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The Bark Bar: Designing a Sustainable Forest Integrated Café Using Accoya Wood

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Abstract: ***I studied ten research papers to check if Accoya Wood is the right choice for building The Bark Bar, a forest café near Kerwa Dam in Bhopal. All the studies show that Accoya is no ordinary wood—it's treated with acetylation, which makes it super strong, resistant to rot, and stable even in rain, heat, or damp soil. Long-term tests in Greece and New Zealand proved it can stay decay-free for over ten years, and other papers show it doesn't swell, crack, or warp with seasonal changes. This makes it perfect for outdoor decks, railings, furniture, and even small structural parts like pergolas. It's also eco-friendly and non-toxic, safe to use around trees, and needs very little maintenance while lasting much longer than regular hardwoods. These findings give me full confidence that Accoya is a tough, sustainable, and beautiful material that fits perfectly with a forest café designed to blend with nature and survive Bhopal's weather.***

Keywords: Forest-Integrated Architecture, Biophilic Design, Sustainable Materials, Accoya Wood, Electrochromic Glass.

I. INTRODUCTION

The Bark Bar is not imagined as just another café, but as a space where people can truly slow down and breathe. In cities, most cafés are full of noise, rush, and constant activity. People go there for coffee, but often leave with the same stress they came in with. The idea behind The Bark Bar is to give a completely different kind of experience—a café that is placed inside the forest, where nature itself becomes part of the design. Instead of changing the site, the café adapts to it. Seating decks are built around trees, reading corners are tucked into quiet spots, and a small performance area is designed for soft, acoustic music. The forest atmosphere—sunlight through leaves, natural breeze, and bird sounds—creates an environment that feels calm and healing.

The materials also play a very important role. Accoya Wood has been chosen because it is extremely durable, resistant to weather, and safe for the environment. It does not warp, rot, or get damaged easily, which makes it perfect for outdoor decks and seating in a forest setting. Electrochromic Glass adds a modern touch by controlling the light—reducing glare and heat during the day, while still keeping the views of the forest clear. So, The Bark Bar is not just a café to eat or drink. It is designed as a therapeutic space, where people between 18–45 years—students, professionals, creatives—can come to read, talk, listen to music, or simply enjoy silence. It is a place to reconnect with nature in daily life and to experience how design can become a part of healing.

II. LITERATURE REVIEW

1) Mantanis, Lykidis & Papadopoulos, 2020 | Polymers Journal: [Greek Field Test : 10 Years] – Stakes of Accoya placed directly in soil showed no visible decay even after a decade. Noted only a slight reduction in strength but no loss of stability.
2) Scion Forest Research Institute, 2011 | New Zealand Outdoor Study: Tested Accoya against teak, cedar, and preservative-treated pine. Accoya resisted decay better than all other species.
3) TRADA Report, 2016 | UK Case Study on Cladding: [Scottish Weather Test : 10 Years] – Accoya cladding exposed to harsh rain and frost showed almost no warping or cracking. Surfaces aged gracefully with very little maintenance. Supports its use for façades, railings, and vertical finishes in The Bark Bar.
4) Crawford, Hairstans, Alexander & Bongers, 2024 | Napier University, Scotland: Tested Accoya as laminated beams in outdoor wet conditions. High stability, less swelling and cracking than untreated wood. Confirms it can even be used for pergolas, canopies, or semi-structural supports in your design.
5) Springer Publication, 2015 | Service Class 3 Study: Focused on woods under direct rain/sun exposure. Accoya resisted fungal attack and moisture damage better than other timbers. Perfect for open-air café decks and exposed walkways at your site.
6) Papadopoulos et al., 2019 | Material Science Study: Measured seasonal swelling and shrinking. Accoya had extremely low movement compared to other woods. Ensures your café floors, tables, and counters remain flat and stable in Bhopal's rainy summers.

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7) Accsys Technical Report, 2018 | Sustainability & Lifecycle: Verified FSC certification, recyclability, and non-toxicity. Safe around tree roots and soil, made from fast-growing pine plantations. Aligns perfectly with your eco-sensitive, forest-integrated café vision.
8) Dutch Case Study, 2012 | Wetland Walkways: Accoya used in decking exposed to continuous wet–dry cycles. Stayed dimensionally stable without cracking. Suggests it will perform equally well for lakeside decks and outdoor platforms near Kerwa Dam.
9) Architectural Journal, 2020 | Façade Applications in Europe: Architects applied Accoya for façades in heritage and public buildings. Maintained structural integrity and natural aesthetics in different climates. Strong justification for Bark Bar's exterior identity and branding through Accoya façades.
10) WoodSolutions Australia, 2018 | Durability Report: Ranked modified timbers against tropical hardwoods. Accoya achieved highest ratings in durability, stability, and long-term cost-efficiency. Confirms it is the best long-term investment for a forest café project.

III. RESEARCH GAP

1) Lack of forest-based commercial cafés in India.
2) Minimal integration of responsive materials in semi-urban contexts.
3) Absence of detailed interior design-focused studies using Accoya + smart glass.

IV. PURPOSE

The purpose of this project is to design a café that blends hospitality with silence and nature, offering people a calm escape from urban noise. The Bark Bar aims to create a space where food, reading, and reflection happen in harmony with the forest, rather than against it. By using Accoya Wood for durable, eco-friendly construction and Electrochromic Glass for natural light control, the café demonstrates how commercial spaces can be sustainable, restorative, and emotionally healing.

V. METHODOLOGY

All ten studies on Accoya wood clearly show how tough and reliable this material is by testing it in real outdoor conditions and controlled lab setups. Mantanis and team (2020) buried Accoya stakes in Greek soil for a full decade and found no decay, only a slight drop in strength, while Scion researchers (2011) placed it next to teak, cedar, and treated pine in New Zealand and saw it resist rot and weathering far better than the rest. TRADA (2016) watched Accoya cladding face ten years of harsh Scottish weather with barely any warping, and Crawford et al. (2024) built glulam beams and tested them outside, proving they stayed stable with almost no swelling or cracking. Springer (2015) recreated extreme wet conditions and confirmed strong fungal resistance, while Papadopoulos et al. (2019) showed that Accoya barely swells or shrinks even with seasonal humidity changes. Accsys (2018) backed its eco-credentials through FSC certification and life-cycle tests, the Dutch Wetlands Board (2012) proved it could handle constant wet–dry cycles in decking, Architectural Journal (2020) highlighted its long-term beauty and strength in European façades, and WoodSolutions (2018) rated it the top performer among modified timbers for durability and low maintenance. Together, these findings make it clear that Accoya is perfect for *The Bark Bar*, where it can handle Bhopal's forest climate, outdoor decks, façades, and furniture while staying strong, stable, and environmentally safe for years.

VI. CONCLUSION

The Bark Bar redefines the idea of a café by creating a space that is not just about food and beverages but about healing, silence, and reconnecting with nature. Unlike conventional urban cafés that thrive on noise and speed, it emphasizes peace, reflection, and slow living within a forest setting. The use of Accoya Wood ensures long-lasting durability, eco-friendliness, and seamless integration with natural surroundings, while Electrochromic Glass adds comfort through smart light control without obstructing views of the forest. Together, these materials establish a balance between modern design and environmental sensitivity. With open decks, reading nooks, and acoustic performance corners, the café is designed to encourage mindful activities in a serene atmosphere. By respecting contours, minimizing land disruption, and adopting passive strategies, it promotes sustainability while offering a refreshing alternative to urban lifestyles. Ultimately, The Bark Bar stands as an example of how commercial architecture can inspire, restore, and coexist with nature in a meaningful way.

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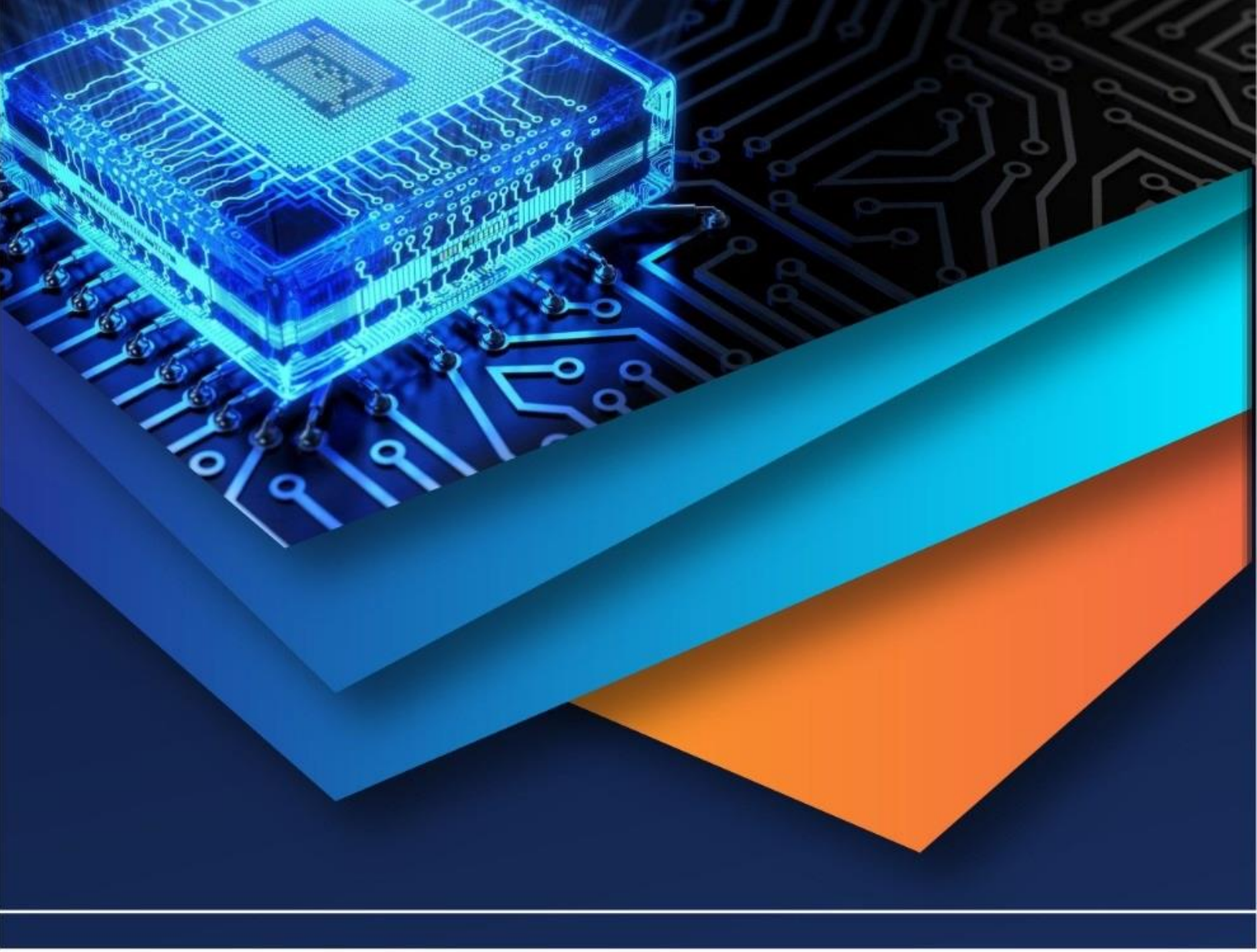
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