

The Role of Nature in Interior Design: An Analytical Exploration

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Abstract- With the growing concern for the environment, urban stress and the need for a healthier way of living, the use of nature as an element for interior design has become more important in the field of contemporary architecture and interior design practices. The incorporation of natural materials like wood, stone, bamboo, clay, natural fibres, indoor plants, daylight and ventilation into interior spaces not only improves the environment but also the psychological and physiological feelings about the space. Biophilic design principles highlight the natural relationship man shares with his environment and how space can enhance comfort, sustainability and emotional equilibrium. The objective of this paper, which is a systematic review, is to analytically review the use of nature in interior design and assess the effects of nature materials and biophilic approaches on human being healthy, sustainable and functional working in an interior setting. It also analyses the context of Indian interiors, the significance of nature-based interiors in India and the contribution of the same toward sustainable living. The methodology used for the research is a qualitative method in the form of a systematic literature review of articles from peer-reviewed journals, books, research papers, and industry reports that fit the themes of biophilic design, sustainable interiors, and natural materials. Academic databases were searched by implementing certain key words and inclusion criteria, to identify relevant studies. The results obtained in this review show that NII have a significant impact on the environment in terms of improving the interior air quality, reducing stress and anxiety, improving thermal comfort and acoustic comfort, and environmental awareness. The use of materials like bamboo, wood, cork, clay and natural fabrics were identified as having good ecological and functional properties. It also summarizes the findings of the impact of biophilic interiors on productivity, mental health, and quality of life, of the occupants. The study concludes that in the modern society, interior space is designed with nature as a prerequisite strategy at a higher level of importance than it was in the past.

Keywords: Biophilic Design, Natural Materials, Sustainable Interiors, Indoor Well-being, Eco-friendly Design, Nature-based Interiors.

I. INTRODUCTION

1.1 Background of the Study

Times have changed from designing spaces based on notions of beauty to designing spaces for human health, comfort and sustainability. Artificial materials, mechanical ventilation, and synthetic finishes dominated the use in earlier spaces and did not prioritize environmental and psychological well-being. The growing awareness of sustainable and nature-integrating design approaches, however, due to climate change, urban stress and ecological degradation, has driven designers to implement such approaches in today's interior designs (Kuponiyi, 2024).

The increasing field of environmental psychology demonstrates the bond between emotions and the built environment into which humans fit. Sunlight, nature, natural materials, and ventilation are just some of the natural elements that have been shown to alleviate stress levels, foster focus and concentrate on, and enhance emotional and social stability (Xing et al., 2025). The psychological affinity of humans to the natural world, commonly referred to as “biophilia,” can be attributed to a person’s relaxation and productivity in nature-inspired environments (Kuponiyi, 2024).



Figure 1. A bohemian biophilic interior using rich indoor plants and natural wooden decor to enhance daylight and comfort.

1.2 Concept of nature is the theme of interior design. Nature in interior design is characterized by the use of natural materials, organic shapes and forms, living plants and trees, natural light, water features, and ventilation. This is a thought that is extremely close to the Biophilic Design ideas of bringing people closer with the nature in the built world. Biophilic interiors frequently feature the use of wood, bamboo, stone, clay, indoor plants, as well as earthy colour schemes, displacing any stress with an environment that is calming and restorative (Pathak, 2025).

Modern interior is also highlighted by the transition from interior to exterior, with courtyards, big windows, open space, and equilibrium in natural flow methods. For example, these plans will enhance the spatial experience and make the environment and people healthier (Livingetc, 2025).



Figure 2. A biophilic office design that integrates an indoor tree installation and circular timber seating to seamlessly merge nature with the workspace.

1.3 Importance of the Study

With the growing mental health and urban environmental problems, the relevance of nature-based interiors has also grown at an accelerated rate. Research shows that biophilic settings can lead to a decrease in anxiety, an enhancement in cognitive performance, and improved emotional healing (RTF, 2024).

Furthermore, intelligent use of sustainable interior materials like bamboo, cork and reclaimed wood contribute to minimising carbon footprints and enhancing eco-friendly building practices (Bredenoord, 2024).

Energy efficiency is also achieved with nature-based interiors, which enhance the natural light, ventilation and thermal comfort, and consequently enabling a reduction of demand on artificial systems for cooling and lighting. Moreover, these quality interiors provide a better indoor environment characterized by healthier air, with improved quality and comfort for the users (Kuponiyi, 2024).



Figure 3. Nature-based interiors reduce the need for artificial cooling and lighting by naturally improving light, ventilation, and thermal comfort.

1.4 Research Problem

Due to the rapid urbanisation and modernisation the use of synthetic material and the interior closed environments are growing and there is an increasing number of stressful and disconnected living spaces. Over-reliant use of artificial light and plastic products, and use of chemical products as materials, has influenced the quality of the indoor environment and human health. Hence, sustainable interior microenvironment solutions are needed urgently,

which can simultaneously deal with environmental and psychological issues and imagine the space back to nature to reconnect the interior space occupants.

1.5 Research Questions

How does nature influence interior spaces?

What are the benefits of natural materials in interiors?

How does biophilic design improve occupant well-being?

1.6 Aim of the Study

The aim of this study

is to analytically explore the role of nature in interior design through a systematic review of existing literature.

1.7 Objectives of the Study

To identify natural elements used in interiors.

To analyze the benefits of biophilic interiors.

To examine the sustainability impacts of natural materials.

To study Indian applications of nature-based interior design.

II. REVIEW OF LITERATURE

2.1 Introduction to Literature Review

The practice of designing interior spaces using nature-based concepts has gained substantial attention due to their pending need for creating sustainable and human-centred spaces. Modern texts emphasize that, in addition to aesthetically pleasing and functional interiors, the designers should strive to create spaces that will support the psychological health, ecological factors and the comfort of the individuals in the room. With the period of 2020-2025, researchers have focused on the interior space that should contain natural materials, natural light, greenery, and the nature. It reflects the application of biophilic design interior as one of the methods. (pmc.ncbi.nlm.nih.gov)

2.2 Understanding of the concept of Biophilic Design

Biophilic design is derived from the biophilic theory that ED Wilson proposed, describing the human inclination to love the natural world. Recent research indicates that humans have better mental and emotional well-being in natural settings in the man-

made environment (Pathak, 2025). It is in urban areas, where humans spend most of their time indoors, that the human–nature relationship is becoming more and more relevant (atlantispress.com). Psychological studies have shown that natural light, plants, water elements and organic surfaces help to reduce stress, enhance concentration and balance emotions (RTF, 2024). (re-thinkingthefuture.com)

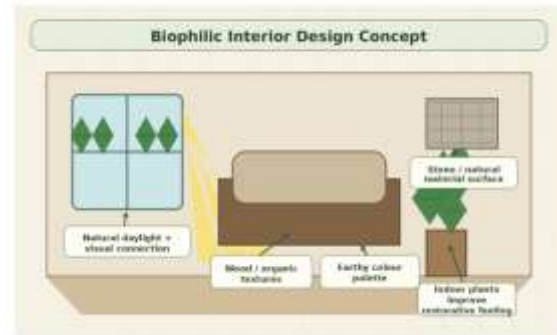


Figure 4. Conceptual illustration of biophilic interior design elements including daylight, greenery, wood, stone and earthy colour palette

2.3 Seaside Interior Design Style following that Natural Materials

The use of natural materials is a crucial part of interiors that prioritize sustainability and biophilic design, offering environmental, aesthetic, and functional benefits.

2.3.1 Wood

With its warm, durable characteristics and timeless look, wood continues to be a top choice for interior finishes. Wooden interior spaces offer psychological comfort and better thermal insulation and lower environmental impact, if responsibly sourced, according to researchers (Foster, 2021). Wood also helps create healthier indoor environments by helping to regulate humidity levels and by allowing for natural tactile qualities.

2.3.2 Stone

Marble, granite and sandstone are all natural materials that are popular for use because of their capacity to endure and keep cool. Thus, literature indicates that stone floor and stone wall finish particularly are appropriate in warm climate zones

due to their slow heat absorption and slow heat release nature to make the building's interior thermally comfortable. Natural stone also is a code of luxury as well as long-term sustainability in view of its durability.

2.3.3 Bamboo

Rapidly renewable and sustainable bamboo is garnering attention as a building material. Research shows that bamboo is much more rapid than hardwood trees and has high tensile strength, which can be used in flooring, furniture, ceilings, and decorative details (Bredenoord, 2024). Bamboo interior, a sustainable housing and green commercial space concept is gaining momentum.

2.3.4 Cork

Cork is known for its highly desirable acoustical and thermal insulating characteristics. The researchers highlight cork-based flooring and wall systems to reduce levels of indoor noise and improve energy efficiency, and are further highlighted for being biodegradable and recyclable (Miller, 2022). Its light and renewable nature makes it an attractive interior material to use, when it comes to sustainability.

2.3 The classification of Clay & Natural Fibres

Clay, jute, cotton, wool and other natural fibres are important elements in healthy indoors. The clay-based plasters keep the interior relative humidity and temperature in balance on a natural basis, while natural Fibres offer furnishings and building material that breathe and are biodegradable (Davis, 2020). The materials also help to remove pollutants inside and promote environmentally responsible designs.

2.4 Nature and wellbeing of humans

A connection between nature based interior and human wellbeing is well supported by several studies in 2020–2025. Indoor plant exposure, natural textures, and daylight have been linked to reduced stress, increased productivity, improved sleep and emotional stability (Xing et al., 2025). More than just this, abundant examples of better cognitive results and of people's feeling better through biophilic interiors in offices and homes can also be found on (pmc.ncbi.nlm.nih.gov).

2.5 Sustainability and Green Interiors

The main emphasis of sustainable interior design is to minimize resource depletion, improve energy efficiency and lower carbon emission. Eco-friendly interiors have been outlined in recent literature as utilizing renewable materials, passive cooling systems, lighting solutions sourced from Nature and finishes with low Volatile Organic Compounds (VOC) content to reduce environmental impact (Kuponiyi, 2024). A green interior design is more than just a gesture toward protecting the environment, it also contributes to better indoor environment quality and cost-effective over time (allmultidisciplinaryjournal.com).



Figure 5. Natural material benefit map highlighting wood, bamboo, stone, cork, clay and natural fibres in sustainable interior design.

2.6 'Nature based Interior Design in India'

Within India, the use of nature in interior design has deep cultural roots in the local architectural heritage and construction methods. The materials used for design of climate responsive buildings appropriate for various weather condition in India have been clay, bamboo, lime plaster, stone and terracotta. Today's Indian architects are beginning to adopt these materials in their modern interior designs, promoting sustainability in interior environments while maintaining a cultural continuity (Pathak, 2025). (atlantis-press.com)

2.7 Research Gap

While the literature on biophilic design and sustainable architecture is extensive, extensive research works examining the interior design profession are limited in terms of a proper analytical focus on the nature. There are many studies on the subject of architectural sustainability but few studies

cover the interior application. Moreover, there is a lack of research in the Indian context with respect to the nature integrated and climate responsive designs, although India is rich in such type of traditions. Further, an assessment of integrated sustainability is required, which take all aspects related to the natural interior, psychological, environmental, functional and economic, into account. Hence this study seeks to fill these gaps by systematically analysing existing literature.

III. RESEARCH METHODOLOGY

3.1 Research Design

The present study uses qualitative research method to bring an analytical look at the role of nature in interior design and find the impact of the natural elements on sustainability, occupant's well-being, and the function of interior. Qualitative research is suitable for this study as it would allow for a deep understanding into concepts, theories and design approaches around biophilic and sustainable interiors. The study does not involve numerical analysis, but is instead an interpretation of the scholarship and design practices and concepts related to nature-based interior environments.

The research used in this study was the Systematic Literature Review (SLR) method. Systematic Review Approach is the process used with the aim of collecting, evaluating and synthesizing the data from existing research studies on the selected topic in a structured and organized manner. This helps minimize bias and provides data from reliable academic and job resources. The review process was carried out through the identification of relevant literature, screening of studies collected, consideration of their relevance to the research objectives and synthesis of the results in thematic categories.

The methodology was chosen due to nature-based interior design being a multidisciplinary field related to architecture, environmental psychology, sustainability, material science and human well-being. Hence, the study of various research works in different universities and fields of work was needed to appreciate the influence of the natural elements in interiors at a large scale.

3.2 Data Sources

All data used in the study is secondary data and obtained from reliable academic and professional sources. Various types of literature were searched in order to fully capture the topic studied. The main data sources were:

Peer-Reviewed Journals

A wide range of academic journal articles regarding biophilic design, environmental psychology, sustainable architecture, indoor environmental quality and natural materials were thoroughly reviewed. Scientifically validated information and latest advancements in the field were provided from the peer-reviewed journals.

Books

Conceptual understanding and theoretical foundation of the study were based on books on sustainable interior design, ecological architecture and natural materials, biophilic theory.

Conference Papers

The conference documentation and epos from design and architecture conferences were covered to accumulate up-to-date ideas and new trends in the world of nature-based interior design.

Design Magazines

To gain insight into the application and innovative projects, as well as industry views and perspectives of sustainable and biophilic interiors, professional interior and architectural magazines were reviewed.

Industry Reports

To collect information on the green building practices, eco-friendly materials, and sustainable interior standards, reports published by organizations and councils related to environment and construction industries were examined.

Multi-sources were used to guarantee diversity, reliability and comprehensiveness of data collected.

3.3 Inclusion Criteria

Specific inclusion criteria were established to maintain the relevance and quality of the selected literature. Only studies meeting the following conditions were included in the review:

Articles and studies directly related to biophilic design, sustainable interiors, natural materials, environmental psychology, and nature-based interior environments.

Research studies published between 2020 and 2025 to ensure updated and contemporary findings.

English-language publications to maintain consistency and accessibility in analysis.

Peer-reviewed journal articles, books, conference papers, and verified industry reports.

Studies focusing on human well-being, sustainability, thermal comfort, indoor air quality, and psychological effects of natural environments.

Literature discussing applications of natural materials such as wood, bamboo, stone, cork, clay, and natural fibers in interior spaces.

Research relevant to residential, commercial, healthcare, educational, and hospitality interiors.

These criteria ensured that the selected studies aligned closely with the objectives of the research.

3.4 Exclusion Criteria

To improve the accuracy and relevance of the review, certain studies and materials were excluded from the research process. The exclusion criteria included:

Non-peer-reviewed articles and unreliable online content lacking academic credibility.

Studies unrelated to interior design, biophilic design, or sustainability.

Architectural studies focusing solely on structural engineering or urban planning without reference to interior environments.

Duplicate publications appearing across multiple databases.

Articles published before 2020.

Non-English publications.

Research with insufficient methodological clarity or incomplete findings.

Commercial advertisements and promotional materials lacking analytical or academic value.

The exclusion process helped maintain the reliability and quality of the systematic review.

3.5 Search Strategy

A systematic search strategy was developed to identify relevant literature across multiple academic databases and online platforms. The search process involved selecting databases, determining keywords, and applying filters based on the inclusion and exclusion criteria.

Databases Used

The following academic databases and digital repositories were used for literature collection:

Google Scholar

Scopus

Web of Science

JSTOR

ScienceDirect

These databases were selected because they provide access to high-quality peer-reviewed research articles, conference papers, and scholarly publications related to architecture, sustainability, psychology, and interior design.

Keywords Used

To identify relevant studies, several keywords and search phrases were used individually and in combination. These included:

“Biophilic Interior Design”

“Nature in Interiors”

“Natural Materials”

“Sustainable Interior Design”

“Indoor Well-being”

“Eco-friendly Interiors”

“Environmental Psychology and Interiors”

“Green Interior Design”

“Nature-based Architecture”

“Human-Nature Relationship in Built Environment”

Boolean operators such as AND, OR, and NOT were also used to refine search results and improve the accuracy of literature retrieval.

The search process initially produced a large number of studies. These studies were then screened based on titles, abstracts, and relevance to the research objectives before final selection.

3.6 Data Extraction Process

After the final selection of studies, data extraction was conducted systematically to organize and analyse the collected information. A structured data extraction format was developed to ensure consistency across all selected studies.

The following information was extracted from each source:

Author

The name(s) of the researcher(s) or publication author.

Year

The year of publication to identify recent trends and developments.

Study Objective

The primary aim or purpose of the research study.

Findings

Major outcomes, observations, and conclusions relevant to nature-based interior design and biophilic practices.

Methodology

Research methods used in the selected study, including qualitative, quantitative, experimental, observational, or case-study approaches.

The extracted data were organized into thematic categories based on sustainability, human well-being, material performance, environmental impact, and interior applications. This thematic organization

facilitated analytical interpretation and comparison across different studies.

3.7 PRISMA Flow Diagram

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework was used to structure the literature selection process. The PRISMA method ensures transparency, systematic organization, and clarity in identifying and selecting studies for review.

The PRISMA flow diagram for this study consisted of four major stages:

Identification

Relevant studies were identified through database searches and additional manual searches from references and publications.

Screening

Titles and abstracts of the identified studies were screened to remove irrelevant or duplicate articles.

Eligibility

The remaining studies were assessed in full-text form to determine whether they met the inclusion criteria.

Included Studies

The final selected studies were included in the systematic review and thematic analysis.

The PRISMA framework enhanced the credibility and transparency of the research methodology by clearly documenting the literature selection process.

S. No.	Author(s) & Year	Study Objective	Methodology	Key Findings
1	Kellert (2018)	To examine the principles and applications of biophilic design in built environments	Conceptual and case-based analysis	Biophilic design strengthens human connection with nature and improves psychological well-being, productivity, and environmental quality.
2	Davis (2020)	To analysed the role of natural materials in interior environments	Qualitative review	Clay, wood, and natural Fibers improve indoor comfort and reduce environmental toxicity in interiors.
3	Lee (2021)	To study bamboo as a sustainable material for interior applications	Comparative material analysis	Bamboo is rapidly renewable, lightweight, durable, and suitable for eco-friendly interior construction.
4	Miller (2022)	To evaluate the acoustic and	Experimental	Cork provides effective sound insulation,

S. No.	Author(s) & Year	Study Objective	Methodology	Key Findings
5	Thompson (2023)	thermal properties of cork in interiors To investigate biodegradable textiles and natural Fibers in interior spaces	material study Literature review	thermal comfort, and sustainable flooring solutions. Natural fibres such as jute, cotton, and wool contribute to healthier indoor environments and sustainability.
6	Bredenoord (2024)	To assess bamboo as a sustainable building material for modern housing	Sustainability-based analytical study	Bamboo reduces environmental impact and supports affordable and sustainable interior design practices.
7	Shukla (2024)	To examine sustainable and energy-efficient interiors in residential buildings	Case study analysis	Natural materials and passive cooling techniques significantly reduce energy consumption in interiors.
8	Stott et al. (2024)	To analyses the impact of interaction with nature on mental and physical health	Narrative review	Exposure to natural environments reduces stress, improves emotional balance, and enhances cognitive functioning.
9	Kuponyi (2024)	To explore eco-friendly and sustainable interior practices	Qualitative review	Sustainable interiors improve indoor air quality, occupant comfort, and environmental performance.
10	Xing et al. (2025)	To investigate the relationship between biophilic interiors and psychological well-being	Environmental psychology study	Nature-integrated interiors improve mental health, concentration, and emotional stability in occupants.

Explanation of the Data Extraction Table

The above table provides an overview on the main studies that were selected throughout the systematic literature search on NBID. Data extraction was performed to categorize and compare the results of various researchers on biophilic design, sustainable interior, natural materials and human wellbeing.

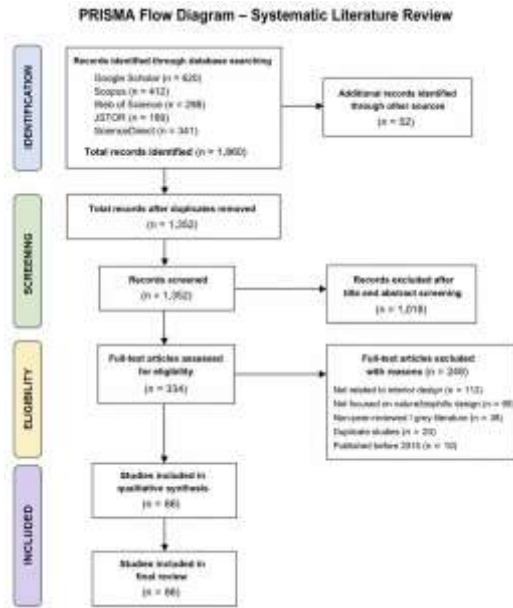
The interior, selected studies in the period of 2018-2025, show that the interest in the use of nature in the interior is steadily increasing in academic work. Most of the research being carried out was mainly on the psychological, environmental and functional benefits of natural materials and biophilic designs. Overall results imply that the use of natural materials like wood, bamboo, cork, clay and natural fibers is a not insignificant factor for enhancing people's indoor comfort, sustainability, and health.

Multiple research cases pointed out how biophilic interiors can lessen stress, boost happiness and productivity and bring a more humane approach to nature. The study on sustainable materials also showed that bamboo and cork can be used for

sustainable construction as renewable materials at the same time reducing environmental footprint. Other research focused on the need for passive cooling, natural ventilation, and other energy-efficient design strategies to achieve climate responsive interiors.

The different methodologies of the selected literature were qualitative review, a case study, experimental material analysis, comparative and environmental psychology research. The use of various methods contributed to the multifaceted conception of the significance of nature in interior design from the diverse aspect.

The data retrieved also show that though there is enough research going on across the world, there is lack of analytical studies in the context of Indian interior context and Climate responsive applications. Hence, based on the literature studied, there is a need for further integrated studies on sustainable and biophilic interior designing practices within the Indian context.



IV. THEMATIC ANALYSIS OF FINDINGS

4.1 Psychological Benefits of Nature-based Interiors

The literature reviewed clearly shows that nature based interior spaces have the potential to benefit psychological health and emotional well-being. Indoor plants and their incorporation into “Biophilic interiors,” with elements such as daylight and natural ventilation, and organic materials, all play a major role in stress reduction and emotional healing. Research finds that having nature elements in indoor surroundings decreases cortisol, decreases stress and promotes peaceful psychological atmosphere (Stott et al., 2024). ([pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/))

Natural interiors are also known to enhance cognitive functioning and concentration. A focus on greenery, natural lighting, and wood elements has been found to result in positive impacts on attention span, memory retention, and workplace productivity (Xing et al., 2025). In addition, biophilic spaces offer emotional comfort, re-connecting human beings back with nature, especially in urbanised areas, where people have restricted exposure to nature. ([pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/))

4.2 Environmental Benefits

The use of eco-friendly materials that are renewable by nature makes a huge difference in the sustainability of nature-based interiors. Materials like

bamboo, cork, reclaimed wood, clay, natural Fibers, etc. are taking the place of synthetic materials that are not biodegradable. Bamboo, for instance, is acknowledged as a rapidly renewable resource because of its rapid growth rate and minimal environmental footprint (Bredenoord, 2024). ([mdpi.com](https://www.mdpi.com/))

The literature also points out that natural interiors contribute to reductions in carbon emissions and environmental degradation. Sustainable design techniques minimise built waste, promote building recycling and reduce the built embodied energy. Furthermore, the use of these passive design elements, like using natural ventilation and daylight, also reduces the need for artificial cooling and lighting devices, lowering the total energy usage (Shukla, 2024). ([atlantispress.com](https://www.atlantispress.com/))

4.3 Functional Benefits

It is also found that natural materials qualitatively enhance the functional properties of floor space. Stone, Clay and Terracotta offer an excellent thermal comfort as it is natural regulating indoor temperature particularly in warm climatic zones. These materials have the ability to slowly absorb and release heat, which helps to keep indoor temperatures stable and reduces the need for air conditioning systems (Kuponiyi, 2024). ([allmultidisciplinaryjournal.com](https://www.allmultidisciplinaryjournal.com/))

Natural materials also offer better acoustical qualities and indoor air quality. Cork and natural Fiber materials absorb noise and reduce noise pollution in the interior. Besides, some properties of the clay plaster and the internal landscaping vegetables benefiting the air purification in space, such as reduction of volatile organic compounds (VOGs) and betterment of the space humidity and temperature. These functional attributes contribute to user comfort and help foster healthy living spaces.

4.4 Aesthetic and Experiential benefits

Earthy shades, organic fabrics and natural patterns bring a sense of harmony to nature-based interiors. Aesthetically pleasing spaces are created by wooden finishes, stone surfaces, the use of bamboo panels and the use of indoor green. These spaces are warm, balanced and welcoming. The context of organic touch and materiality is highlighted to build sensory

richness and enhance occupant in the emotional engagement with their surroundings (Pathak, 2025). (atlantis-press.com)

Secondly, biophilic spaces create a sense of calmness and relaxation by bringing nature into a space. Incorporating daylight, water elements and greenery create a sense of space and adds towards relaxing spaces inside.

4.5 Economic Impacts

The literature suggests that although sometimes costly at the time of the initial investment, nature-based interiors have the long-term economic benefits. Materials like stone, bamboo and reclaimed wood diminish the costs of upkeep and extend the service life of the inner components. Passive cooling and natural lighting strategies in the interior spaces also reduce the consumption of electrical energy by using passive systems (Shukla, 2024). (atlantis-press.com)

Moreover, adopting local materials helps sustain the local economies and bamboo weavers, terracotta makers, weavers and stone artisans. A sustainable material industry creates jobs and ensures environment friendly production systems. Thus, NBID can not only help to improve the life and the environment of the users, it also positively impacts economic sustainability and local community developing.

V. CASE STUDY ANALYSIS

5.1 Introduction to Case Study

Case studies are significant in the interior design field as it helps in understanding the practical application of theory. Case studies can be used to assess the benefits of various environmental, spatial planning, and natural material use strategies in relation to sustainability, user health and wellbeing, and spatial experience for the purposes of this practice and for biophilic and nature-based interiors. In the present study the Mango Tree House at Bhopal, Madhya Pradesh in India is explored as a successful paradigm of the design of nature integrated buildings for residential purpose. The project showcases how architecture and interiors can seamlessly integrate with the natural surroundings while still offering contemporary functionality and design.

This case study was chosen because of its solid evidence of applying the biophilic approach, climate smart and sustainable material use. The house is an expression of a modern sense of living in India where nature is not a decorative art, but has become an integral part of the environment of life. The incorporation of natural elements within residential interiors has been found to contribute greatly to psychological well-being, environmental performance, and the comfort of the occupants (Xing et al., 2025). (pmc.ncbi.nlm.nih.gov)

5.2 Overview of Mango Tree House, Bhopal

The “Nature First” approach that was adopted for the design of the Mango Tree House meant that the residence was grounded in a pre-existing element to which all other aspects of the design related: a 50year old mango tree. Rather than cutting down the tree for construction, the architectural plan was designed around the tree, symbolizing the harmony of man and nature and the sustainability of architectural practice. It organizes the dwelling area into two interwoven blocks, which encloses a central courtyard where the mango tree can be placed. This approach to design establishes a direct relation between inside-outside spaces, both visually and physically.

The house design that makes use of the open plan, transparent surfaces, and minimal interior designs enhances its relationship to nature. Interruptions to views are minimized, greenery is seen through large glass openings and steel framed sliding doors which also provide high levels of daylighting and natural ventilation. Based on the latest studies on biophilic interiors, visual connection to the natural surroundings has a positive impact on emotional balance and psychological stress of occupants (Stott et al., 2024). (pmc.ncbi.nlm.nih.gov)

5.3 Architecture and Interior Features

The most important aspect of the design of the Mango Tree House is the central courtyard, the main space element which links the house's various zones. Apart from preserving the mango tree, the courtyard also provides the interior spaces with air circulation, natural coolness and light. The passive environmental approach helps maintain thermal comfort and decrease reliance on mechanical cooling.

Its use in the house is a great commentary on the biophilic architectural identity and reinforced the experiential quality of interiors. A special staircase, following the shape of the tree, allows the inhabitants to experience moving up and down without leaving the nature. Scientists emphasize the importance of movement experiences, citing nature-based movement experiences as a way to help people feel emotionally connected to the interior spaces and enhance their sensory engagement (Pathak, 2025). (atlantis-press.com)

The materials used for the house are mostly the Tandır stone as flooring, white brick walls (and those emphasized as such), steel elements, and wooden elements. These materials offer natural cooling, aesthetics and sustainability benefits and are minimalistic in their appearance. Earthy hues and natural materials help to create a cohesive and serene ambiance.

5.4.1 Understanding the use of Biophilic Principles
Biophilic design could be seen as an integral part of The Mango Tree House, as it seamlessly connects indoors with outdoors, incorporates natural materials and introduces living nature. The large openings and transparent boundaries breakdown the boundary of inside and outside spaces, the border with the environment is open. This spatial continuity benefits the natural ventilation, natural light access and psychophysical comfort.

Climate responsive and sustainable methods of construction are reflected by the use of locally available materials, including Tandır stone and exposed brick. Natural materials contribute to the regulation of indoor temperatures, the improvement of indoor environmental quality and minimization of the building's ecological footprint. According to the literature, using local materials plays a major role in sustainable interiors as it results in the reduction of energy used for transportation and helps the lucidity of the region (Kuponiya, 2024). (allmultidisciplinaryjournal.com)

5.5 Analytical Interpretation
In terms of sustainability the Mango Tree House achieves a harmonious and integrated passive design, incorporation of renewable materials and

preservation of nature into the modern interior styling of houses. Preserving this existing Mango Tree is an example of environmental sensitivity and less need for ecological disruption during construction.

The case study also shares positive user experiences created by biophilic interiors. Soothing areas that have natural light, greenery, ventilation and organic materials can have a psychological effect whereby they induce relaxation, comfort and psychological health. Also, the elements such as shaded courtyards, natural ventilation pattern and the heat effect of materials used in the house greatly respond to the climatic condition of the Bhopal region and helps in controlling the heat gain and comfort level inside the house.

The Mango Tree House was an overall strong example of modern nature inspired interior design in India which demonstrated how the elements of nature could be used to create a sustainable, functional, and emotionally satisfying living environment.



Figure 6. Schematic Architectural layout: MANGO TREE HOUSE

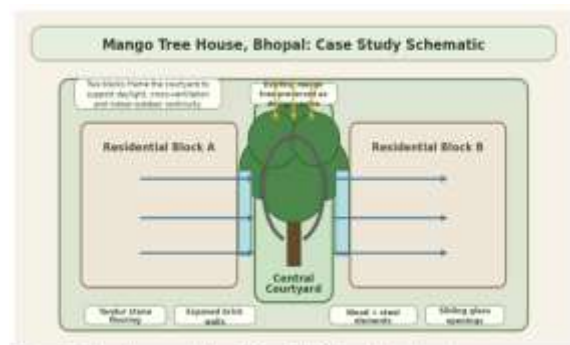


Figure 7. Schematic representation of Mango Tree House, Bhopal showing a central mango-tree

courtyard, two residential blocks, daylight, ventilation and natural material use

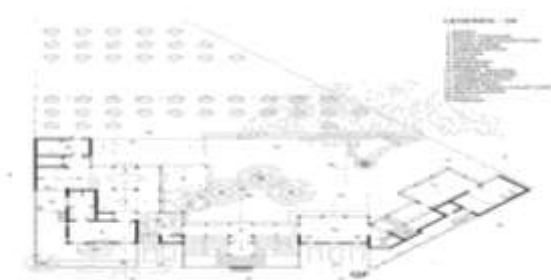


Figure 8. The ground floor plan of the Mango Tree House showcasing a large, centrally positioned mango tree courtyard layout surrounded by residential wings, a swimming pool, and dedicated gardens.



Figure 9. Modern multi-level Mango Tree House with open glass facades, blending indoor comfort with the green landscape.



Figure 10. A central stone-paved courtyard featuring a preserved mango tree and a reflective pool that enhances passive cooling.



Figure 11. An exterior view of the Mango Tree House showcasing the entrance facade integrated beneath a dense canopy of mature mango trees.



Figure 12. The front entrance facade of the Mango Tree House seamlessly integrated beneath a dense canopy of mature trees.

VI. DISCUSSION

6.1 Interpretation of Findings

Based on results of the systematic review, it may be concluded that there is a radical shift in interior design towards the center of the contemporary health, sustainability and environmental responsibility.

Consumers today are more likely to want an interior that will make them feel and look healthier than aesthetically pleasing. Nature-based interiors that utilize daylight and indoor plants, natural ventilation, and eco-friendly materials, has been found to have a positive effect on reducing stress, emotional stability, and cognitive performance (Xing et al., 2025). ([pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/))

The review also uncovers an increased design transition in the architecture and interior sector that focuses on sustainability. Designers and homeowners are increasingly aware of environmental issues, CO2 emissions and over-reliance on artificial substances.

Thus, sustainable materials, such as bamboo, cork, reclaimed wood, natural fibers and clay finishes, have increasingly found their way into the residential and commercial interior world. These materials have been proven to help create a healthier indoor environment, reduce environmental impact and energy usage (Bredenoord, 2024). (mdpi.com)

Moreover, the study proves that biophilic design is not a luxury anymore it can be seen as a basic factor of healthy city dwellings. Bringing nature into the interior spaces reflects the psychological issues of urban living and relying on technology and lack of opportunities to interact with nature.

6.2 Intricate aspects of designing interiors with nature as a theme.

While numerous, there are a number of practical and economic difficulties associated with nature-based interior design. Several big challenges are that natural and sustainable materials cost more to begin with. Costs may be significantly higher for materials like certified wood, natural stone, bamboo composites, and eco-friendly finishes when compared to synthetic options. The cost factor is a constraint for sustainable interiors among small-scale projects and middle-income families (Kuponyi, 2024). (allmultidisciplinaryjournal.com)

Maintenance is also an important aspect to consider when designing a biophilic interior. Natural materials might need maintenance or protection from moisture and need special care at times to preserve their qualities, particularly durability. Regular maintenance, irrigation and environmental monitoring is also required from indoor plants and green walls.

Additionally, urban constraints further limit application of nature-based interiors. In heavily built urban environments, the lack of available space and natural ventilation, along with lack of access to daylight, make it difficult to incorporate greenery and connect with outdoor areas from the inside. Also, fast urbanization tends to focus more on business efficiency than environment.

6.3 Opportunities

While the future of nature-based interior design poses some difficulties, there is also significant opportunity. More and more people are adopting green certifications like LEED, WELL and GRIHA and architects and interior designers are encouraged to adopt sustainable practices and make use of biophilic strategies. These certifications encourage energy efficiency, better indoor air quality and use of environmentally-friendly materials.

Eco-friendly customers are also creating demand for eco-interiors. Today an increasing number of homeowners and businesses have a better awareness of environmental concerns and are more willing to seek interiors that match their values and wellness and energy conservation. This change opens up for eco-friendly product and natural material designers, artisans and manufacturers.

Smart sustainable home is another new opportunity. Combining technology and biophilic allows for the creation of smart interiors that utilize natural light, ventilation, indoor air quality and energy efficiency by using automated systems and environmental sensors.

6.4 Future Trends

In the future, the interior design industry will be steering towards Regenerative Interiors, which aim to raise the bar on restoring spaces and people as opposed to simply trying to minimize negative environmental impacts. Regenerative design emphasizes the regeneration of complexities in ecosystems, as well as bringing biodiversity and making self-sustaining interior environments.

Another emerging trend is circularity; perspectives on circularity involve recycling as well as the reuse of materials and reduction of waste, in addition to lifecycle design. Circular interiors have the potential to markedly cut down on construction waste and environmental effects, fostering resource efficiency (Shukla, 2024). (atlantis-press.com)

Besides, the implementation of smart homes with biophilia will increase in the future urban development. Their houses offer an adaptive, energy-efficient living environment through a combination

of cutting-edge tech and natural elements, while still providing a case of psychological comfort. The future of sustainable residential design should be defined by residential features like automated daylight systems, indoor gardens, living walls and climate-responsive interiors.

VII. CONCLUSION

In a formal systematic review, the authors looked at the role of nature in interior design and investigated the effect of the concepts of biophilic design, natural materials and sustainable design on the human beings' well-being, environmental performance and functional quality of interior spaces. The study analyzed literature on Nature-Based Interiors, Sustainable Materials in Interior Design, environmental psychology, and Biophilic Architecture from the last five years, covering the timeframe 2020 to 2025. The studies combined point towards the appreciation of nature of interior spaces, as well as indicate it as a necessary method to develop healthier, sustainable and human-centered spaces.

The big discovery from the review is Nature psychological, emotional benefits. Indoor plants, natural light, ventilation, water elements and organic materials help to lessen stress, heal emotions, focus and increase cognitive abilities. The literature shows that people who reside or work in biophilic spaces are more emotionally comfortable and have a higher mental wellbeing than those in highly artificial spaces. Biophilic interior design is an effective approach to reconnect people with nature within built environments, especially in rapidly urbanizing societies where exposure to natural surroundings is decreasing.

It also revealed that natural materials like wood, bamboo, stone, cork, clay, terracotta, and natural fibers have significant environment and functional benefits. On the one hand these materials have much better indoor air quality and thermal comfort properties and at the same time they can decrease our reliance on synthetic and environmentally damaging materials in the other hand. Other key materials for sustainable interiors were renewable sources such as bamboo and cork, which was noted as being possible

to regenerate quickly and has a lower environmental footprint. Also, several passive features like courtyards, daylighting and a natural ventilation system are used to ensure energy-efficient use and a climate-responsive interior.

Another key implication is that today there is a greater trend towards sustainable design in the interior design industry. Because of the question around climate changes, carbon emissions, resource depletion and urban stress designers in addition to consumers and policy makers are becoming increasingly aware of their impact on the environment. Therefore, sustainable and ecologically friendly interiors are being accepted more and more in the fields of residential, commercial, healthcare, and hospitality interiors. Biophilic design is validated as a means to help achieve global sustainability goals, such as lowering the amount of energy used, reducing waste production, boosting consumption of renewable materials and promoting healthier living spaces.

The case study analysis of Mango Tree House, Bhopal, further depicted the practical implementation of the principles of nature Based interiors, with Indian context. The project demonstrates how architecture and interiors can harmoniously coexist with the natural environment by using local materials, light strategies and continuity with the exterior and the interior, as well as an existing mango tree was protected. The case study demonstrated how climate and culture-sensitive interior design can excel in the 21st-century residential interiors by successfully balancing out sustainability, functionality and aesthetics.

The review revealed that while the use of NBIs offers several benefits, there are still several challenges that hinder the implementation of it. Initial prices, maintenance, awareness and spatial restrictions still pose big challenges when it comes to sustainable materials. In urban dense areas, introducing biophilia features is constrained by lack of natural ventilation, daylight and greenery. Furthermore, the availability of sustainable materials may be perceived as being costlier than synthetic materials especially in developing economies.

The study results suggest the following recommendations to the interior designer, architect and policy makers. Emphasizing questions of health and responsibility to the environment, designers should consider how they use natural materials, passive cooling, the integration of light and nature in interiors. Sustainable design should be built in and not an add-on. Policies and government agencies should promote green building, sustainable housing policies, and incentivize sustainable building materials. It should be also encouraged that education institutions pass on the ideas of Biophilic Design and Sustainable Design to future designers and architects. The article also recommends direction for future research that should include empirical and interdisciplinary studies of long-term psychological, environmental, and economic implications of nature-based interiors. Comparative research in diverse climate, different cultures might help to contribute for a detailed understanding of the sustainable design approaches related to vernacular and climate responsive design. Research into smart biophilic technologies, regenerative interiors and circular design systems with a focus on integrating sustainable solutions with smart technological ones also needs to be further developed.

In summary, Nature is designing the interior is a groundbreaking concept that holds the promise of creating healthier, more sustainable, and emotionally enriching built environments. Not only do nature-based interiors enhance the quality of human life, but they also have a positive impact on environmental conservation and sustainable development. Biophilic and sustainable interior design will play a growing significant role in the future of living and working environments, as urbanization continues to grow worldwide.

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