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PROSPECTS AND DESIGN TOOLS FOR ECO-INTERIORS IN TOURISM AND COMMERCIAL REAL ESTATE

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Abstract

The article is devoted to the analysis of prospects and design tools for eco-interiors in the fields of tourism and commercial real estate in the context of sustainable development and the ESG agenda. The study examines the concept and essence of eco-interiors, as well as the evolution of approaches to environmentally oriented interior design. Particular attention is paid to industry-specific features of implementing eco-interiors in tourism facilities and commercial real estate, with similarities and differences in goals, tools, and outcomes identified. Based on an analysis of contemporary academic research, the tools for eco-interior design are systematized, including biophilic design, environmentally friendly materials, sustainability standards, and smart technologies. The prospects for the development of ecological interior design are revealed, associated with the transition to post-carbon design models and the strengthening of an interdisciplinary approach. The article concludes that eco-interiors are playing an increasingly important role as a tool for creating sustainable, human-centered, and competitive spaces.

Keywords: *eco-interiors; sustainable design; biophilic design; tourism; commercial real estate*

Introduction

Over the past decades, the concept of sustainability (ESG) has become dominant in the context of socio-economic and spatial development, which is reflected, among other things, in the transformation of design and architectural practices. In this context, the greening of interiors has gained particular importance as a key element of the indoor environment of buildings, directly affecting quality of life, user behavior, and the environmental (carbon) footprint of real estate assets. The strengthening of the ESG agenda worldwide necessitates a reconsideration of approaches to interior design, as interiors are now evaluated not only from an aesthetic perspective but also functionally in terms of implementing principles of sustainability,

resource efficiency, and social responsibility (Cole & Hamilton, 2024).

It should be noted that for the tourism and commercial real estate sectors, eco-interiors acquire additional strategic significance. In tourism facilities, environmentally oriented interior solutions predetermine the formation of a positive user experience, enhance perceptions of spatial authenticity, and directly affect the attractiveness of properties for environmentally conscious consumers (Lee, 2023). In commercial real estate, particularly in office and public business spaces, sustainable interiors are widely recognized as a factor contributing to increased employee productivity, well-being, and the investment attractiveness of buildings (Gou, 2016). At the same time, the very concept of the ecological interior (or eco-interior) continues to evolve, encompassing the design of the indoor environment with consideration of biophilic principles, socio-psychological effects, the life cycle of materials, and the local context (Aristizabal et al., 2021; Ning et al., 2017). As a result, the eco-interior emerges as an interdisciplinary object, operating at the intersection of design, architecture, ecology, economics, and sustainable tourism.

In this regard, a systematic analysis of the prospects and tools for designing eco-interiors in the tourism and commercial real estate sectors is highly relevant, aimed at identifying general patterns, industry-specific features, and directions for the further development of this field. This provides a basis for formulating the research objective, which is to present contemporary tools for eco-interior design in tourism and commercial real estate and to substantiate the approaches and prospects for their application.

Methodology

The methodological framework of the study is based on a comprehensive interdisciplinary approach, incorporating methods of theoretical analysis, comparative research, and qualitative interpretation of academic sources. The study is focused on identifying the prospects and tools for eco-interior design in the tourism and commercial real estate sectors, taking into account contemporary concepts of sustainable development and ecological design.

The primary method employed was the analysis and synthesis of academic publications devoted to sustainable interior design, biophilic design, and the greening of tourism and commercial spaces. To identify industry-specific features, a comparative analysis was applied, aimed at contrasting approaches to eco-interior design in tourism facilities and commercial real estate. The comparison was conducted across several parameters, including the functional objectives of interiors, the environmental tools employed, the expected socio-economic effects, and the role of interiors in shaping user experience. In addition, a socio-technical approach was utilized, under which the eco-interior was conceptualized as a system of interrelated technical, social, and cultural elements.

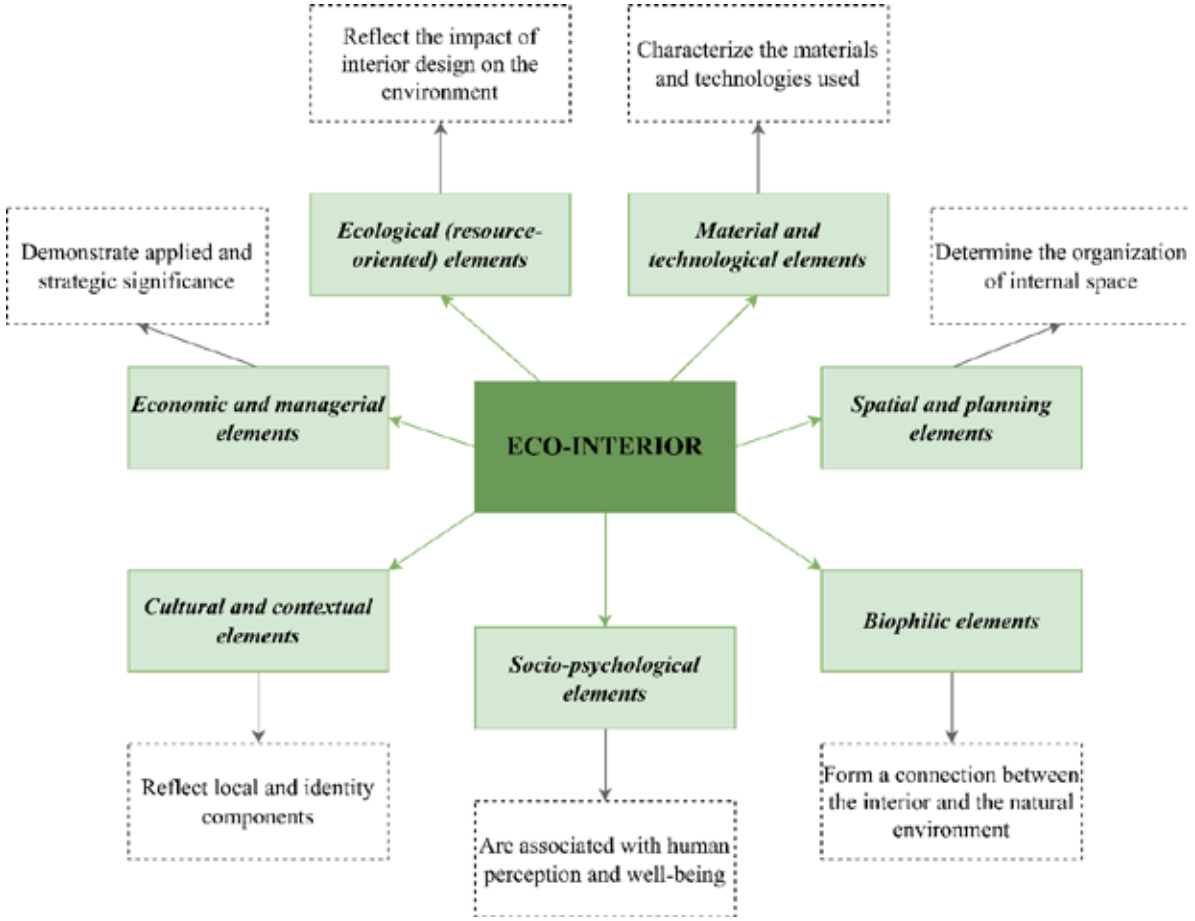
Result and Discussion

The concept of the eco-interior and its theoretical and practical boundaries are shaped in accordance with the principles of sustainable development, reflecting the aspiration to create indoor environments that ensure comfortable human interaction while minimizing negative impacts on the natural environment.

In its most general form, an eco-interior is defined as a system of spatial, material, and technological solutions aimed at the rational use of resources, the reduction of energy consumption, and the creation of a favorable indoor microclimate (Khan, 2024; Mustofa et al., 2023).

Predominantly, the essential characteristics of the eco-interior lie in its integrated nature (Figure 1), as eco-interior design entails consideration of the life cycle of interior elements, their potential for reuse, as well as the social and psychological effects of human interaction with ESG-oriented spaces. Contemporary literature acknowledges that traditional interior design was for a long time focused primarily on aesthetic and functional parameters, while environmental aspects were treated as secondary or optional (Ning et al., 2017). In contrast, modern approaches incorporate environmental criteria as system-forming elements at all stages of the design process, a shift that has driven the evolution of eco-interior design.

Figure 1. *Structural elements of the eco-interior*



Source: compiled by the author

The evolution of environmentally oriented interior design can be conditionally divided into several stages. At the early stage, attention was focused on isolated "green" solutions, such as the use of natural materials or energy-efficient lighting. Subsequently, the emphasis shifted toward sustainable interior strategies, which involved energy and water management, ensuring indoor environmental quality, and reducing the carbon footprint (Gou, 2016). It is important to note that ensuring the environmental performance of interiors is associated both with the implementation of optional design practices and with mandatory requirements established in different countries. In the latter case, this refers to the development of a regulatory framework for ecological design, including building codes, sanitary and hygienic standards, energy efficiency requirements for buildings, and sustainability assessment standards for the built environment. In many countries, the environmental performance of interiors is established through mandatory parameters related to air exchange, solar access, heat distribution, permissible levels of volatile organic compound emissions, and indicators of energy consumption. At the same time, voluntary certification systems (LEED, BREEAM, and WELL) are becoming increasingly widespread, setting higher environmental and social requirements and encouraging the adoption of a systemic approach to interior design within the framework of sustainable development.

In addition, a significant stage in the development of eco-interior design is associated with the dissemination of biophilic design, which is based on the integration of natural elements and nature analogues into indoor spaces. Existing research demonstrates that biophilic interiors have a positive effect on users' cognitive state, stress levels, and overall well-being (Aristizabal et al., 2021). At the same time, the contemporary eco-interior is increasingly shaped as a transitional phenom-

enon, as rapid technological development brings to the forefront the need to rethink designers' professional practices with a focus on long-term, verifiable environmental and social effects (Cole & Hamilton, 2024).

Given these considerations, it is necessary to examine the eco-interior and its specific features from the perspective of the tourism and real estate sectors.

In the tourism sector, environmentally oriented interiors function as an important component of the tourist experience, as the interior environment of tourism facilities directly influences emotional perception, levels of satisfaction, and the formation of an image of the property as being oriented toward sustainable development. Contemporary studies demonstrate that eco-friendly interior solutions enhance the attractiveness of hotels and restaurants by improving the indoor microclimate, visual comfort, and associations with responsible consumption (Lee, 2023).

Thus, one of the key features of eco-interiors in tourism is the widespread application of biophilic design (Figure 2), which is manifested in the integration of living plants, natural materials, the creation of natural lighting, and the use of water elements. These practices contribute to the formation of a sense of connection with the natural environment and are particularly in demand when tourist destinations are located in urban areas. Biophilic interiors have a positive impact on guests' emotional state and enhance perceptions of the tourism brand (Elshaer et al., 2025).

Figure 2. *Example of biophilic design application in tourism*

Source: https://www.sleepermagazine.com/stories/projects/rockwell-group-unveils-sustainable-interiors-for-1-hotel-toronto/

An equally important role in tourism interiors is played by the local context, which is based on the use of regional materials, craft traditions, and elements of cultural heritage, allowing for the creation of authentic environments and the differentiation of the tourism product. Materials characteristic of the local context may be employed (Figure 3). For example, the development of furniture for rural tourism facilities based on local resources is widely applied, which not only reduces environmental pressure but also strengthens the cultural identity of the space, making tourists' stays more memorable (Domljan et al., 2025).

On the other hand, since eco-design reflects alignment with the principles of sustainable development, important directions also include the reuse of materials, the creation of modular structures, and the application of durable solutions. Such interiors make it possible to integrate environmental responsibility, functionality, and creativity within a single conceptual framework (Mustofa et al., 2023).

Figure 3. *Example of using local materials in eco-interior design*

Source: https://www.tatlerasia.com/homes/architecture-design/nature-inspired-hotels-and-resorts-with-elements-of-biophilic-design

It should be noted that while eco-interiors in tourism are characterized by a focus on user experience, emotional impact, and authenticity, in the commercial real estate sector environmentally oriented interiors are primarily regarded as a tool for improving building operational efficiency and enhancing working conditions for occupants. Integral elements of such design include the provision of functional comfort and productivity.

According to existing assessments, "green" interiors in office buildings are associated with the implementation of technologies aimed at:

– reducing energy consumption;
– improving indoor air quality;
– increasing employee satisfaction;
– creating an efficient working environment;
– enhancing the image and investment attractiveness of real estate (Gou, 2016).

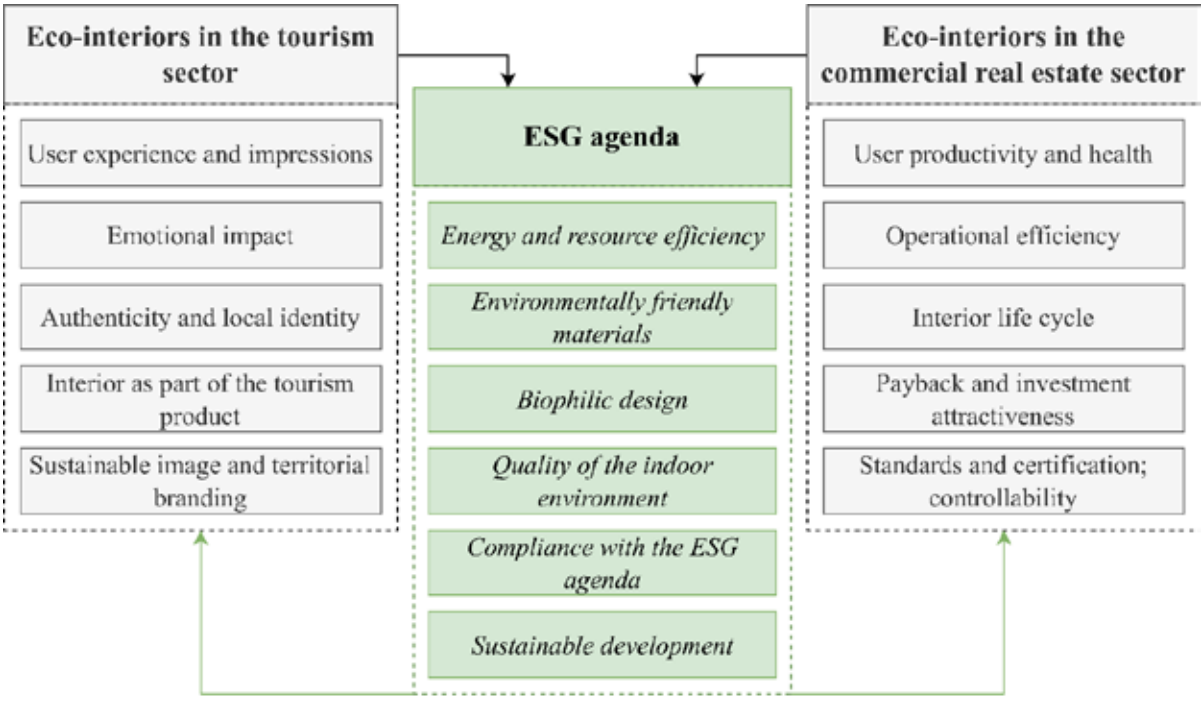
Interior design practice in commercial real estate in accordance with the principles of sustainable development predominantly relies on certification systems, which implies the application of green building standards (Ning et al., 2017).

Thus, a comparison of the tourism sector and commercial real estate makes it possible to identify both common features and fundamental differences (Figure 4). In particular, both sectors are united by a focus on reducing environmental impact, rational use of resources, and improving indoor environmental quality, and in each case the eco-interior functions as an element of ESG strategy and a factor of the competitiveness of properties.

At the same time, differences are manifested in functional priorities. In tourism, the ecological interior is aimed at creating a unique experience and emotional engagement of guests, often with an emphasis on local identity, spatial authenticity, brand characteristics, and related factors; thus, individualized and non-standard solutions tend to prevail. In commercial real estate, by contrast, primary importance is given to standardized indicators of productivity, operational efficiency, and return on investment, while environmental solutions are assessed primarily from the perspective of long-term economic feasibility.

Thus, in the context of the similarities and differences in eco-interiors in the tourism and commercial real estate sectors, it is important to consider the tools for their design (Table 1):

Figure 4. *Comparison of eco-interiors in tourism and commercial real estate*



Source: compiled by the author

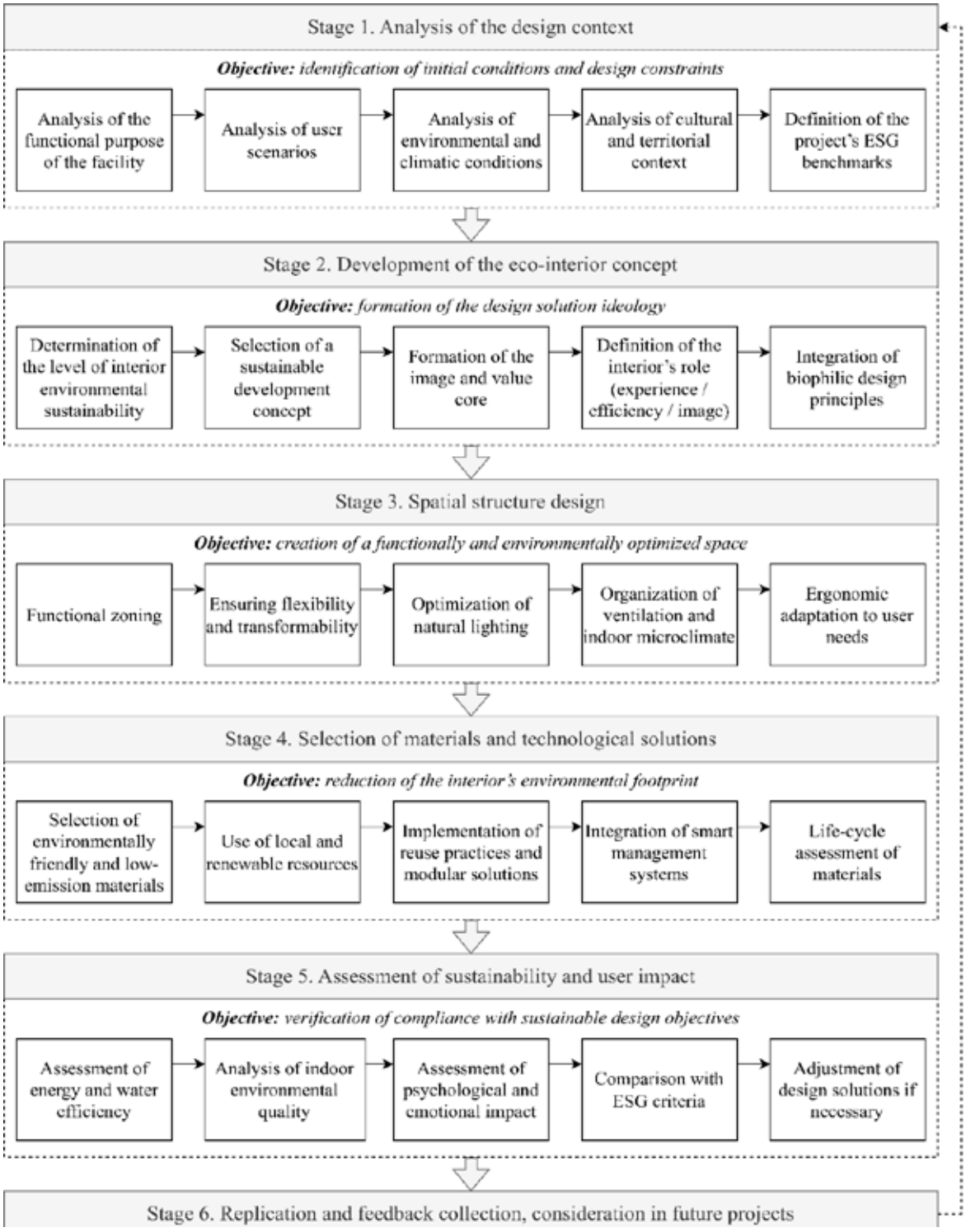
Table 1. *Tools for eco-interior design in tourism and commercial real estate*

Group of tools	Content and characteristics	Key effects	Priority area of application
Environmental standards and certification	Systems for assessing energy and water efficiency, indoor environmental quality, and the environmental performance of materials	Reduction of resource consumption, enhancement of sustainability and investment attractiveness	Commercial real estate, hotels
Biophilic design	Integration of living plants, natural materials, natural light, and water and multisensory elements	Improvement of user well-being, stress reduction, increased satisfaction	Tourism, offices, public spaces
Eco-friendly and local materials	Use of renewable, low-emission, and regional materials	Reduction of carbon footprint, support of local identity	Tourism, commercial real estate
Reuse and modularity	Adaptive and recycled structures, modular interior elements	Waste reduction, flexibility of space use	Tourism (restaurants, temporary facilities), offices
Smart interior technologies	Automated control of lighting, climate, and water consumption	Improved energy efficiency and operational control	Commercial real estate
Spatial adaptability	Universal layouts with multiple use scenarios, transformable zones, ergonomic solutions	Improved functionality and comfort	Equally applicable to both sectors

Group of tools	Content and characteristics	Key effects	Priority area of application
Cultural and contextual solutions	Integration of cultural heritage, regional motifs, and local design	Formation of authenticity and differentiation	Primarily tourism

Source: compiled by the author

Figure 5. *Universal methodology for eco-interior design*



Source: compiled by the author

In the context of applying the above tools, designers may rely on a methodology for eco-interior design (Figure 5):

The proposed methodology is aimed at shaping the eco-interior as an integrated design system in accordance with the principles of sustainable development, focusing on reducing environmental impact, improving indoor environmental quality, and creating human-centered spaces. The methodology takes into account the functional, environmental, socio-psychological, and cultural-contextual characteristics of tourism and commercial real estate facilities, as well as the requirements of the ESG agenda and the principles of sustainable development. The proposed sequence of stages is universal, ensuring the applicability of the methodology to different types of facilities and design scales; the cyclical nature of the methodology allows for the adjustment of design solutions based on user experience and long-term environmental effects.

Conclusion

Thus, the conducted study has made it possible to generalize contemporary approaches to eco-interior design and to identify their significance for the development of the tourism and commercial real estate sectors under conditions of sustainable development and the strengthening of the ESG agenda. In contemporary practice, the eco-interior is conceptualized as a system in which environmental, social, cultural, and economic design parameters are simultaneously implemented.

From a design perspective, the eco-interior functions as a tool for the deliberate shaping of space, oriented both toward visual expressiveness and toward the long-term effects of human interaction with the environment. In tourism, the eco-interior enables the creation of an authentic and emotionally rich user experience; in commercial real estate, the eco-interior becomes a factor in enhancing productivity, the quality of the working environment, and the investment attractiveness of buildings.

The results of the study confirm that the development of eco-interiors is associated with the expansion of the interdisciplinary nature of design, the implementation of digital and “smart” technologies, and the strengthening of the role of cultural and local context. The prospects of this field are driven by the transition to post-carbon design models, within which the interior designer becomes a participant in the transformation of urban and tourism environments. Accordingly, the prospects for the development of eco-interior design in the tourism and commercial real estate sectors are associated with:

— the integration of systemic and interdisciplinary approaches, under which the eco-interior is considered as an element of the transformation of tourism and commercial real estate, embedded within economic, social, and governance processes;

— the expansion of biophilic design, oriented toward multisensory engagement and the enhancement of user well-being in tourism and work environments;

— the strengthening of the role of socio-technical indicators for assessing the sustainability of interiors, which take into account user experience, economic effects, and managerial context alongside technical parameters;

— the development of practices related to material reuse, modular design, and the localization of interior solutions aimed at reducing environmental footprints and strengthening territorial identity;

— the transformation of professional education and design practice toward transitional interior design, oriented toward long-term environmental, social, and ESG objectives.

Thus, the eco-interior should be regarded as one of the key tools of contemporary design, contributing to the creation of spaces that simultaneously meet the requirements of environmental responsibility, social relevance, and aesthetic quality.

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