Colleges  
Amritsar

Corresponding Author: Email ID: jameelgul28@gmail.com

## ABSTRACT

Machining the materials into implants that are customized to individual patients has been the standard practice in recent years in an effort to solve the problem that now exists. During the process of machining the implants, complicated forms are not possible to manufacture using conventional methods. On the other hand, the biocompatibility of the material has been compromised. In order to machine the implants, it was necessary to take into account the relevant characteristics that may potentially have an effect on the machinability of the implants. For this study the materials selected are stainless steel and this material is machined by using non-traditional method of machining i.e. wire electric discharge machining Wedm. The selection of appropriate parameters is determined by the Pulse on time, the Pulse off time, and the Applied Voltage (V). The factors design was used in the planning of the experiments, and all three variables were taken into consideration. The machinability of the machining process was evaluated based on the answers, namely the Surface Quality and the Material Removal Rate.

## AUSTENITIC STAINLESS STEEL

Krupp invented implant-grade stainless steel in 1926. (Essen-Germany). It had 18% Cr and 8% Ni and became 18-8. (type 302 in the present-day arrangement). Cr's key ability is to form a passive, protective surface coating. Mo was added to boost this metal's pitting corrosion resistance. 18-8Mo became 316 stainless steel. 1950s vacuum technology increased corrosion resistance and reduced carbon from 0.08 to 0.03 percent. Ni expansion of 9-15 wt. percent ensures austenitic condition at ambient temperature for high Cr concentration.[1]

The machined specimens were then put through further testing to determine their biocompatibility. The biocompatibility of the machined specimens was evaluated based on the results of two separate studies: one on cell viability and another on bio corrosion.

In biomedical sectors, commercial-grade stainless steel is utilized to make surgical and dentistry tools. Manufacturing techniques that are specific to stainless steel implants, such as vacuum melting (VM), vacuum reduction in the amount of non-metallic additives. Most people choose austenitic stainless steels because of their versatility. Low cost, high strength and ductility, machinability, and mechanical qualities that can be controlled easily.

Implants made of vacuum-melted 316L stainless steel are available on the commercial market. Plates, screws, nails, and rods made of bone are used. In the  $\gamma$ -phase, there should not be any ferrite present in a single face-centered cubic (FCC) structure, but there should be in a body-centered cubic (BCC) structure. At the conclusion of the component manufacturing process, a free iron surface & passivation treatment were applied. The ASTM No. 6 grain size is the recommended grain size (100 m)[2-5].

# ANALYSIS AND OPTIMIZATION OF PROCESS PARAMETERS AND EFFECT OF PROCESS PARAMETERS ON THE PROPERTIES OF STAINLESS STEEL 304 JOINTS

*\*Harmanjit Singh \*\*Inderjit Singh Sodhi*

*\*Department of Mechanical Engineering, Shiv Shankar Institute of Engineering & Technology, Patti*

*\*\*Amritsar Group of colleges Amritsar*

*Corresponding Author: Email ID: harmansingh373@yahoo.com*

## ABSTRACT

MIG welding is an appropriate process to join stainless steel 304. In present work, the welding Current, Voltage & Gas flow rate select & the effect of welding parameters on mechanical properties i.e. Tensile Strength of stainless steel 304 is observed and to optimize the parameters using the Taguchi method. Hardness test was done using UTM. The selection of L9 Orthogonal array is according to work. Signal to Noise ratio is used to analyse the result & also according to results it is clear that current has more effect on Tensile strength of weldment of stainless steel 304.

**Keywords** – MIG Welding, Stainless steel 304, Voltage, Current, Gas Flow Rate, Tensile Strength, Taguchi Method

## INTRODUCTION

In today world Welding plays a significant role in every field. In Welding, specimens are welded together with electrode or filler rod. Electrode or filler rod is used according to material of specimen. MIG that is Metal inert gas welding which consists of Neon & Argon as inert gases and electrode used is according to specimen material i.e. Stainless steel 304 which contains 18% Chromium & 8% Nickel is used in present work. Shielding Gases i.e. Helium, Argon, Neon etc. used to protect the molten weld pool from contamination of air impurities. Welding process parameters i.e. Welding current, Welding Voltage and Gas Flow Rate are used as main process parameters and optimization is done with the help of Taguchi method using L9 method. The properties like mechanicals properties of weldment of different stainless steel like austenitic Stainless steel different due to different process parameters for the MIG welding and TIG welding process [1]. The welding process uses shielded gases which is come along to shield the molten weld pool from defects like fusion, porosity and embrittlement of welding metal, if these are come in touch with electrode or the welding metal [2]. In case of welding in a particular location there is enough heating is done and after this there is fast cooling as a result stresses is generated of residue type. There is also distortion of weld metal. They distribution in case of residue stresses in the plate that are welding strongly are affected by the structure type of material [3]. The different weldment or weld bead of different specimens have Tensile strength. UTM is used in this present work to check the tensile strength of stainless steel 304. The carbon, sulphur, phosphorus, etc are elements that are included in the material. There is increasing height, decreasing in width it is this because of rate of cooling affect the size of weld pool. Also weld bead, penetration, depth, height, width of stainless steel varies according to welding process parameters. There is also the effect on the properties of the plates of different materials according to the type of the welding used. In some cases the tensile strength is increases and in some cases it is decreases same effect is on the other properties of the specimens of SS304 all this is depends on welding type and weld parameters like current, voltage, gas flow rate etc [4]. The main aim of work is to analyze which welding process parameter have more effect on tensile strength of weldment or weld bead of SS304 and optimization is done with help of taguchi method [5].



# NOVEL ALGORITHM FOR SQL INJECTION DETECTION AND PREVENTION

*\*Amanpreet Kaur \*\* Sanjeev Kumar*

*Student, Department of computer Science and Engineering, Amritsar Group of Colleges, Amritsar Punjab.*

*\*Assistance Professor, Department of computer Science and Engineering Amritsar Group of Colleges, Amritsar Punjab*

*Corresponding Author: Email ID: amans020240@gmail.com*

## ABSTRACT

SQL Injection is still one of the most harmful security attacks. When it comes to financial damage and the exposing of personal information. Furthermore, the majority of intrusion detection techniques used today gather traffic entering the online application from the web application host or from a network device, while other techniques gather information from the database. Logs from the server. The NOVEL model has been applied to identify and avoid "sql injection" attacks. The outcomes show that NOVEL performs well, especially when it comes to correctly recognizing instances and keeping up a high level of performance overall.

**Keywords:** SQL, Injection, Attack detection, NOVEL, Perceptron+SGD,LSVC

## INTRODUCTION

The injection in SQL code turns out to be one of the most widespread vulnerabilities that happen when a series of user data needs to get there without protection filters. The hacker gets the information she needs just by typing a normal question. The typed question is redirected into an abnormal one, which now has become dangerous as it can cause damage. It is a good huntsman which can invest all of the needed efforts for penetration. It can eat both plants and mammals. an unprotected database with vulnerabilities to numerous attacks, is possible to be accessed by everyone, even data can be modified or leaked and compromise the system eventually [1]. SQL injection (SQLi) or injection of query language SQL into the database system is one of the most prolific and dangerous threats to web applications introduced globally. however, software and web application logs still remain as the key alliances. Using input just hacker alias table, SQL code, and injection the database system is definitely broken by unauthorized access at the end. Data manipulation. While doing the research, we come across the different issues that can negatively impact our health. We also discuss the role screenings and vaccinations in stopping and preventing these health dilemmas. These actions intercept criminals trying to get into the system with "SQL injection" attacks. Moreover, technologies masking defaming phrases could be the best option here [2], which is why "SQL" injections are the most benevolent since they are direct. Information systems operated off the web are subject to problems like SQL injection and flaws in the operational design. Attacker try to took the advantage of this loophole in maintaining the security of your users input data, to enter malicious SQL commands and results in disrupting the system's functioning, uncontrolled access and the falsified data. The SQL Query gives us the ability to pull up our stored data into a database table that is a two-dimensional structure referred to as a database table, including some of the techniques used for cyber-attacks such as injections techniques that is SQL and XSS to name a few, and the various tools designed to shield the web application and keep it secure [3].

The annoying thing is that in recent years, we have found modern threats around the corner that use "SQL injection," which remains the most popular. The vulnerabilities in databases for networks remain a major concern, especially for organizations that are becoming immensely reliant on them. Coming from the attacker's performing code execution by taking advantage of both the leftover binary and even web application issues. Yet, such a hidden customization feature might be leveraged in the implementation of SQL queries, thereby creating

# STUDYING PERFORMANCE AND COMBUSTION CHARACTERISTICS OF BIODIESEL FROM WALNUT OIL BY USING RK DIESEL ANALYSIS

Jameel Gull<sup>\*</sup> Rajbir Singh

*M.Tech Scholar Amritsar Group of Colleges Amritsar*

*\*Assistant Professor, Mechanical Engineering Department at Amritsar Group of Colleges Amritsar*

*Corresponding Author: Email ID: jameelgul28@gmail.com*

## ABSTRACT

Depleting oil reserves, rising oil prices, the threat to the environment from exhaust emissions and global warming are creating an intense international interest in developing alternative and renewable fuels for engines. The use of biodiesel as an alternative fuel is seriously regarded. The research is done to determine the optimum compression ratio of biodiesel derived from waste cooking oil for different proportions. The compression ratio significantly impacts the process and provides an outstanding degree of motor performance control. The compression ratio is fixed for conventional internal combustion engines, which results in a compromise between the contradictory requirements. The compression effect of different biodiesel blends under varying loads can be studied in a variable compression rate engine. In the present work, the edible walnut is used for the production of biodiesel. Several researchers have worked with various biodiesel in various diesel engines. The purpose of present study is to analyze biodiesel blends and obtained results in terms of performance, combustion and emission features in conjunction with Standard Diesel. The DIESEL-RK is used to simulate the combustion characteristics of direct injection diesel engine

## INTRODUCTION

Energy is the primary driver of economic development in addition to social growth. Diesel engines in a number of countries are widely used as main movers in the fields of transport, agriculture and power generation. However, owing to the high expense and increasing depletion of fossil products, there is an intensive search for renewable fuels. Both developed and developing countries, it is important to raise the use of diesel fuel. In order to fulfil our basic requirements and ensure sustainable growth, an adequate amount of energy resources is required. In the future, economic forecasts rely mainly on the high level of energy convenience in increasing quantities from harmless, stable and biodegradable resources.

Energy has a need and a high appetite that is increasing dramatically, so the electricity supply need will be expanded by up to 36% in 2035 [1]. Owing to the rise in population, the demand for fuel is also growing and the growth of the population of developing countries such as China and India will be projected at up to 25% in the coming years. Higher energy consumption is also a crucial element of the production of the economy to boost the way of life, which growing puts strain on energy supplies. The best sample study as an illustration is that the energy supply demand in India can be projected to rise by 75% in 2035 [2].

## BIODIESEL AN ALTERNATIVE FUEL

Biodiesel is the perfect replacement for fossil fuels. It can be prepared from vegetable oil and animal fats by means of an alcohol or transesterification process. Biodiesel may be used as such or combined with fossil fuels in various amounts. Transesterification is carried out to reduce crude viscosity. Plant's oil such as jatropha, pongamia, rice bran, neem, karanja, soybean, cotton seed has been used as biodiesel and is reportedly under investigation.

Biodiesel is primarily produced from plants in India. Throughout India, the following biodiesels are widely used [5].

# PERFORMANCE OF MICROWAVE PROCESSED INCONEL-625 CLADS FOR VICKER'S MICROHARDNESS

\* Prabhjit Singh<sup>1</sup> \*\* Gurbhej Singh<sup>2</sup> \*\*\* Jagjit Singh<sup>3</sup>

<sup>1,2 & 3</sup> Amritsar Group of Colleges, Amritsar, India

Corresponding Author: Email ID: singhprabhsingh90@gmail.com

## ABSTRACT

In this study, an efficient and affordable microwave technique was used to clad a stainless steel (SS-316) substrate with Inconel-625. For the cladding process, a household microwave oven with operational ratings of 900 W and 2.45 GHz was employed. The mean microhardness of the obtained clad was considerably better than that of the substrate (SS-316).

**Keywords:** Microwave Cladding, Inconel-625, Microwave Hybrid Heating

## INTRODUCTION

A superalloy based on nickel called Inconel-625 (IN625) has numerous advantageous properties. These include its resilience to corrosion in harsh chemical conditions, exceptional creep resistance at high temperatures, and resistance to strain age cracking. Additionally, Inconel-625 has higher formability and better welding workability compared to other highly alloyed nickel-based alloys. Because of these unique characteristics, this superalloy is a fantastic option for the materials that are utilized in a wide range of sectors, including the chemical, power generation, aerospace, petrochemical & marine industries [1]. However, the expensive price of Inconel-625 has limited its use in large-scale manufacturing. One of the widely utilized techniques for the improvement of surface properties, as well as material function without modifying the majority of properties, is known as surface engineering. Various engineering applications use Stainless steel as one of the common material. Various methods can be used for ferrous alloy's surface modification are thermal spraying, CVD, PVD, heat treatment, laser cladding and microwave cladding etc. [2, 3]. Because of the factors like easiness in operation as well as being able to build a variety of materials on substrate, one of the most common technique that is used widely nowadays is thermal spraying. Although, limitations associated with thermal spray technique includes porosity and splats' poor mechanical bonding [4-6]. Furthermore, when high accuracy is required for performing the cladding on the small components then laser cladding is used, which has a high cost of operation. Furthermore, in the laser cladding process, during the rapid melt pool solidification there exists a crack formation tendency [7-8]. Presently, there exists one more popular technique namely, microwave processing of materials, as it has various advantages like volumetric heating, uniform heating a well as because of the enhanced microstructural characteristics it possesses improved mechanical properties. Furthermore, in the materials' microwave processing, at the atomic level heat is produced, which further results in the enhanced productivity as well as lower consumption of energy. Also, during this process the material which owed to the atomic level interaction resulted in generation of volumetric heat inside it in comparison to the conventional surface heating techniques where conductive mode of heat transfer is used. Thus, material resulted in decreased thermal gradient inside it which results in enhanced functional properties along with decreased residual stresses inside the material. Firstly, gave the microwave heating application as microwave cladding for enhancement of metallic material's functional properties in a patent form. MHH(Microwave Hybrid Heating) technique's principle was used by the authors for microwave clad development.

## EXPERIMENTAL DETAIL

### DETAIL OF MATERIAL

Superalloy Inconel-625, Ni-based based powder Purchased from (M/S Metallizing Equipment ), Jodhpur (India), was selected for cladding due to high hardness and corrosion resistance. Fig 1 SEM micrograph shows that display the morphology of Inconel-625 powder. The majority of the powder particles with a diameter of 40

# MECHANICAL AND MICROSTRUCTURAL BEHAVIOR OF MICROWAVE PROCESSED NI-CR/WC-12CO COMPOSITE CLADS ON SS-304 AUSTENITIC STEEL

*\*Harish Ayer \*\*Gurbhej Singh*

*\*Department Of Mechanical Engineering, Amritsar Group Of Colleges, Amritsar, Punjab  
India*

*\*\*Department Of Mechanical Engineering, Amritsar Group Of Colleges, Amritsar, Punjab  
India*

*Corresponding Author: Email ID: harishayer58@gmail.com*

## ABSTRACT

This work reports on the investigation on microwave cladded stainless steel 304. Microwave cladding is a novel processing technique. Microwaves have electronic and magnetic properties which can be operated in the specific frequency range under the specific time to create metallurgical bonds. Microwave cladding is gaining more importance because the process helps in equal heating throughout the material from the molecular level. The main advantage of the microwave cladding is reducing the cost of the production and production time. Cladding denotes the bonding together of dissimilar metals. In the present work, metal matrix composite clads of Ni-Cr/WC-12Co a powder based material have been cladded on stainless steel substrate of grade SS-304 using microwave heating at 2.45GHz frequency. A concept of hybrid heating is used to process metal matrix composite clads at exposure power level of 900 W. The exposure time for developing metal matrix composite clads varies for different clad composites. The microwave claddings were characterized through microscope and measurement of Vickers hardness. Clads were formed with partial dilution of a thin layer of the substrate. The microstructural analysis of microwave processed clads reveals the uniform distribution of Ni-Cr/WC-12Co powder particles in the substrate material stainless steel of grade 304 and also an increase in the hardness value of the substrate.

**Keywords:** Microwave, Cladding, SS304, Ni-Cr/WC-12Co

## INTRODUCTION

### SURFACE ENGINEERING

Surface engineering is the most widely used technique for improving the surface properties and functionality of a material without changing its bulk properties. This technique is beneficial tool for modifying a material's surface to yield surface properties that are significantly different from the material's bulk properties [1]. Protection against corrosion for ferrous alloys (mild steel, stainless steel) used in the oil and gas industry is a critical field of research. Stainless steel is the most commonly used material in engineering applications; as it has very good corrosion resistance. The surface properties of a ferrous alloy can be modified through various methods, such as heat treatment, PVD, thermal spraying, epoxy coating, enamel coatings, laser cladding, and microwave cladding [2-6]. Thermal spraying is the most commonly used technique due to its ease of operation and ability to deposit a range of materials on a substrate. However, the weak mechanical bonding between splats and the significantly higher porosity are the major limitations associated with the thermal spray technique [7-9].

### MICROWAVE HEATING AND MICROWAVE HYBRID HEATING

The heating of the materials is due the absorption of microwaves in the volume of material. The proper heating of materials through the microwave radiations directly depends upon the physical properties of the materials and these properties plays an important role in deciding the processing of the materials through microwaves. Various

# A STUDY ON THE EXPERIMENTAL INVESTIGATION OF CONCRETE PROPERTIES CONTAINING RECYCLING PLASTIC AS PARTIAL REPLACEMENT FOR FINE AGGREGATE

*\*Mani \*\*Vijay Kumar*

*\*Department of Civil Engineering, Amritsar Group of Colleges, Amritsar, Punjab, India*

*\*\*Department of Civil Engineering, Amritsar Group of Colleges, Amritsar, Punjab, India*

*Corresponding Author: Email ID: manizaidar08@gmail.com*

## ABSTRACT

One of the numerous things that harm the ecosystem is solid waste. Problems are caused by things like the difficulty of recycling waste and the restricted amount of reuse. Plastic is a significant category of solid waste with a negative influence on the environment. The purpose of this study is to look into the impacts of using PET as a partial replacement for sand in concrete. We looked at how this substance affected the mechanical and physical characteristics of concrete. PET was used in a set of six concrete compositions with substitution levels of 10%, and 30%, 50% as a partial replacement for sand. In order to analyse how fresh and hardened concrete behaved in terms of workability, compressive strength, flexural strength, and tensile strength, concrete was cast. The sand substitution reduced the mechanical qualities of the concrete at varied rates and demonstrated that plastic trash may be disposed of in certain ratios, allowing it to be used successfully in industrial settings.

**Keywords:** Plastic, Waste, bottles, etc.

## INTRODUCTION

One of the biggest obstacles to environmental protection is the consumption of numerous plastic product types. Large amounts of plastic garbage and their poor biodegradability have a harmful impact on the environment. Every sort of plastic used by humans in daily life eventually decomposes, weighing several tones and requiring substantial amounts of space to store. Plastic garbage also cannot be totally recycled all at once. Globally, almost 6.5 billion tons of plastic garbage and used rubber are produced each year. Because plastics take so long to degrade, it is extremely dangerous to dispose of plastics in the environment. Waste reuse is crucial from a variety of angles since it lessens environmental pollution, supports and conserves non-renewable natural resources, and helps recycle and conserve energy in the production process. Utilizing plastic trash in the materials sector is an environmentally friendly way to reduce the amount of waste that is incinerated in landfills. Studies have demonstrated that plastic may be utilized in concrete; in recent years, this kind of material has been a prominent study topic. The usage of lightweight construction products is thought to help promote recycled resources. Commonly, a lighter concrete unit results from the substitution of natural aggregates with lightweight components. Weight loss is a key objective in the construction sector. The high level of thermal insulation response of the building and the time and money savings associated with handling and manufacturing are just two benefits of lightweight concrete. Since built structures' self-weight is known to be directly correlated with seismic forces, a structure's self-weight reduces after an earthquake, lessening its impact. Numerous polymers have been researched recently, including high-density polyethylene (HDPE), polyethylene terephthalate (PET), and polypropylene (PP) (HDPE). The effects of adding plastic material to freshly laid and hardened concrete have been the subject of research. Studies have revealed a range of workability results, and the most have noted a trend for the replacement ratio to rise as the replacement level rises. All scholars concur that when replacement level rises, unit weight decreases.

Additionally, the majority of studies demonstrate a decrease in flexural, splitting, and compressive strength. For instance, several researchers have discovered that replacing shredded PET with sand in amounts ranging from 0 to 20 leads to a loss in both workability and compressive strength of 43 to 95 and 9 to 62 %, respectively.

# A STUDY ON THE EXPERIMENTAL INVESTIGATION OF CONCRETE PROPERTIES CONTAINING RECYCLING PLASTIC AS PARTIAL REPLACEMENT FOR FINE AGGREGATE

*\*Mani \*\*Vijay Kumar*

*\*Department of Civil Engineering, Amritsar Group of Colleges, Amritsar, Punjab, India*

*\*\*Department of Civil Engineering, Amritsar Group of Colleges, Amritsar, Punjab, India*

*Corresponding Author: Email ID: manizaidar08@gmail.com*

## ABSTRACT

One of the numerous things that harm the ecosystem is solid waste. Problems are caused by things like the difficulty of recycling waste and the restricted amount of reuse. Plastic is a significant category of solid waste with a negative influence on the environment. The purpose of this study is to look into the impacts of using PET as a partial replacement for sand in concrete. We looked at how this substance affected the mechanical and physical characteristics of concrete. PET was used in a set of six concrete compositions with substitution levels of 10 %, and 30 %, 50% as a partial replacement for sand. In order to analyses how fresh and hardened concrete behaved in terms of workability, compressive strength, flexural strength, and tensile strength, concrete was cast. The sand substitution reduced the mechanical qualities of the concrete at varied rates and demonstrated that plastic trash may be disposed of in certain ratios, allowing it to be used successfully in industrial settings.

**Keywords:** Plastic, Waste, bottles, etc.

## INTRODUCTION

One of the biggest obstacles to environmental protection is the consumption of numerous plastic product types. Large amounts of plastic garbage and their poor biodegradability have a harmful impact on the environment. Every sort of plastic used by humans in daily life eventually decomposes, weighing several tones and requiring substantial amounts of space to store. Plastic garbage also cannot be totally recycled all at once. Globally, almost 6.5 billion tons of plastic garbage and used rubber are produced each year. Because plastics take so long to degrade, it is extremely dangerous to dispose of plastics in the environment. Waste reuse is crucial from a variety of angles since it lessens environmental pollution, supports and conserves non-renewable natural resources, and helps recycle and conserve energy in the production process. Utilizing plastic trash in the materials sector is an environmentally friendly way to reduce the amount of waste that is incinerated in landfills. Studies have demonstrated that plastic may be utilized in concrete; in recent years, this kind of material has been a prominent study topic. The usage of lightweight construction products is thought to help promote recycled resources. Commonly, a lighter concrete unit results from the substitution of natural aggregates with lightweight components. Weight loss is a key objective in the construction sector. The high level of thermal insulation response of the building and the time and money savings associated with handling and manufacturing are just two benefits of lightweight concrete. Since built structures' self-weight is known to be directly correlated with seismic forces, a structure's self-weight reduces after an earthquake, lessening its impact. Numerous polymers have been researched recently, including high-density polyethylene (HDPE), polyethylene terephthalate (PET), and polypropylene (PP) (HDPE). The effects of adding plastic material to freshly laid and hardened concrete have been the subject of research. Studies have revealed a range of workability results, and the most have noted a trend for the replacement ratio to rise as the replacement level rises. All scholars concur that when replacement level rises, unit weight decreases.

Additionally, the majority of studies demonstrate a decrease in flexural, splitting, and compressive strength. For instance, several researchers have discovered that replacing shredded PET with sand in amounts ranging from 0 to 20 leads to a loss in both workability and compressive strength of 43 to 95 and 9 to 62 %, respectively.

# A REVIEW AND ANALYSIS FOR USAGE OF RECYCLED AGGREGATE, GROUND GRANULATED BLAST-FURNACE SLAG AND STEEL FIBRE AS SUSTAINABLE CONSTRUCTION MATERIAL

*\*Anjali \*\*Vijay Kumar*

*\*Research Scholar, Amritsar Group of Colleges, Amritsar*

*\*\*Assistant Professor, Civil Department, Amritsar Group of Colleges, Amritsar*

*Corresponding Author: Email ID: anjaliaman01@gmail.com*

## ABSTRACT

This review study aims to address the problems associated with river sand mining and the negative impact of CO<sub>2</sub> (carbon-dioxide) emissions from the construction industry. The study investigated the several metrics of concrete composed of recycled aggregates (RAs), GGBS (ground granulated blast furnace slag) and steel fibre, including relative compressive strength, relative splitting tensile strength and durability. According to previous research, mechanical strength decreased slightly at 50% replacement of RA, but it was considerably decreased at 100% replacement of RA. The beneficial changes in strength observed between 20 to 30% incorporation of GGBS. The greatest outcome was observed when GGBS was replaced by 30%. The strength was greatly enhanced by the addition of steel fibre. When compared to regular concrete, the durability of RA-based concrete was quite lower while that of GGBS-based concrete was higher. This review study concludes that using more sustainable concrete in conjunction with RCA, GGBS and steel fibre waste would be an environmental beneficial.

## INTRODUCTION

There is an enormous need for infrastructure development as a result of the rapid economic and demographic growth in both advanced and emerging economies. Mehta and Meryman [34] estimate that the amount of concrete used annually is about 20 billion metric tonnes. Approximately 7% of CO<sub>2</sub> emissions worldwide are attributed to the cement industry, according to Lucca et al. [28]. A major challenge is reducing the issue of CO<sub>2</sub> emissions while providing enough cement for building. Sand is an essential non-renewable material in concrete mix but extraction of sand from the rivers may deplete the pockets of quarries.

The irregularly shaped and textured sand that is taken from the river can be used for building. Several researchers were tempted to examine the suitability of granite dust, marble dust, crushed sand, and sand stone as fine aggregate in concrete despite the fact that these materials are non-renewable due to their high availability [16,35,51,52]. River sand mining negatively impacts rivers by removing microorganisms, pushing the river to change its path, and depleting the bed and ground water (which are important for soil structure and fertility). Construction expenses are significant because to the limited supply and strong demand for natural resources Bolden et al. [5]. Because desert sand grains are rounded, there is no possibility of compaction. To overcome the problem of CO<sub>2</sub> emission and river sand mining, Cement and river sand must be completely replaced with recycled waste, such as GGBS (ground granulated blast furnace slag) and recycled aggregates (RAs) from waste generated during construction and demolition (CDW).

Every year, 1.6 billion tonnes of CDW are produced in China alone. According to reports from the European Union (EU), between 850 and 880 million tonnes of garbage are produced each year [46,17]. When compared to making natural aggregate concrete, Kong showed that recycling coarse aggregates from CDW may save 58% of non-renewable energy usage and reduce greenhouse by 65% (Hossain et al., 2016) [19]. But recycling and reusing the generated "C&D" trash for the production of recycled aggregates (RA) becomes crucial in order to preserve the environment and efficiently utilise the natural resources that are accessible (Tianyu et al., 2019) [44]. Reusing old concrete as a source of aggregate has become a popular substitute for natural aggregates (NA)

# A COMPREHENSIVE REVIEW ON SQL INJECTION ATTACKS AND PREVENTION TECHNIQUES

\*Amanpreet Kaur\*\* Sanjeev Kumar

\*Student, Department of Computer Science and Engineering

\*\*Assistance Professor, Department of Computer Science and Engineering, Amritsar Group of Colleges, Amritsar Punjab.

Corresponding Author: Email ID: amans020240@gmail.com

## ABSTRACT

"SQL injection" is one of the most regular and hazardous problems with internet applications. (SQL), which puts complex data and system integrity at serious risk. The paper offers a thorough study of "SQL injection" outbreaks, including their processes, popular exploitation strategies, and their outcomes. A variety of prevention procedures are also observed, from basic best practices to refined easing approaches like input validation, parameterized queries, and online applications. Moreover, new improvements and tendencies in the "SQL injection" shield are exposed, underscoring the non-stop attempts to pledge this enduring threat in the dynamic field of cyber safety.

Keywords: SQL, Injection, Attack Detection, Parameterized Queries

## INTRODUCTION

In today's era, online applications are attacked by injections, which are created to attack data-driven applications for attaining access to online applications, in which the attacker inserts malicious commands in the web application interface to by-pass the authenticity of the application to get the privilege of the application access for execution [3]. SQL injection has a way of captivating the benefit of a flaw in the software, such as when user input is not strongly typed and is processed unexpectedly or when consumer response is filtered falsely for string precise emission characters encoded in SQL statements. Though it can be used to outbreak any kind of SQL database, "SQL injection" is mainly recognized as a means of attack for websites [1].

It's conceivable for the invader to yield total control of the challenged system. Since an effective SQL injection occurrence could have disastrous consequences, it is imperative that organizations implement effective detection and prevention actions to safeguard their network applications from this menace [11]. By conducting an extensive literature review of the various strategies that have been developed to recognize and stop SQL injection attacks, this study seeks to accomplish precisely that. Among the techniques are detecting intrusion, parameterized searches, and input validation. The "stored procedures" are queries with SQL that have been precompiled and placed in the database [12]. These approaches offer an added layer of precautions in contrast to SQL injection outbreaks and can be used for complex database operations. Disturbance recognition systems observe web movement for signals of malicious conduct [13]

The language applied to transform and modify these databases is called "Structured Query Language" (SQL), which permits the database manager to use records in a variety of ways, including storing, changing, and removing them. Databases hold records in tables with relationships between them. This method, known as "relational database" (RDB), makes it easier to search between associations between data points since it clearly defines the relationship between data points and tables, as well as the relationship between field types and the schema [1]. The most broadly used RDBs are "Microsoft SQL Server," Oracle, and MySQL. Web applications use backend databases to store, send, and recover records. Since these databases may contain delicate material, they serve as a draw for hackers. Attackers exploit weaknesses in database programming through a range of approaches. According to [8], "SQL injection" is a form of database intrusion attack that involves breaking into



# IDENTIFYING PROTEASE CLEAVAGE SITES TO INHIBIT GROWTH OF HIV-1 AIDS: A REVIEW

Navneet Kaur\* Bhuvnesh Kumar

Reserach Scholar, Department of CSE, AGC, Amritsar

\*Assistant Professor, Department of CSE, AGC, Amritsar  
 Corresponding Author: Email ID: navkaur9955@gmail.com

## ABSTRACT

Acquired Immuno Deficiency Syndrome (AIDS) is considered as crucial threat over the sustainable growth and increase of its epidemic impact and absence of curable medicines. HIV-1 AIDS can be controlled by using protease inhibitors to understand the features of those proteases. Sequence based features, Physiochemical features and structure based features are extracted from HIV-1 proteases. In This paper a methodology for selecting those features and and training using Machine Learning algorithms is proposed . The proposed methodology will be evaluated based on various Type-1 .Type-2 parameters.

**Keywords:** AIDS, Machine Learning, HIV-1 Protease Prediction, HAART.

From the past two decades, acquired immunodeficiency syndrome an infected Virus commonly known as HIV-1 AIDS was reported by the US Center for Disease Control. In a very short time the disease spread like an epidemic proportions in the whole world. According to the World Health Organization statistics, 32 million lives have been claimed by HIV AIDS, about 37.9 million people are living with HIV-1 at the end of 2018. Though many researches and investigations have been implemented, but no method as whole can cure AIDS till date. However there are ailments like antiretroviral therapies that are available that being accessed by 2.5 million people by June 2019[1]. HIV-1 targets the immune system and weakens person's immune system, infected person gradually become immunodeficient, as it reduces CD4 cell in our blood. Immuno deficiency causes wide range of diseases and infections and cancers. However, there are methods to cure AIDS upto some extent. From the past four decades, many anti HIV substrates have been suggested by Various organizations. Some of them working as inhibitor. HAART (most widely used therapy), the anti-retroviral therapy is basically fusion of inhibitors of proteases.[2]. Proteases basically an enzyme which protein and peptide.

## INTRODUCTION

Protease inhibitor is basically a tiny molecule that usually binds to protease at the main cleavage site. in such a way that substrate must not bind to the protease. It has been observed experimentally that protease bind with the protein in octapeptide length and cleaves its scissile bond. A scissile bond is a covalent chemical bond that can be broken by an enzyme. Examples would be the cleaved bond in the self-cleaving hammerhead ribozyme. There are 20 amino acids that are naturally available, so the number of octapeptides can be  $20^8$ , which is very large in number and difficult to process using experimental methods and prediction of protease cleavage using computerized methods are cost effective and simple solutions[3].

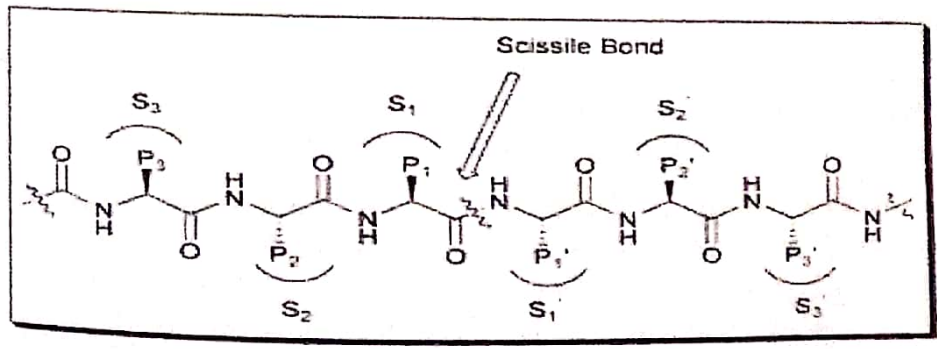


Fig1:- Nomenclature used for P<sub>1</sub>...P<sub>n</sub>, P<sub>1</sub>'...P<sub>n</sub>' is used to designate amino acid residues of peptide substrates[4].

# COMBINATION FUZZY VAULT ALGORITHM BASED ON POLYNOMIAL COEFFICIENTS AND ANGLE VALUES

*\*Kanika Sharma \*\*Namrta Kad \*\*\*Rahul Punj*

*\*Research Scholar Amritsar Group of Colleges Amritsar*

*\*\*Professor, AGC Amritsar*

*\*\*\*Assistant Professor, LPU Phagwara*

*Corresponding Author: Email ID: kanikasharma2688@yahoo.com*

## ABSTRACT

Iris are one of the oldest and most widely used form of biometric identification. Everyone is known to have unique, immutable iris minutia and if these features are fused with other biometric traits like hand geometry and retina, we shall get far more better immutable and set of features that will help us get better core of security of biometric systems, this has been the exact idea of this research work, all it takes its methodological base from previously published works it has added novelty by using concept using fused polynomial coefficients with angular values to build as feature set or template set which is distinct and unique, then augmented the algorithm with the similarity distance measure having least tolerance limit. The methodology not improved the accuracy of the existing system but provided with hardened layer of security with less number of false alarms.

**Keywords:** Biometric, Hand Geometry, Retina, Fingerprint, Fuzzy Vault.

## INTRODUCTION

Establishing the identity of a person is very crucial in the current connected scenario. The existing authentication mechanisms are password based and token based. Biometric authentication has proved itself superior compared to these traditional authentication methods. Biometrics is defined as automated measure for identifying or authenticating a person based on its physiological characteristics such as iris, fingerprints, palm behaviour characteristics such as signatures. The word biometrics is derived from the Greek words namely "Bio" meaning life and "metrics" meaning measurements. Since many physical and behavioral characteristics are unique to an individual, biometrics provides a more reliable system of authentication than ID cards, keys, passwords, or other traditional systems. Biometrics generally deals with the application of statistical analysis to measurable biological data of a human. The interesting and basic idea of biometric is that our body itself acts as a password. The concept of biometrics as a means to identify a person dates back to ancient period. But in this project biometric is not directly used as a recognition system rather it is used to implement a cryptographic security system. The reason why biometrics has gained a lot of importance nowadays is that it is the only means of identification of a biological entity by a non-biological entity e.g. a computer machine. With the advent of extensive use of computer machines for secure transactions of machine data like e-mails, e-banking, e-purchasing, etc. correct identification of the user is very important. The prevalent systems use mostly passwords directly as a key for the cryptosystem or sometimes they use the password to get an access to the password stored in some smartcard possessed by the user. The major loophole in using such a security is that these passwords being very simple (so as to be remembered by any user) and hence is prone to be compromised as most of the time these passwords are easy to guess. The significant advancement in the field of computer processing made possible the recent automated biometric personal identification and authentication systems.

A biometric system provides an automatic recognition of an individual based on some sort of unique features or characteristics possessed by the individual. Biometric systems have been developed based on fingerprints, facial features, voice, hand geometry, handwriting, iris and retina etc. Biometric systems work by first capturing or extracting a sample of the feature from the trait, such as recording a digital sound signal for voice recognition, or taking a digital color image for palm or iris recognition. The sample is then transformed using some sort of

# COMPREHENSIVE REVIEW ON HYBRID FRACTAL ANTENNAS

*\*Komal Sharma \*\*Narinder Sharma*

*\*Research Scholar, Electronics and Communication Engineering Department, Amritsar Group of Colleges, Amritsar*

*\*\*Department of Computer Science and Engineering, Amritsar Group of Colleges, Amritsar*

*Corresponding Author: Email ID: er.komal@yahoo.in*

## ABSTRACT

This work provides an in-depth analysis of hybrid fractal antennas (HFA). To fulfill market criteria, renowned experts have devised, evaluated, and investigated several types of HFA. This Manuscript begins with an introduction of fractal antennas and then discusses the required inspiration to write this paper. The comprehensive review of the literature has been carried on different HFAs which include the fusion of: same kind of Fractal geometry (FG), two different kind of FGs and fusion of the same type of ion of three distinct type of FGs. Additionally, a analysis of these HFAs has been conducted on the basis of their performance parameters which may include size, frequency bands, gain, bandwidth, and practical applications. To enhance clarity, the comparison of several HFAs has also been outlined in tabular form. This paper also illustrates the difficulties that the researchers encountered during designing of HFAs.

**Keywords:** FG, Hilbert, Fractal, Giuseppe Peano, Koch, FA, HFA, MPA, Meander, Minkowski

## INTRODUCTION

In order to meet the demands of the modern industry, eminent scientists have invented a number of antennas in the quickly developing sector of communication. In a sense, antennas are the brains and hearts of technology; without them, modern life's necessities could not be imagined. Despite the abundance of literature on antennas, the unique qualities of the Fractal Antenna (FA) have made it an indispensable member of the antenna family [1, 2]. Natural fractals served as the foundation for B. Mandelbort's 1975 Fractal Geometry (FG) hypothesis [3, 4]. Fractals are typically complex structures that can arise spontaneously or be designed to meet specific needs using the Iterative Function System (IFS). Fractals are complex structures with exclusive properties such as self-similarity, fractional dimensions, infinite complexity and space-filling [7-9]. These FGs can be created iteratively [5, 6]. The ability to fill space facilitates the downsizing of antennas [10, 11], whereas self-similarity aids in the accomplishment of wideband/multiband characteristics [12, 13]. Commonly used FGs are Sierpinski Carpet or Gasket [14-18], Giuseppe Peano [19-23], Minkowski [24-28], Koch [29-33], Hilbert [34-38], Meander [39-43], and others can also be developed with recursive procedures and also employed while developing FAs. Notably, new FAs have also been introduced for researchers, such as the Amer Fractal slot-loaded antenna for 3G, 4G and 5G communications [44], whereas, Sunflower-shaped MIMO FA exhibits dual frequency bands with low mutual coupling [45]. These unique FGs are also used in Massive MIMO [57-65] and 5G [46-56], whereas, each geometry has a distinct function while creating antenna for particular wireless applications. On the other hand, achieving the required performance without sacrificing antenna performance might not be possible with a single Fractal Geometry. Because of this, scientists have created hybrid fractal antennas, or HFAs, by combining several geometries for a range of wireless applications. Various combinations, including fractal shapes with themselves like Koch-Koch, Meander-Meander, Sierpinski Gasket- Sierpinski Gasket etc., can be used to develop Hybrid Fractal Antenna.

## RESEARCH INSPIRATION

In this technological era, antenna should be tiny sized, light weight, easy to develop and carry, and able to display wide/multi band features. With these vital characteristics, such an antenna might be easily included into

# FR4 MATERIAL BASED CPW-FED HYBRID FRACTAL ANTENNA DESIGNED BY CONCOCTING HILBERT AND SINE WAVE CURVE FOR WIRELESS COMMUNICATION APPLICATIONS

*\*Komal Sharma\*\* Narinder Sharma*

*\*Research Scholar, Department of Electronics and Communication Engineering, Amritsar Group of Colleges, Amritsar, Punjab, India*

*\*\*Dean Research and Development, Amritsar Group of Colleges, Amritsar, Punjab, India*

*Corresponding Author: Email ID: er.komal@yahoo.in*

## ABSTRACT

This manuscript explains the Hybrid Fractal antenna with CPW feed for various wireless applications. Proposed antenna is designed by concocting Hilbert and sine curves and resulted structure is named as Hilbert-Sine Hybrid Fractal Antenna (HSHFA). The volumetric dimension of HSHFA is  $30 \times 30 \times 1.6 \text{ mm}^3$  and is designed on low cost FR4 glass epoxy substrate with relative permittivity of 4.4 and thickness 1.6. HSHFA with CPW feed operates on five unique frequencies 2.5, 4.3, 5.5, 9.1 and 10.9 GHz with corresponding reflection coefficient -21.49, -26.97, -12.15, 16.48 and -15.07dB and exhibits the bandwidth 1.36, 2.35 and 3.86 GHz which make it a proficient candidate for the distinct wireless applications.

**Keywords:** FR4; Fractal Antenna; HSHFA; Hybrid; Hilbert Curve; Sine Curve

## INTRODUCTION

In the changing era of technology, compact sized multifunctional antenna is always a first choice of the scientists as such types of antennas are used in the portable handheld electronic gadgets. Fractal antenna may be considered as a right candidate to meet these requirements because of its unique properties such as self-similarity and space-filling. The word fractal was firstly coined by Mandelbort in 1971[1] and its meaning is fracture or broken. Self-similarity property of Fractal antenna helps to attain the wideband/multiband characteristics whereas; spacing-filling property is useful to achieve the miniaturization.

N. Sharma et al. [1] expounded an antenna designed by amalgamating staircase structure on hexagonal ring-shaped geometry with volumetric dimension of  $24 \times 30 \times 1.6 \text{ mm}^3$  and exhibited impedance bandwidth of 2.64, 0.96, 0.59 and 1.24 GHz. N. Sharma et al. [2] presented a nested hexagonal ring-shaped fractal antenna designed on low-cost FR-4 glass epoxy substrate with relative permittivity of 4.4 and overall dimension  $30 \times 30 \times 1.6 \text{ mm}^3$ . depicted the bandwidth of 340 MHz (1.92-2.26 GHz), 820 MHz (3.04-3.86 GHz), 4230 MHz (5.38-9.61 GHz), and 3040 MHz (10.41-13.45 GHz) with a maximum gain of 6.19 dB. K.Kaur et al.[3] explained compact ultra-wideband (UWB) printed monopole UWB with dual bandnotched characteristics of volumetric dimension  $27 \times 27 \times 1.6 \text{ mm}^3$ , and divulged UWB frequency spectrum from 3.1 to 10.6 GHz along with Bluetooth frequency range 2.4–2.48 GHz along with gain of 8.28 and 9.98 dBi at rejected frequency bands. S.S. Bhatia [4] et al. reported circular ultra-wideband monopole antenna with mushroom-electromagnetic bandgap-type structure anticipated the bandwidth of 2.0-12 GHz with a permissible range of VSWR. N. Sharma et al. [5] adorned compact sized  $24 \times 30 \times 1.6 \text{ mm}^3$  hexagonal ring-shaped fractal antenna and contemplated improved reflection coefficient, bandwidth and gain. N. Sharma et al. [6] propounded two hybrid Fractal antennas with Koch-Koch and Koch-Minkowski geometries of same volumetric dimensions  $45 \times 38.92 \times 1.6$  and operates at distinct frequencies 2.77/8.87 and 4.46/8.78 GHz with corresponding gain 1.57/5.62 and 5.73/5.62dB. Chang et al. [7] linned hybrid fractal antenna with plus-plus geometry and exhibited wider bandwidth 6.8-7.8GHz with high peak gain 18.5 dB. Sampath R [8] et al. portrayed UWB MIMO Hybrid Fractal Antenna of volumetric dimensions  $40 \times 20 \times 1.6 \text{ mm}^3$  which exhibited permissible value of reflection coefficient along with wider range (2.5 to 11 GHz) of impedance bandwidth. Jamil et al. [9] described Hybrid Fractal Antenna designed by fusing Meander and Koch geometries of volumetric dimensions  $38 \times 10 \times 1.6 \text{ mm}^3$  and works on distinct resonant

# HYBRIDIZATION OF PARTICLE SWARM OPTIMIZATION (PSO) WITH NON-DOMINATED SORTING GENETIC ALGORITHM III-BASED COLOR CONSTANCY ALGORITHM

*\*Samreen Kaur \*\*Atul Mahajan*

*\*M.Tech student, Department of Electronics and Communication Engineering, Amritsar Group of Colleges, Amritsar, Punjab India*

*\*\*Associate Professor, Department of Electronics and Communication Engineering, Amritsar Group of Colleges, Amritsar, Punjab India*

**Corresponding Author: Email ID:** samreenkaur227@a gmail.com

## ABSTRACT

The primary aim of color constancy is to mitigate the influence of illuminant color on images. It is achieved either through the computation of invariant functions or by adjusting the input image to neutralize the impact of the light source's color. The paper introduces an efficient approach, presenting a hybrid model that combines Particle Swarm Optimization (PSO) with the Non-dominated Sorting Genetic Algorithm III (NSGA-III) to enhance color constancy algorithm's efficiency and robustness. The proposed technique utilizes fourth-order partial differential equations to achieve a balance between edge preservation and noise reduction. The comprehensive performance analysis, including mean angular error, root mean square error, median angular error, and peak signal-to-noise ratio, demonstrates the effectiveness of the proposed hybrid model. The results indicate significant improvements over the existing model. Overall, this paper contributes to advancing color constancy methodologies, introducing a hybridized model that leverages the strengths of PSO and NSGA-III for improved computer vision applications.

**Keywords:** Color Constancy, Illuminant Estimation, Hybrid Algorithms, Particle Swarm Optimization, Non-dominated Sorting Genetic Algorithm III, Fourth-Order Partial Differential Equations, and Edge Preservation.

## INTRODUCTION

Color constancy is used to determine the actual color of the scene which is affected by different illuminants [10]. It can be achieved sometimes simply by computing invariant functions or maybe simply by changing the input image in a way that the effects of colour associated with light source will be removed. Color constancy will be the capability to understand colors of objects independent of colour of lighting source. Having color constancy is actually of importance for several computer vision programs, for example photo retrieval, photo category [2]. The approach to this problem can be divided into two groups. The first group aims to represent the image as a function that does not change with respect to lighting, for example in the context of an image search. These methods do not require an actual estimation of the light source. The goal of the second group of approaches is to correct the image for deviation from natural light. Unlike the first group of methods, the solutions to this problem implicitly or indirectly estimate the color of the light source.[8] Color constancy based on less complex color constancy algorithms. In addition, fast algorithms based on low-level image properties such as Max-RGB and Gray World come into consideration. Max-RGB is a fast and simple color constancy algorithm that estimates a light source's color from the maximum response of multiple colors.

Another simple and well-known method of color constancy is based on the gray world hypothesis, which assumes that the average reflection in the scene is achromatic. These low-level methods are due to their very low computational effort, i.e. using maximum (max-rgb) or average (grey-world) pixel values, also common in consumer digital cameras. A new method is proposed that can be used to apply color constancy to images recorded in the presence of different light sources. Most of the algorithms are based on the assumption that the

# CIRCULAR SLOT ENABLED PATCH ANTENNA FOR 5G COMMUNICATION SYSTEMS

*\*Navdeep Singh\*\* Sunil Thakur*

*\*Department of Applied Sciences, Amritsar Group of Colleges, Amritsar, Punjab*

*\*\*Department of Physics, DAI College, Jalandhar*

*Corresponding Author: Email ID: arora\_navdeep@rediffmail.com*

## ABSTRACT

This work demonstrates the use of circular slots to excite antenna resonance in mm-Wave band. A compact patch antenna for high frequency 5G applications is discussed. The antenna is designed using mathematical equations on RT-Duroid (5880) substrate. The mathematical design is modified to optimize antenna design using circular slots on ground and patch of antenna. The numerical study of the antenna is performed and the effect of variation of circular slot radius on antenna performance is studied. The antenna resonates at 28.1GHz with reflection coefficient of -36.71dB and gain 4.99dBi. The antenna shows broad resonance bandwidth of 5.1GHz and exhibits good matching with the feedline.

**Keywords:** Reflection Coefficient · Gain · VSWR · Bandwidth · Slot · 5G · mm-Wave band.

## INTRODUCTION

Modern wireless communication systems require high transmission bit rates, wide signal bandwidth to handle large network traffic with moderate budget and better coverage [1]. To fulfill the needs of modern communication systems, mm-Wave band is been explored extensively by various researchers [4,6,9,12,13,15,17]. The 2015 World Radio Communication Conference had allocated 2486GHz frequency band as mm-Wave band [6]. The innate properties of this frequency band like short wavelength, wide bandwidth make it applicable for fifth generation network applications [9]. Consequently on July 2016 [13], the Communications Federal Commission (FCC) selected the frequency bands 28 GHz (27.5–28.35 GHz), 38 GHz (37–38.6 GHz) and 39 GHz (38.6–40 GHz) for fifth generation services and applications. So there is a need of designing new antennas for mm-Wave applications. The prerequisites for the antenna design to be conformal with 5G applications are compact size, enhanced bandwidth with high gain.

Various researchers [4,15,17] have used periodic rectangular slots on the patch, to obtain a compact high gain antenna for 5G applications. The use of parasitic elements [4] along the radiating patch also enhances the antenna performance in mm-Wave band. The bandwidth of the antenna in above discussions was moderate. But Khraisat et.al [7] investigated the effect of rectangular slots on ground plane and deduced that bandwidth can be improved by adding slots on ground plane of the antenna. Further by using circular slots [14] the radiation characteristics of the antenna can be enhanced greatly. Researchers have also turned to inset feed [2,9,12], substrate integrated waveguide (SIW) [13], slotted waveguide antenna [5] to modify antenna characteristics for 5G applications. While waveguide integrated antenna is costly, also it becomes difficult to obtain printed antenna. A lot of research has also occurred in field of MIMO antennas [3,10,11,16], but the antenna designs are bulky.

The literature lacks compact sized wideband antennas having simple and planar geometry with high gain for 5G applications. Based on the missing links of the literature, a compact patch antenna is proposed in this study. Its design is approximated by using mathematical design equations, while optimised design is obtained by studying numerical simulations. The variation of radiation parameters of optimised antenna is studied.

# EMBEDDED PLATE AS SCOUR COUNTERMEASURE FOR BRIDGE ABUTMENTS

*\*Upain Kumar Bhatia\*\* Baldev Setia*

*Professor and Head, Department of Civil Engineering, Amritsar Group of Colleges, Amritsar, Punjab*

*\*\*Director, Punjab Engineering College, Chandigarh*

*Corresponding Author: Email ID: hod.ce@acet.edu.in*

## ABSTRACT

Failure of bridges is not affordable due to its severe effects on economy of the nation. Failure due to scour of an otherwise structurally sound bridge is even more distressing. Design of efficient scour countermeasures involves understanding of the mechanism of flow modification around bridge elements. Many scour prevention devices have been tested in laboratories as well as in field in last few decades. Spurs, mainly used as river training structures, are also used as scour countermeasures around abutments along with other devices like Riprap, Cable tied blocks, Geo-bags, hard points, Sleeves, Collar plates etc. The present laboratory experimental study aims to reduce scour around short bridge abutments by providing a long thin vertical plate embedded into the channel bed under steady uniform flow at incipient conditions. The plate is embedded throughout and extends from the upstream nose of abutment model to different orientations. The device offers no initial obstruction to the flow. Scour causing primary vortex initiates the scour at upstream nose of abutment model. Once the scour is initiated, the exposed part of embedded plate starts obstructing and modifies the flow to counter the primary vortex. Scour protection is found to vary from 43% to 62% for the tested range of yaw angle  $-45^\circ$  to  $+135^\circ$  with respect to upstream direction.

**Keywords:** Abutment Scour, Scour Countermeasure, Embedded Plate, Flow Visualization.

## INTRODUCTION

No bridge failure is affordable due to severe effects on economy. It is more distressing if a structurally sound bridge fails due to scour around its foundations. The mechanism of flow modification and scouring around an abutment involves a primary vortex which dislodges the bed sediment near the upstream nose of abutment and carries it to downstream. Sediment from the adjoining area slides into the scour hole and is eventually taken out by the same principal vortex. Development of scour hole continues at a reducing rate until it reaches a practically equilibrium stage. Many scour prevention devices are tested by researchers in laboratories as well as in field in last few decades. [1], [2], [3], [4], [5], [6] [7] have used spurs as river training structures; whereas Liu et al [8] have used them as scour countermeasures around abutments. [9] have used Riprap, Geo-bags and Cable tied blocks etc for this purpose. [10] have used hard points. [11] has used Collar plates and Sleeves, [12,13] used inclined plates whereas [14] used vertical plates to protect the bridge abutments. An embedded plate is used in the present study as scour countermeasure for a short vertical wall abutment. It is a long thin vertical plate embedded into the channel bed. An embedded plate principally acts as a barrier to the sediment sliding into the scour hole and retards the development of scour hole.

## EXPERIMENTAL SETUP

The experiments are conducted in a 15m long recirculating flume of cross section 0.6m wide and 0.75m deep. 7cm wide short abutment model with protruding length of 7cm is installed in non-cohesive sediment of geometric mean size  $d_{50} = 0.28\text{mm}$ . Flow depth ( $y$ ) is kept twice the protruding length ( $L$ ) of abutment and flow velocity ( $v$ ) is maintained at incipient level throughout the experimental duration of 5 hours. Figure 1 presents

# AN EXPERIMENTAL ANALYSE THE SOIL STABLIZATION USING PLASTIC WASTE AND BITUMEN EMULSION

*\*Amjad Ali Khan \*\*Vijay Kumar*

*\*Research Scolar Civil Engineering Department, Amritsar Group of colleges,*

*\*\*Assistant Professor Civil Engineering Department, Amritsar group of colleges, Amritsar*

*Corresponding Author: Email ID: amu990606@gmail.com*

## ABSTRACT

Soil is used sub base and base material, if strength of soil is poor, then stabilization is normally needed. Sub grade is sometimes stabilized or replaced with stronger soil. Sub grade quality is generally communicated as far as CBR. Consequently, in all, the pavement and the sub grade together must sustain the activity volume. In this research locally available red colored literate type gravel soil is taken as experimenting material. Medium setting emulsion (MS) is used as stabilizing agent in this study. Bitumen sand stabilization is an effective process as bitumen makes soil stronger and improves resistance capacity against water and frost. Bitumen is a very effective agent for sand stabilization but for soil stabilization it is being very costly. There is no any particularly following process or method for soil bitumen stabilization and most importantly there is no any code for bitumen soil stabilization in Indian Standard. This experiment study deals with some specific tests like liquid limit, plastic limit, plastic index, MDD, specific gravity, CBR performed on different variations of bitumen emulsion and waste plastic. Propose the optimize variations of bitumen emulsion and waste plastic.

**Keywords :** Medium Setting Emulsion, Red Color Literate Type Gravel Soil, Bitumen Emulsion.

## INTRODUCTION

Starting from the base, soil is a standout amongst the most abundant construction materials of nature. Just about all kind of construction is based with or upon the soil. Long term performance of pavement structures is altogether affected by the strength and durability of the subgrade soils. Even though stabilization is a well-known option for improving soil engineering properties yet the properties determined from stabilization shift broadly because of heterogeneity in soil creation, contrasts in micro and macro structure among soils, heterogeneity of geologic stores, and because of chemical contrasts in concoction interactions between the soil and utilized stabilizers. These properties require the thought of site-specific treatment alternatives which must be accepted through testing of soil-stabilizer mixtures. (*Michael (1993)*)

Whether the pavement is flexible or rigid, it rests on a soil foundation on an embankment or cutting, normally that is known as subgrade. Subgrade soil should be of good quality and appropriately compacted to utilize its full strength to withstand the stresses due to traffic loads for a particular pavement. (*Cokca et al. (2003)*)

Soil stabilization can be done by two methods, one is mechanical method and the other one is chemical or additive methods. Presently every road construction project will use one or both stabilization strategies. The most well-known type of mechanical soil stabilization is compaction of the soil, while the addition of cement, lime, bituminous or alternate executors is alluded to as a synthetic or added substance strategy for stabilization of soil. (*Razouki et al. (2002)*)

The system uses the grain-size distribution and Atterberg limits, such as Liquid Limits and Plasticity Index to classify the soil properties. There are different types of additives available. Not all additives work for all soil types. Generally, an additive may be used to act as a binder, after the effect of moisture, increase the soil density. Following are some most widely used additives: Portland cement, Quicklime or Hydrated Lime, Fly Ash, Calcium Chloride, Bitumen etc. But, mechanical soil stabilization alludes to either compaction or the introduction of sinewy and other non-biodegradable reinforcement of soil. This practice does not oblige



# AN EXPERIMENTAL INVESTIGATION OF PAVER BRICKS MADE OF PLASTIC WASTE AND SAND

*\*Syed Afshaan \*\*Vijay Kumar \*\*\*Upain Kumar Bhatia*

*\*Research Scholar Civil Engineering Department, Amritsar Group of colleges*

*\*\*Assistant Professor Civil Engineering Department, Amritsar group of colleges, Amritsar*

*\*\*\*Professor and Head Civil Engineering Department, Amritsar Group of college, Amritsar*

*Corresponding Author: Email ID: afshan.q001@gmail.com*

## ABSTRACT

Nearly 300 million tonnes of plastic waste are produced every year. Plastic wastage is growing at an annual rate of 9%. To minimize this growing problem, performed experiment on different types of plastic waste to form plastic and sand brick which could be used in different construction filed in different use according to requirements of bricks. First, have selected Required size mould. This study focusses on the investigation of properties of different plastic and sand brick produced by partial replacement of cement with plastic in percentage of 30% plastic and 70% sand. The study presented above helps in reducing the plastic waste disposal problem as it utilizes the waste even in its finest form and converts that useless material into a useful construction material. The main process and the concept had been derived from the project in which the brick was tried on different plastic. This research has been involved out with satisfactory result.

**Keywords:** Plastic, Bricks, Cement

## INTRODUCTION

### PLASTIC BRICK TILES (ECO BRICK):

An Eco brick is a plastic bottle packed with used plastic to a set density. They serve as reusable building blocks. Eco bricks can be used to produce various items, including furniture, garden walls and other structures. Eco bricks are produced primarily as a means of managing consumed plastic by sequestering it and containing it safely, by terminally reducing the net surface area of the packed plastic to effectively secure the plastic from degrading into toxins and microplastics. Eco bricking is a both an individual and collaborative endeavour. (Richa Kothari, et.al (2021)

### ADVANTAGES:

1. Allow recycling of waste plastic. If made with hollow cells, they can be filled with compacted dirt, increasing their potential utility for projects lasting several years.
2. They can be used for insulation; in this application they may be left as such with hollow cells, or these cells may be filled with husk (other good alternatives exist) to inhibit air currents for cheaply increasing their insulating properties. This seems to be the most practical application, apparently suitable for moderately cool regions.
3. If such bricks are covered with aluminium foil, perhaps glued with epoxy, they would withstand UV much better. Everyone needs few bricks at home for different purposes.
4. They should be sufficiently economical, with potential for easy recycling. Under submerged conditions they should last much longer.
5. Exotic shapes are possible for decorative purposes. (Tania Dadwal, et. al (2022)



# WASTER PAPER AS CONSTRUCTION MATERIAL: A REVIEW

*\*Khushboo \*\*Upain Kumar Bhatia*

*\*M.Tech Student, Department of Civil Engineering, AGC Amritsar*

*\*\*Professor & Head, Department of Civil Engineering, AGC Amritsar*

*Corresponding Author: Email ID: kbhatti179@gmail.com*

## ABSTRACT

As per the recent survey conducted, there are approximately 3.04 trillion trees on the Earth. However, despite this vast number, close to 4 billion trees are cut down annually for paper production alone. This alarming figure highlights the urgent need for sustainable alternatives, especially in resource-depleting industries like construction. Traditionally, construction heavily relies on non-renewable resources, worsening environmental degradation. Additionally, the disposal of wastepaper poses challenges, with a significant portion ending up in landfills instead of being recycled.

In response to these issues, our research aims to explore the viability of paper Crete bricks as a sustainable building material. By utilizing waste papers, such as newspapers, magazines, and invitation cards, we evaluate properties like weight, compressive strength, water absorption capacity, fire resistance, and hardness. Preliminary findings indicate promising results. By blending paper pulp with cement and sand, paper Crete bricks achieve a remarkable 50% reduction in weight compared to conventional clay bricks. This substantial weight reduction not only improves structural efficiency but also reduces costs in design and construction. Overall, the adoption of paper Crete bricks represents a significant shift in construction practices, providing a sustainable solution to address resource depletion and environmental impact. Embracing innovative materials like paper Crete allows us to reshape the future of construction, balancing economic efficiency with ecological responsibility.

**Keywords:** Wastepaper, Compressive Strength, Paper Crete Bricks, Environmental Impacts.

## INTRODUCTION

Paper mash is another composite material utilizing wastepaper office paper as an incomplete substitution of Portland concrete. This expansion in the fame of utilizing natural amicable, minimal effort and light weight development materials in building industry has realized the need to research how this can be accomplished by profiting the earth just as keeping up the material necessities insisted in the norms. As regular wellsprings of totals are getting depleted, it turns out pressing to develop.

Most of deserted paper squander is gathered from the nations everywhere throughout the world causes certain genuine ecological issues. Paper is the 3rd largest industrial polluter of air, water, and soil. In recent year, paper and paperboard constitute a greater portion of many countries' municipal solid waste generation.

Since, the large demand has been placed on the construction industry, especially in the last decade due to increase in pollution which cause a chronic shortage of building resources, the civil engineers have been challenged to convert the industrial waste to useful building and construction materials. One exclusive recycle opportunity is using wastepaper as a construction material. Since the construction industry uses up a great amount of non-renewable resources, therefore the potential function of wastepaper for producing a low cost and light weight composite brick for construction not only delivers the potential use of wastepaper recycling but it will likewise bring down the demand pressure on global natural resources.

Paper mash is a complex material involving Portland concrete, squander paper, water, and sand. The mix of these materials, which may give an approach to give reasonable lodging fora huge scope. Paper mash have been reported: to be cheap alternative building material; to have good sound absorption and thermal insulation; to be a light weighted and fire- resistant.


# Chapter 6

## Minimalism: A Game Changer for Industries

**Amritesh**

*Indian Institute of technology, Ropar, India*

**Arjinder Kaur**

 <https://orcid.org/0000-0003-1223-7999>  
*Indian Institute of Technology, Ropar, India*

### **ABSTRACT**

*Minimalism has become a lifestyle choice for consumers from various cultural backgrounds who are deliberately rejecting the consumerist narratives that drive market-driven lifestyles. This chapter aims to provide a comprehensive review of growing trends in minimalism, emphasizing the defining traits of minimalists, the historical origins of minimalism, and the potential risks it poses to deindustrialization. A bibliographic review method is used to address the interconnected concepts within the specified objectives. The study illuminates the global shift in consumer behaviour by examining the increasing embrace of minimalism in different consumer sectors of the economy. The authors highlight the disruptive capacity of minimalism in various industries and recommend further research to plan a systematic degrowth of unsustainable products and match it with the emerging demand for a minimalism-driven lifestyle. In summary, this chapter emphasizes the potential connections among minimalism, health and wellbeing, and environmental sustainability.*

DOI: 10.4018/978-1-6684-9277-2.ch006

Copyright © 2024, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.



< Back to results 3 of 27 Next >

Download Print Save to PDF Save to list

Thermal Claddings for Engineering Applications • Pages 51 - 62 • 30 May 2024

# Corrosion and microstructural behaviour of Inconel 625 microwave clad deposited on mild steel

Document type  
Book Chapter  
Source type  
Book  
ISBN  
978-104001771-5, 978-103246054-3  
DOI  
10.1201/9781032713830-3  
View more

Singh, Gurbhej<sup>a</sup>; Bansal, Amit<sup>b</sup>; Vasudev, Hitesh<sup>c</sup>  
Save all to author list

<sup>a</sup> Amritsar Group of Colleges, Amritsar, India  
<sup>b</sup> I. K. Gujral Punjab Technical University, Kapurthala, India  
<sup>c</sup> School of Mechanical Engineering, Lovely Professional University, Phagwara, Punjab, India

Full text options Export

Abstract

Abstract

In the present study, domestic 000 watt microwave oven was used to deposit the clad of