

Investigating the Use of Green Materials in Restaurants

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Abstract

The growing demand for sustainability has pushed the restaurants to adopt the ecofriendly and green practices, particularly in restaurant interiors. This research explores the use of green materials in restaurants through a case study of cafes in Pune, India. This paper investigates the use of green materials in restaurant interiors, focusing on their practical applications. Through a review of literature and an analysis of case studies, including restaurants in Pune, India, we highlight the potential of these materials to revolutionize the restaurant industry's approach to sustainability. The findings suggest that green materials not only enhance aesthetics but also provide long-term benefits and reduce the ecological footprint of restaurants. Research is done to find out the best example of the restaurant which have used green interior materials. The research paper focuses on the growing trend of sustainability in interior design, with a specific emphasis on restaurants in Pune, India. The primary aim is to explore the application and impact of eco-friendly materials in the interiors of restaurants, identifying key parameters of "greenness" and comparing conventional materials with green alternatives. The study focuses on a range of sustainable materials such as recycled wood, bamboo, natural stone, and low-VOC paints. Eight restaurants in Pune were selected for case studies, providing real-world examples of how green materials enhance both aesthetics and sustainability. Data was collected through site visits and visual observations, followed by an analysis that assessed the materials based on sustainability criteria set by the Indian Green Building Council (IGBC). Findings revealed that restaurants are increasingly adopting sustainable practices, contributing positively to environmental efforts while also enhancing customer experience. The Boho House café emerged as the leader in green material usage, scoring the highest in terms of sustainability. The paper concludes that integrating green materials offers both environmental and economic benefits. It encourages the use of sustainable interior materials in restaurants to

minimize their ecological footprint and align with global eco-friendly trends. While the research is limited to Pune, the conclusions highlight broader implications for the hospitality industry, advocating for wider adoption of green interior materials in restaurant design.

Keywords—Sustainability, Eco-friendly sustainable materials, design, eco-friendly restaurants.

I. Introduction

In an era increasingly defined by environmental awareness and sustainability, the field of interior design has embraced a transformative shift towards greener practices. As we always talk about the green buildings but not about the green interiors, but most of the time of our day, we spent in the interior of the buildings only. Sustainable materials have become increasingly important in the world of interior design as the need for environmentally friendly building materials that minimise their impact on the planet continues to grow. In the journal, "Environmental Sustainability in Interior Design." the author Shahna Haneef stated that, "The right selection of materials and finishes for each and every element of an interior is totally under the discretion of a designer who have nothing to lose and plenty to gain from embracing sustainable design. In order to create an environmentally sustainable interior, designers must consider the environmental impact of the materials which they plan to use in the interior; encourage recycled-content materials, avoid endangered tropical hardwoods and limit VOCs that harm human health." Restaurants, which relies heavily on the aesthetics and functionality of its interiors, the use of green materials presents a unique opportunity to create both environmentally friendly and inviting spaces. The aim of this research is to study applications of green materials in interior design of restaurants in Pune. Objectives are to identify the parameters for greenness, identify the green materials, which of these materials are used in interior of the restaurants and to compare the conventional interior materials and green interior materials.

A. Significance of study

This research investigates how green materials can be incorporated into restaurant interiors. This paper explores various sustainable materials commonly utilized in interior spaces, focusing on their environmental benefits, and practical applications. By examining case studies and current trends, this research aims to highlight the importance of sustainable material choices in reducing environmental impact while promoting healthier indoor environments. Through research, case studies, this paper seeks to provide a comprehensive understanding of the practical use of sustainable materials in interior design. By highlighting successful examples and innovative approaches, it aims to inspire industry professionals, policymakers, and stakeholders to adopt sustainable practices that prioritize environmental responsibility without compromising design excellence.

II. Review of literature

Numerous studies have emphasized the growing importance of sustainability in architecture and interior design. According to the Indian Green Building Council (IGBC), green building materials not only reduce environmental degradation but also promote energy efficiency and resource conservation. Green interior materials are those that are environmentally friendly and sustainable. They minimize their impact on the environment throughout their lifecycle, from production to disposal.

A. Eco-friendly interior materials

These materials play a significant role in reducing the carbon footprint of a building, and promoting energy efficiency. Eco-friendly materials are generally more resource-efficient than traditional materials, meaning they use less energy and fewer resources.

Parameters for Greenness in Interior Design:

Greenness in interior design refers to the use of materials and practices that minimize environmental impact. The Indian Green Building Council (IGBC) has established a comprehensive framework for green building certification which includes specific criteria for the materials used in interior design. Here are the key parameters for greenness in interior design as per IGBC.

Material Composition:

The materials should be made from renewable

resources or recycled materials. Energy Efficiency: The materials should have good insulation properties to reduce energy consumption for heating and cooling.

Durability and Longevity:

The materials should be durable and long-lasting to reduce waste. Local Sourcing: Prioritizing locally sourced materials can reduce transportation emissions.

Energy-efficient lighting:

Use LED or CFL lighting to reduce energy consumption. VOC emissions: Minimize volatile organic compound (VOC) emissions from paints, adhesives, and other finishes. Maintainability: Consider the ease of maintenance and cleaning of the materials.

Recyclability:

Choose materials that can be easily recycled or reused at the end of their service life. Reusability: By reusing items, significantly reduce the amount of waste. Comparison of Conventional and Green Materials: Conventional Materials often rely on non-renewable resources, contribute to pollution, and may have negative effects. Green Materials are derived from renewable sources, reduce environmental impact, and promote healthier indoor environments. Research by Smith and Tully (2020) found that using sustainable materials in high-traffic areas, such as restaurants, significantly reduces maintenance costs over time. Additionally, a report by the World Green Building Council (2019) highlights how eco-friendly materials contribute to healthier indoor environments by reducing the presence of volatile organic compounds (VOCs), which are commonly emitted by conventional materials. The literature also discusses the economic aspects of green materials. Initial costs of eco-friendly materials may be higher than traditional options, but long-term savings due to durability and reduced energy consumption can offset these costs (Johnson & Wang, 2018). Case studies in the hospitality industry reveal that adopting green materials not only lowers operational costs but also enhances the aesthetic appeal and customer experience. In the research paper, "Sustainable interiors: green design methods and its influence on Eco psychology." he author stated that, "When purchasing various materials in the design process, it is important that designers consider whether the material is renewable or can be consumed at the same rate that it can be replaced by nature." The integration

of sustainable materials in interior building design is becoming increasingly crucial in the face of environmental challenges.

Robinson's (2016) case study analysis highlights the successful implementation of sustainable design principles in restaurants, showcasing the use of eco-friendly materials and energy-efficient practices. This study examines the focusing on the use of eco-friendly materials, energy efficiency, and waste reduction. Al-Tamimi's (2017) comprehensive review provides a valuable overview of the existing literature on green restaurant design, identifying key themes and research gaps. These studies collectively underscore the growing importance of sustainable design in the hospitality industry and offer insights for future research and practice.

The paper, "Implementation of Eco-Interior Cafe Design in The New-Normal Era in Malang City," by author Lucretia Jessica and Tiara Primadani delves into the importance of sustainable and health-conscious cafe design in the post-pandemic world. It explores the concept of eco-interior design, which emphasizes harmony between humans and the environment. The review highlights the significance of adequate ventilation, natural lighting, and the use of non-toxic materials in cafe interiors to create a safe and comfortable space for patrons. Additionally, the paper discusses the role of eco-interior design in promoting sustainability and reducing the environmental impact of cafe operations. The paper "Interior Design Concept in Lemongrass Restaurant" by authors Riyanda, Adi and Bagor references studies on eco-design in airports and hotels, highlighting the importance of sustainable design principles in public spaces. It cites research on the relationship between interior design and human behaviour, emphasizing the influence of design on mood and experience. Additionally, the paper draws from literature on eco-design concepts in building and interior design, particularly focusing on sustainable materials and practices. Unit of analysis for this research is interior of restaurants. Independent variables are choice of materials and Dependent variable is eco-friendliness. The research scope encompasses the exploration of sustainable materials used in interior of restaurant design. This includes: Identification of Sustainable Materials: Discussing various materials that are environmentally friendly. Practical Applications: Exploring how these materials are applied in real-world interior design scenarios and Case Studies and Trends: Analysing specific examples and current industry directions.

III. Methodology

Case Study method: Studied specific projects and

implementations to understand real-world applications and their outcomes. Sampling type: random sampling of restaurants around Pune. Data collection: Primary data collection was done by using visual research method of live case study of restaurants in Pune.

This research is based on a mixed-methods approach, incorporating both qualitative and quantitative data. A literature review was conducted to examine existing studies on green materials in interior design, with a specific focus on their use in restaurants. In addition, case studies of restaurants in Pune, India, were analysed to assess how green materials are integrated into actual restaurant settings. The data were collected through site visits. The selected case studies were Qehhwa Café, Voyage Café, Café Paashh, The Madeline cafe, Pimlico café, Aloraa Café, Boho and the boho house.

IV. Case studies

Data collection was done by using visual research method of live case study of restaurants in Pune. Below is an analysis of how these materials were applied in each café.

A. Qehhwa Café:

This case study analyses the interior design of the Qehhwa Cafe in NIBM, Pune, India. The cafe's design aesthetic is characterized by a modern, minimalist approach, utilizing natural materials and neutral colours to create a warm and inviting atmosphere. Materials Used and Their Applications: Wall Plane: Jute: Used as a wall covering in certain areas, providing a rustic and earthy texture. Natural Stone: Employed in some sections of the walls, adding a rugged and organic element. Painted Plaster: Used for the majority of the walls, providing a clean and minimalist backdrop. Bamboo: Incorporated into decorative dividers and partitions, creating a natural and semi-private atmosphere. Furniture: Rattan: Used for chairs and stools, offering a comfortable and visually appealing option.

Recycled Wood: Employed for tables and other furniture pieces, adding warmth and a traditional feel. Recycled Metal: Used for some chairs and table bases, providing a modern and industrial touch. Ceiling: Jute: Used as a ceiling covering, creating a rustic and textured overhead element. Exposed Beams: Visible in some areas, adding a sense of history and character. Flooring: Natural Stone: Used for the majority of the flooring, providing a durable and earthy surface.



Fig. 1. Photos of interiors of Qehhwa Café

B. Aloraa Cafe

Aloraa Cafe in Pune is a unique establishment that blends rustic charm with modern elegance, creating a welcoming and inviting atmosphere. The cafe's interior design is heavily influenced by natural materials, which contribute to its overall aesthetic and sustainability. **Materials Used and Their Applications:**
Wall Plane: **Bamboo:** Bamboo is prominently used as a structural material for the cafe's walls, creating a natural and sustainable framework. It also serves as a decorative element, adding texture and warmth to the interior. **Natural Stone:** Natural stone, such as granite or sandstone, can be used for wall cladding or accents, providing a durable and earthy finish. **Wood:** Wooden panels or planks can be incorporated into the walls, adding a rustic and organic feel. **Textiles:** Curtains or drapes made from natural fibers can be used to cover the walls, providing privacy and enhancing the overall aesthetic. **Furniture: Wood:** Wooden tables and chairs are a common choice for furniture in Aloraa Cafe, offering a timeless and classic look. **Upholstered Furniture:** Sofas or armchairs with upholstered seats and cushions can add color and comfort to the seating areas. **Bamboo:** Bamboo can also be used to create unique and sustainable furniture pieces, such as stools or side tables. **Ceiling: Bamboo:** Bamboo can be used for the ceiling as well, creating a visually interesting and eco-friendly element. **Wood:** Wooden beams or planks can add a rustic and traditional touch to the ceiling. **Textiles:** Fabric panels or curtains can be hung from the ceiling to create a more intimate and cozy atmosphere. **Flooring: Natural Stone:** Natural stone, such as marble or granite, can be used for flooring, providing a durable and luxurious surface. **Wood:** Wooden flooring, either hardwood or engineered wood, can add warmth and a natural feel to the cafe. **Bamboo:** Bamboo flooring is another sustainable option that can be used for the cafe's floors



Fig. 2. Photos of interiors of Aloraa Café

C. Voyage Cafe

Voyage Cafe in Pune presents a strong nautical theme, incorporating a variety of materials to create a coastal atmosphere. **Materials Used and Their Applications:**
Wall Plane: Paint: The walls are likely painted in light, neutral tones like white, cream, or pale blue to complement the nautical theme and create a bright, airy ambiance.

Wallpaper: Nautical-themed wallpaper with patterns like waves, anchors, or sailboats could be used in certain areas to add visual interest and reinforce the coastal theme. **Wood Paneling:** Wooden paneling, possibly stained or painted white, could be used for accent walls or to create a rustic, seaside feel. **Brick:** Exposed brick walls or brick-look tiles can add a vintage, industrial touch, especially if combined with metal accents. **Furniture: Wood:** Wooden furniture, such as tables and chairs, is a common choice for cafes. The wood can be stained or painted to match the overall color scheme and create a warm, inviting atmosphere. **Upholstery:** Upholstered chairs and sofas in blue, white, or other nautical-themed colors contribute to the coastal ambiance. Fabrics like cotton, linen, or canvas are suitable for a casual and comfortable seating experience. **Metal:** Metal accents, such as chairs with metal frames or tables with metal legs, can add a modern and industrial touch. Nautical-themed metal elements like ship's wheels or anchors can also be incorporated into the furniture design. **Ceiling: Paint:** The ceiling is likely painted in a similar color to the walls to create a cohesive look. **Exposed Beams:** If the cafe has exposed beams, they can be painted or stained to match the other wood elements in the space. **Tin Ceilings:** Tin ceilings can add a vintage industrial feel and complement the nautical theme. **Flooring: Tile:** Tiled floors, possibly in a light or neutral color, are a common choice for cafes. Tile is durable, easy to clean, and can be used both indoors and outdoors. **Wood:** Hardwood flooring can add warmth and a natural feel to the space. However, it may require more maintenance than tile. **Laminate:** Laminate flooring is a more affordable option that can mimic the appearance of wood or tile.



Fig. 3. Photos of interiors of Voyage Café

D. Café Paash

Cafe Paash serves as an excellent example of how sustainable materials can be used in restaurant design. By incorporating recycled wood, natural fabrics, eco-friendly paints, and other sustainable elements, the cafe has created a welcoming and environmentally conscious space. **Materials Used and Their Applications:**
Wall Plane: Eco-friendly paints: Low VOC (Volatile Organic Compound) paints were used to reduce indoor air pollution and create a healthier environment for patrons. These paints are free from harmful chemicals and emissions. The paints are used to coat the walls and ceilings. **Natural Stone:** The walls of Cafe Paash feature natural stone, adding a rustic and earthy element to the interior. The stone's

texture and color variations create a visually interesting backdrop. **Exposed Brick:** In certain areas, exposed brick is used to enhance the industrial-chic aesthetic. The brick's raw and unfinished appearance contrasts with the polished stone, adding depth and character. **Whitewash:** Some walls are whitewashed to create a clean and minimalist contrast against the darker materials. The whitewash also helps to brighten the space and visually expand it. **Furniture: Recycled wood:** Furniture and fixtures are crafted from reclaimed and recycled wood, giving the interiors a rustic yet modern feel. This choice helps reduce deforestation and waste. **Natural fabrics:** Upholstery and decor items use organic and natural fabrics such as cotton and linen. These materials are more environmentally friendly compared to synthetic alternatives. **Wrought Iron:** Wrought iron is used for chairs and tables, adding a touch of industrial elegance. The metal's strength and durability make it suitable for high-traffic areas. **Upholstery:** Upholstered chairs and sofas feature a variety of fabrics, including floral prints, textured weaves, and plain colours. The upholstery adds comfort and visual interest to the seating areas. **Ceiling Exposed Beams:** The ceiling features exposed wooden beams, which contribute to the rustic and industrial ambiance. The beams also provide a sense of height and openness. **Gypsum Boards:** Gypsum boards are used to create a smooth and even surface for the ceiling. They can be painted or textured to match the overall design. **Flooring Ceramic Tiles:** Ceramic tiles are used for the flooring in some areas, providing a durable and easy-to-clean surface. The tiles can be patterned or plain to match the desired aesthetic. **Natural Stone:** Natural stone, such as marble or granite, is used for flooring in other areas, adding a touch of luxury and sophistication. The stone's natural beauty and durability make it a popular choice for high-end establishments.



Fig. 4. Photos of interiors of Café Paash

E. The Boho House

This cafe stands out for its unique blend of bohemian aesthetics and modern design. This case study delves

into the materials used in the cafe's construction and decor, exploring how these materials contribute to the overall ambiance. **Materials Used and Their Applications: Wall Plane:**

Raw Plaster: Unfinished walls with exposed plaster create a rustic and earthy feel, characteristic of bohemian style. **Whitewashed Brick:** The whitewashed brick walls add a touch of industrial chic, contrasting with the organic elements. **Natural Stone:** Stone accents, such as decorative panels or cladding, provide a grounding and timeless quality. **Wood Paneling:** Wooden panels, often with intricate carvings or patterns, introduce warmth and texture. **Murals and Artwork:** Hand-painted murals or artwork depicting nature, abstract designs, or cultural motifs add a personal touch and enhance the bohemian vibe. **Furniture: Rattan and Wicker:** Woven furniture pieces made from rattan or wicker provide a relaxed and inviting atmosphere. **Natural Wood:** Unfinished or lightly stained wooden furniture adds a rustic and organic element. **Textiles:** Upholstered furniture with colorful fabrics, such as tapestries or patterned textiles, introduces visual interest and comfort. **Metal Accents:** Metal elements, such as iron or brass, can be used for chairs, tables, or decorative accents to create a balance between the organic and industrial. **Ceiling: Exposed Beams:** Visible wooden beams contribute to the rustic and industrial aesthetic. **Textile Hangings:** Fabric hangings, such as macrame or tassel garlands, can be used to create a soft and bohemian atmosphere. **Natural Materials:** Bamboo or rattan can be used for ceiling treatments, adding a touch of nature and texture. **Flooring: Natural Stone:** Stone tiles or slabs provide a durable and timeless flooring option that complements the earthy aesthetic. **Wood:** Hardwood flooring, either polished or unfinished, adds warmth and a natural feel. **Terracotta Tiles:** Terracotta tiles offer a rustic and traditional look that is often found in bohemian-inspired spaces. The materials used in the Boho House are carefully selected and combined to create a cohesive and visually appealing space. For example, raw plaster walls are paired with wooden furniture and rattan accents to create a warm and inviting dining area. Exposed brick walls are contrasted with colourful textiles and artwork to add a touch of industrial chic. The use of natural materials throughout the cafe contributes to the overall bohemian ambiance and creates a sense of connection to nature.



Fig. 5. Photos of interiors of Boho Cafe



Fig. 6. Photos of interiors of Boho Café

F. The Madeline Café

The Madeline Cafe in Kothrud, Pune, showcases a modern and elegant interior design characterized by a soft color palette, luxurious materials, and decorative elements.

Materials Used and Their Applications :

Paint: The walls are painted in a soft, neutral shade like white or off-white, providing a clean and airy backdrop for the various decorative elements.

Wallpaper/Decorative Panels: Some sections of the walls may be accented with wallpaper or decorative panels to add visual interest and texture.

Furniture:

Upholstered Chairs: These chairs likely have fabric or velvet coverings in shades of pink or peach, adding a touch of softness and color to the seating area.

Metal Chairs: The metal chairs, typically with a gold-toned finish, provide a contrast to the upholstered chairs and add a touch of luxury.

Marble Tables: The tables are made of marble, offering a durable, high-quality surface that complements the overall aesthetic.

Marble, a natural stone known for its elegance and durability, is likely sourced from regions in India. It is used for the tabletops, adding a touch of luxury and sophistication to the cafe.

Ceiling: Plaster or Drywall: The ceilings are likely finished with plaster or drywall for a smooth and clean appearance.

Decorative Elements: Decorative elements like hanging lights or floral arrangements can be added to the ceiling to enhance the visual appeal.

Flooring: Large Format Tiles: The flooring is made of large format tiles in a neutral color like white or beige. These tiles provide a durable and easy-to-maintain surface.



Fig. 7. Photos of interiors of The Madeline Café

G. The Pimlico Café

The Pimlico Cafe in Pune showcases a modern and upscale interior design characterized by a mix of classic and contemporary elements. The use of luxurious materials, bold colours, and dramatic lighting creates a sophisticated and glamorous atmosphere.

Materials Used and Their Applications:

Wall Plane: Wallpaper: Wallpaper is extensively used throughout the cafe, featuring a variety of patterns and

colors. Some wallpaper features floral motifs, while others are more abstract.

Marble Accents: Marble is used for wall accents, adding a touch of elegance and luxury.

Furniture: Wood: Wood is used for the flooring, tables, and chairs. The wood appears to be a darker, richer variety.

Metal: Metal is used for decorative elements like door handles and lighting fixtures.

Textiles:

Textiles are used for tablecloths, napkins, and other linens. Luxurious and high-quality textiles contribute to the cafe's upscale ambiance.

Lighting Fixtures: The lighting fixtures are a mix of natural and artificial light. Natural light is provided by large windows, while artificial light comes from chandeliers, sconces, and table lamps.

Artificial Plants and Flowers: These are used to add greenery to the space without the maintenance required for live plants.

Ceiling: the ceiling is finished with a neutral material like plaster or drywall.

Flooring: Large Format Tiles: The flooring is made of large format tiles in a neutral color like white or beige. These tiles provide a durable and easy-to-maintain surface.



Fig. 8. Photos of interiors of The Pimlico Café

H. Boho Boho Café

Boho is a charming cafe that embraces a bohemian aesthetic while incorporating sustainable materials into its design. The cafe's unique blend of natural elements and earthy tones creates a relaxing and environmentally conscious atmosphere.

Materials Used and Their Applications:

Wall Plane: Whitewash: The walls are primarily whitewashed, creating a clean and bright backdrop for the colorful accents. The whitewash also helps to visually expand the space.

Exposed Brick: In certain areas, exposed brick is used to add a rustic and industrial touch. The brick's raw texture contrasts with the whitewashed walls, creating visual interest.

Wallpaper: Floral or geometric wallpaper is used in some areas to add pattern and color. The wallpaper can be a focal point or a subtle accent, depending on the design intent.

Furniture:

Natural Wood: Unfinished or lightly stained wood is a common material for furniture, providing a warm and organic feel. The wood's natural grain and texture add character to the space.

Rattan and Wicker: Rattan and wicker furniture are used extensively, creating a relaxed and bohemian atmosphere. The woven materials provide a sense of lightness and airiness.

Textiles: Colourful textiles, such as cushions, throws, and rugs, are used to add warmth and personality. The fabrics can be patterned or plain, and they complement the natural materials of the furniture. **Ceiling:** Exposed Beams: The ceiling features exposed wooden beams, which contribute to the rustic and industrial aesthetic. The beams also provide a sense of height and openness. **Gypsum Boards:** Gypsum boards are used to create a smooth and even surface for the ceiling. They can be painted or textured to match the overall design. **Flooring:**

Ceramic Tiles: Ceramic tiles are used for the flooring in some areas, providing a durable and easy-to-clean surface. The tiles can be patterned or plain to match the desired aesthetic. **Natural Stone:** Natural stone, such as marble or granite, is used for flooring in other areas, adding a touch of luxury and sophistication. The stone's natural beauty and durability make it a popular choice for high-end establishments.



Fig. 9. Photos of interiors of Boho Boho cafe

V. Analysis

A case study of cafes in Pune was conducted to gather data on the materials used in their interior design. The collected information was then analyzed to identify trends and patterns in the usage of green materials. The findings of this study revealed that the cafés used a variety of green materials that enhanced both the sustainability and aesthetics of their interiors. The findings of this research indicate a growing trend towards the use of green interior materials in cafes in Pune. Many establishments are making conscious efforts to reduce their environmental impact by incorporating sustainable materials into their design. Many green materials were used in restaurant interiors, including: **Flooring:** terrazzo, mosaic tiles, bamboo, or recycled wood, stone. **Walls:** Natural stone, cork, or reclaimed wood. **Countertops:** Recycled glass, bamboo, or sustainable stone. **Furniture:** FSC-certified wood or recycled materials, Rattan and Wicker, recycled metal. **Lighting:** LED lighting. **Seating:** Upholstery made from organic or recycled fabrics. The Indian Green Building Council (IGBC) Green Interiors rating system considers interior materials as one of the categories for green features. The IGBC's rating systems for green buildings address a number of national priorities. The IGBC's rating systems encourage the use of recycled materials and discourage the use of virgin wood during renovation. Eco-friendly materials can save energy and reduce waste because they can be recycled

or come from renewable sources. According to the Indian Green Building Council (IGBC), criteria is given for green interior materials. Below the materials are classified as per the criteria of green interior materials:

| Materials | Local material | Recycled content material | Renewable resource content | Non hazardous material | Reusable/ Recyclable | Low VOC materials | |
|-----------|----------------|---------------------------|----------------------------|------------------------|----------------------|-------------------|---|
| Wood | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 6 |
| Bamboo | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 6 |
| Recycled | ✗ | ✗ | ✗ | ✗ | ✓ | ✗ | 1 |
| Stone | ✗ | ✓ | ✗ | ✓ | ✓ | ✓ | 4 |
| LED light | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | 4 |
| Stone | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | 5 |

Fig. 10. Classification of green materials at all cases

| Materials | Local material | Recycled content material | Renewable resource content | Non hazardous material | Reusable/ Recyclable | Low VOC materials | |
|-----------|----------------|---------------------------|----------------------------|------------------------|----------------------|-------------------|---|
| Paint | ✓ | ✗ | ✗ | ✓ | ✗ | ✓ | 3 |
| Terrazzo | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | 5 |
| Rattan | ✓ | ✓ | ✗ | ✓ | ✓ | ✗ | 4 |
| Bamboo | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | 4 |
| Seagrass | ✓ | ✗ | ✓ | ✓ | ✗ | ✓ | 4 |
| Metal | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | 4 |

Fig. 11. Comparison of cases with different green materials

A points system was developed to assess the overall sustainability of each cafe's interior design. Cafes that used a higher proportion of green materials received a higher score. By analysing the green materials used in the restaurants the café boho house is the best example of the restaurant which have used green interior materials to enhance the beauty of the restaurant. The restaurant got 21 points out of 25 which was the highest score.

| Name of restaurant | Wall plane | Ceiling | Furniture | Flooring | Points |
|--------------------|---|---|--|--|--------|
| The boho house | Low-voc paint LED light Stone Cotton Bamboo | Jute Rattan LED light Bamboo Seagrass, rope | Recycled wood Bamboo, Reused Metal Rattan Cotton stone, Jute | wooden flooring natural stone tiles Terracotta tiles | 92% |
| Alorra cafe | Bamboo Natural Stone wood cotton recycled glass | Jute Bamboo Wood LED light | Recycled wood Bamboo Reused Metal | Wood Bamboo natural stone tiles | 86% |
| The Qehwa Cafe | Low-voc paint LED light recycled glass Rattan | Jute Rattan LED light | Recycled wood Bamboo Reused Metal Cotton | Mosaic tiles natural stone tiles | 82% |
| Boho Boho | LED light recycled glass Jute | Jute Rattan LED light Seagrass | Recycled wood Bamboo Rattan Cotton Jute | Mosaic tiles | 82% |

Fig. 12. Points assigned to each restaurant as per the green materials used

| Name of restaurant | Wall plane | Ceiling | Furniture | Flooring | Points |
|--------------------|---|-----------------------------|---|--|--------|
| Cafe Paash | Low-voc paint LED light recycled glass stone | Jute Bamboo LED light | Recycled wood Reused Metal Cotton | Mosaic tiles natural stone tiles | 78% |
| Voyage Cafe | Recycled glass LED light Stone | | Recycled wood Reused Metal | natural stone tiles | 50% |
| Pimlico cafe | LED light recycled glass | LED light | Reused Metal | | 15% |
| Madeline cafe | LED light | LED light | | | 5% |

Fig. 13. Assigning points to restaurants

VI. Conclusion

This research provides a comprehensive analysis of the use of green materials in restaurant interiors, with a focus on cafés in Pune, India. The findings highlight the increasing trend towards sustainability in interior design, particularly in the restaurant sector. Green materials not only enhance the aesthetic appeal of a space but also contribute to environmental sustainability by reducing energy consumption, minimizing waste, and promoting healthier indoor environments. Cafés such as Café Boho House emerged as exemplary models for integrating sustainable materials like recycled wood, bamboo, and natural stone, creating a harmonious balance between functionality and eco-friendliness. Through the IGBC criteria and a point-based assessment, this study confirms that green materials, when thoughtfully applied, offer long-term benefits both economically and environmentally. The research underscores the importance of sustainable practices in the hospitality industry, encouraging more establishments to adopt eco-friendly design principles.

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