BOOK OF PROCEEDINGS

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ICBE 2026

MAY 08th-09th, 2026
POLIS University, Tiranë

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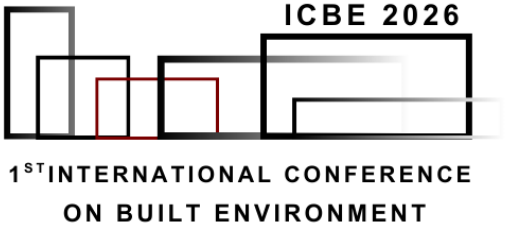
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1st International Conference on Built Environment

ICBE 2026

Conference Theme and Rationale

The 1st International Conference on Built Environment (ICBE 2026) was conceived as an international and interdisciplinary forum for advancing knowledge, critical discussion, and innovation across architecture, urban planning, engineering, construction, materials, design, and the wider built environment. Organized by POLIS University in collaboration with the National Agency for Scientific Research and Innovation in Albania (AKKSHI), the Academy of Sciences of Albania and the University of Ferrara in Italy, the conference brought together academics, researchers, practitioners, students, and industry representatives to exchange research findings, professional experience, and emerging perspectives on the transformation of contemporary cities and territories.

The conference theme reflected the increasingly complex challenges shaping the built environment, with particular attention to sustainability, resilience, technological innovation, heritage preservation, and socially responsive design. Contributions addressed sustainable architecture and green building, innovative construction technologies and materials, climate-responsive and energy-efficient design, disaster risk reduction, circular approaches to construction, and the integration of renewable energy. Equal emphasis was placed on digital transformation through Building Information Modeling, Geographic Information Systems, artificial intelligence, data analytics, automated solutions, digital fabrication, and advanced manufacturing.

ICBE 2026 also recognized that the future of the built environment cannot be approached through technological innovation alone. Urban transformation, cultural heritage, adaptive reuse, inclusive design, ecological thinking, art, and interdisciplinary research were therefore integral to the conference rationale. The scientific sessions examined topics ranging from seismic resilience, geotechnical engineering, and structural safety to urban fragmentation, public space, heritage conservation, adaptive environments, and new relationships between human and non-human systems.

Through keynote lectures, scientific presentations, case studies, and interdisciplinary debate, the conference encouraged connections between research and practice while promoting approaches capable of responding to environmental, social, cultural, and technological change. The breadth of contributions demonstrated the value of bringing engineering, architecture, urbanism, design, heritage, and emerging technologies into a shared academic framework for more resilient, sustainable, adaptive, and human-centered environments.

Held on 8-9 May 2026 at POLIS University in Tirana, with in-person and online participation, ICBE 2026 welcomed guest speakers and participants from Albanian and international universities, research institutions, professional organizations, and industry. Its sessions established a platform for presenting current research, exchanging expertise, strengthening meaningful collaboration, and identifying future directions for the built environment.

The event

The **1st International Conference on Built Environment (ICBE 2026)** is an interdisciplinary academic and professional forum dedicated to exploring contemporary challenges, emerging research, and innovative approaches shaping the future of the built environment. Bringing together researchers, academics, architects, engineers, urban planners, designers, practitioners, and industry professionals, the conference promotes the exchange of knowledge and encourages collaboration across traditionally interconnected disciplines. Its thematic scope encompasses sustainable and resilient construction, technological innovation, advanced building materials, urban transformation, cultural heritage, and interdisciplinary design approaches. Particular attention is given to the growing role of digital technologies, data-driven methodologies, intelligent design processes, and advanced analytical tools in supporting more informed and responsive approaches to architecture, engineering, and urban development. At the same time, ICBE 2026 recognizes the importance of environmental responsibility, cultural identity, social needs, and human-centered design in shaping contemporary cities and territories. Through keynote lectures, scientific sessions, case studies, and interdisciplinary exchange, the conference provides a platform for presenting current research, discussing professional experiences, and developing new perspectives capable of contributing to **safer, more sustainable, adaptive, inclusive, and resilient built environments**.

Objectives

- Promote interdisciplinary collaboration among researchers, academics, practitioners, and professionals in architecture, engineering, urban planning, construction, design, heritage, and related fields of the built environment.
- Advance the use of digital technologies and innovative methodologies, including BIM, GIS, artificial intelligence, data analytics, digital fabrication, and parametric approaches, in research and professional practice.
- Encourage sustainable, resilient, and climate-responsive approaches to architecture, construction, and urban development through innovative materials, energy-efficient strategies, and environmentally responsible design.
- Address contemporary challenges affecting cities, buildings, and infrastructure through scientific research, applied case studies, evidence-based approaches, and innovative design solutions.
- Promote the conservation, transformation, and adaptive reuse of cultural heritage, balancing cultural identity, contemporary needs, structural safety, and responsible urban development.
- Support human-centered and socially responsive urban transformation, considering public space, mobility, ecological systems, community needs, and the wider social and economic impacts of the built environment.
- Provide a platform for knowledge exchange and emerging research, enabling scholars, young researchers, professionals, and students to present innovative ideas, strengthen international collaboration, and contribute to future directions in the built environment.

Main Conference Themes

- Sustainable architecture and green building practices.
- Innovations in construction technologies and materials.
- Heritage preservation and adaptive reuse in the built environment.
- Digital tools and smart technologies in architecture and construction (e.g., BIM, GIS).
- Climate-responsive and energy-efficient design.
- Disaster risk reduction and resilience in the built environment.
- Circular economy approaches in construction and material usage.
- Integration of AI and data analytics in building design.
- Acoustic and thermal performance in building design.
- Renewable energy integration in building systems.
- Advanced manufacturing techniques in construction, such as 3D printing.
- Innovations in construction technologies and materials.
- Heritage preservation and adaptive reuse in the built environment.
- Disaster risk reduction and resilience in the built environment.
- Digital tools and smart technologies in architecture and construction.
- Advanced manufacturing techniques in construction.
- Geotechnical Engineering for Sustainable Development.
- Cartography and Geographic Information System.
- Computer Automated Solutions for Built Environment.
- Reliability in Civil Engineering.
- Urban planning strategies for resilient cities.
- Climate-responsive and energy-efficient design.
- Regulatory frameworks and policies impacting construction and urban development.
- Design in the Era of Anthropocene (Rethinking the Relation between Human and Non-Human Species)
- Speculative Design (with Attention to “Discursive” and “Critical” Design)
- Design and Cross-Disciplinarity (with Emphasis on Processes rather than Design Outputs)
- Inclusive Design
- Art and Urban Regeneration (Focus on Participatory, Collaborative, and Research-Based Practice)
- Relational Art and Architecture
- Monuments and ‘Anti-Monuments’ (Particular Attention to the Process of Designing and Building the City)

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The conference is structured around six thematic sessions, each addressing a specific area of research and practice within the built environment.
Each session is coordinated by experts in the relevant disciplinary field and is open to professors, researchers, PhD candidates, and other scholars and professionals contributing to the conference themes.

SESSION I
Urban Planning and Societal Impact

Chair: Dr. Gent Avdija

This session examines the relationship between urban transformation, spatial development, and their social implications within contemporary cities. Contributions address rapid urbanization, urban fragmentation, the transformation and loss of public space, informal and spontaneous development, and the challenges associated with balancing growth and modernization with human-scale urban environments. Particular attention is given to the evolving conditions of Albanian cities and to planning approaches capable of supporting more inclusive, sustainable, socially responsive, and livable urban environments.

SESSION II
Sustainable Materials, Resilient Construction & Smart Design

Chair: Dr. Endri Duro

This session explores innovative approaches to sustainable construction, resilient structural systems, and environmentally responsive design. Particular attention is given to sustainable materials, energy-efficient and climate-responsive strategies, prefabricated and lightweight construction technologies, and human-centered approaches to structural and architectural design. The session investigates how material innovation, technological development, and responsible design practices can contribute to safer, more efficient, adaptable, and environmentally sustainable built environments.

SESSION III
Technological Advancements and Seismic Design for Resilient Places

Chairs: Dr. Seyyed Behrad Emadi & Dr. Ornela Şen

This session examines the role of technological innovation and advanced engineering methodologies in developing safer, more resilient, and adaptable built environments. Contributions address seismic hazard and risk assessment, digital fabrication, parametric and computational approaches, transformations of building envelopes and prefabricated housing systems, and emerging concepts for future urban mobility. The session highlights how the integration of engineering knowledge, digital technologies, and resilience-oriented design can strengthen the capacity of buildings, infrastructure, and urban environments to respond to contemporary and future challenges.

SESSION IV

Cultural Heritage

Chairs: Dr. Nikolla Vesho & Dr. Marsela Demaj

This session addresses the preservation, interpretation, and transformation of cultural heritage within contemporary architectural and urban contexts. Contributions explore conservation strategies for historic buildings and sacred architecture, seismic assessment and strengthening of heritage structures, adaptive reuse, and the social implications of urban regeneration and heritage loss. Particular emphasis is placed on achieving a responsible balance between conservation ethics, cultural identity, structural safety, and the evolving functional requirements of historic buildings and urban environments.

SESSION V

Spaces of Connection: Art and Design for an Interspecies and Interdisciplinary Environment

Chair: Dr. Francesco Scasciamacchia

This session explores the intersections of art, architecture, design, technology, and the built environment through interdisciplinary and experimental perspectives. It investigates changing relationships between human and non-human systems, spatial perception, adaptive reuse, post-industrial landscapes, urban representation, digital heritage, and environmentally and socially engaged design practices. Through critical, speculative, participatory, and research-based approaches, the session examines how art and design can generate new forms of connection, reinterpret existing environments, and contribute to emerging cultural and spatial narratives within contemporary cities.

SESSION VI

Next-Generation Pioneers of the Built Environment

Chair: Dr. Flogerta Krosi

This session provides a dedicated platform for emerging researchers and students to present innovative, experimental, and forward-looking approaches to the built environment. Contributions span architecture, engineering, urban planning, environmental resilience, design, and related creative disciplines, reflecting the interdisciplinary character of a new generation of researchers and practitioners. Through projects addressing topics such as bioclimatic design, flood-risk management, structural technologies, architecture-inspired design, and critical interpretations of objects and social space, the session encourages critical inquiry, experimentation, and new perspectives on the future of the built environment.

Layout & Design:

Dr. Kristiana Meço

Msc. Erjon Çobani

POLIS University Contact:

Rr. Bylis 12, Autostrada Tiranë-Durrës, Km 5, Kashar

Kodi Postar 1051, Kutia Postare 2995

Tiranë, Albania

Tel: +355.(0)4.2407420 / +355.(0)4.2407421

Fax: +355. (0)4.2407422

Mob: +355 (0) 69 40 88 111

Email: contact@universitetipolis.edu.al

Website: www.universitetipolis.edu.al

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Spaces of Connection: Art and Design for an Interspecies and Interdisciplinary Environment

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Human and non-human environments: Interspecies design / Ecological relationships / Human–environment interaction / Alternative spatial narratives.

Critical and speculative approaches: Critical design / Speculative design / Spatial perception / Relational art and architecture.

H Adaptive and post-industrial environments: Adaptive reuse / post-industrial landscapes / Urban regeneration / Transformation of existing spaces.

Representation, heritage and material experimentation: Urban photography / Digital heritage interpretation / Textile upcycling / Material reuse / New cultural narratives.

In the Age of Material Transformation: Textile Design and Upcycling

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Armela LAMAJ
ORCID 0009-0009-0793-7983
POLIS University, Albania
armela_lamaj@universitetipolis.edu.al

Abstract

Is textile recycling a trend or has it become a necessity?

This study explores the relationship between textile design and upcycling. As an urgent need to transform the way of creation and production as a result of accelerating climate change. The material itself has now become a design project. From the invention of the first synthetic fibers, which were initially conceived as a strategy to preserve as many natural resources as possible. To the proliferation of synthetic materials that revolutionized industry, construction and design.

While these innovations previously brought important technical and aesthetic possibilities, they created other complex consequences on the environment. The production of materials continues to affect natural systems, even in cases where the use of natural fibers is not directly involved. In this study, design is not simply a discipline but a critical mediator, between material innovation and environmental responsibility. The role of this research is closely linked to pedagogy and the way in which the concept of upcycling should be presented in design education.

The aim is not to present sustainability as a limitation, but as a creative opportunity and as a necessary cultural attitude. Not seeing nature as an inexhaustible source of materials, but maintaining a reflective attitude towards the products they bring to the market.

Through the analysis and presentation of student projects developed in courses on form and material, the study compares two approaches: designing a project and then selecting the material, versus starting the creative process through the upcycling of the material itself. In this way, a pedagogical model is proposed where material awareness becomes an integral part of thinking and creating.

Keywords: *material, pedagogy, methodology, nature, synthetic*

1. TREND OR NECESSITY

In recent decades, the textile and design industries have undergone a profound transformation, driven by the acceleration of climate change and the growing pressure to adopt more sustainable practices. The linear production model - produce, use, discard -has proven unsustainable both environmentally and culturally.

In this context, upcycling emerges not only as a technical solution for waste reduction but as a conceptual framework that reconsiders how materials are perceived and used. The central question this study raises is: is upcycling a temporary trend or a fundamental shift in the way design is thought?

This article argues that upcycling should be understood as part of a broader transformation in which material is no longer a passive element but an active starting point in the creative process. In this way, the role of the designer shifts from an author who imposes form to a mediator who interacts with the material.

2. FROM MATERIAL TO CONCEPT

In the early stages of human history, the creation of clothing and textile objects was closely tied to the materials available in nature. Plant fibers, leather, and animal-based materials not only formed the material basis of production but also constrained and guided the creative process. In this context, material was not one choice among many but a fundamental condition that determined the form, function, and aesthetics of the product. As Tim Ingold argues, the process of making under these conditions should be understood as a continuous interaction between humans and materials, where form emerges from the act of working with matter rather than from a preconceived idea (Ingold, 2013). Material limitation in this sense, was not a constraint but a source of creativity.

With the development of industrial technology – especially the invention of synthetic fibers in the 20th century-this relationship began to change fundamentally. Artificial materials such as nylon and polyester were initially promoted as innovative alternatives that reduced dependence on natural resources and significantly expanded design possibilities. These materials introduced new flexibility in terms of performance, durability, and aesthetics, allowing designers to explore previously unimaginable forms and structures. However, this technological shift affected not only design outcomes but also how the creative process itself was conceived.

Gradually, a reversal occurred in the relationship between material and concept. Whereas previously material was the starting point, modern design became driven by abstract ideas that later sought appropriate materials for realization. In this way, neutral and interchangeable tool, subordinate to the designer's vision. Bruno Latour challenges this

separation by arguing that materials and objects are not passive but active participants in a network of production and meaning (Latour, 2005).

This disconnection between design and material has created a significant distance from natural systems, contributing to the current environmental crisis and unsustainable production methods. As Kate Fletcher emphasizes, the fashion industry has developed a culture in which materials are often perceived as infinite and readily available, losing connection with their origins and environmental impacts (Fletcher, 2014). From this perspective, rethinking the relationship between material and concept becomes essential for understanding and transforming contemporary design practices.

3. CONTEMPORARY DESIGN THEORIES AND MATERIAL STUDIES

Contemporary theories of design and material studies have significantly challenged the traditional perception of material as a passive element subject to the designer's will. Instead, they propose a more complex understanding in which material is considered an active agent in the creative process, capable of influencing decision-making, form, and outcome.

One of the most important approaches in the direction is Actor-Network Theory (ANT), developed by Bruno Latour, which argues that object, materials, and technologies and not merely tools but active partecipants in networks of relationships that shape reality (Latour, 2005). In this sense, material is not a neutral medium but a co-creator of the design process.

This perspective shifts the focus a hierarchical model-where the designer is. The sole author to a relational model in which the creative process result s from interactions among various actors, both human and non human.

Through its physical properties, constraints, and potentials, material guides the designer's decisions and influences the development of the project. Thus, design can no longer be understood as a linear process of imposing form but as an ongoing dialogue with matter.

Similarly, Tim Ingolt conceptualizes material as a process in continuous development rather than a finish enty. According to him, creation is not the application n of form onto matter but a process of "following the material", where form emerges through interaction with its properties and behavior (Ingold, 2013). In this sense, textiles are not simply stable surfaces or structures but dynamic systems that interact with the environment, the user, and time.

These theoretical approaches contribute to a profound reconceptualization of design. Material is placed at the center of the creative process, requiring designers to adapt a more sensitive and collaborative approach. This is particularly relevant in practices such as. Upcucling, where existing material-with its history and limitations-besomes the starting point of the project. In this light, design is no longer an act of control but a process of negation and co-creation with matter.

4. UPCYCLING AS A CULTURAL AND CRITICAL PRACTICE

Recycling, and more specifically upcycling, should not be understood merely as a technical

process of waste management, but as a complex practice that intertwines cultural, ethical, and aesthetic dimensions. In the field of fashion and textile design, it represents a direct challenge to the linear model of consumption – "produce, use, discard" by proposing an alternative cyclical approach in wich materials do not and their life cycle but are continuously transformed and reintegrated into new creative processes.

In this context, upcycling contributes to redefining how material value is understood. According to Kate Fletcher, sustainability in fashion is not only about selecting ecological materials but also about how we interact with them, how we use, maintain, and value them over time (Fletcher, Sustainable fashion and textiles: Design journeys, 2014)

This This perspective shifts attention from materials as a consumable resource to material as an entity with longevity and ongoing transformative potential.

Upcycling, in this sense, is not a compromise. Due to lack of resources but a conceptual choice that restores dignity and history to materials within the design process.

Beyond its functional aspect, upcycling can also be interpreted as a form of critical design. Dunne and Raby argue that critical. Design does not aim solely to create objects but to generate questions and reflections about existing system (Dunne, 2013)

In this sense, upcycling becomes a tool to challenge norms of consumerism and to question the idea of "newness" as an absolute value. By using discarded or used materials, upcycled design creates a tension between past and present, giving objects a narrative and critical dimension.

Another important dimension of upcycling is its connection to the circular economy, which promotes keeping materials in use for as long as possible while minimizing waste. According to the Ellen Mac Arthur Fondation, this approach requires not only technological change but also a cultural shift in how society perceives ownership, use, and the life cycle of products (Foundation, 2017). In this framework, upcycling becomes a practice that combines innovation with responsibility.

In conclusion, upcycling should be understood as a practice that goes beyond technical recycling, positioning itself as a cultural and critical act. It redefines the relationship between material, time, and value, transforming design into a reflective process that integrates aesthetics with ethics and creativity with responsibility.

5. UPCYCLING BETWEEN ART AND DESIGN

One of the most significant aspects of this study is the analysis of upcycling as a hybrid practice operating simultaneously within the fields of art and design, challenging traditional boundaries between these disciplines. In the artistic context, upcycling is often used as an expressive and conceptual tool, where material is not merely a medium but a carrier of meaning, history, and symbolism. The created object does not necessarily serve a practical function but aim to provoke critical reflection on consumption, waste, and the value of materials in contemporary society (Dunne, 2013).

In contrast, within design upcycling must balance conceptual dimensions with functional requirements and practical use. Here, material becomes a structural and performative element, requiring solutions that are both aesthetic and usable. As Fletcher notes, sustainable design demands not only innovation in materials but also their integration in ways that support long-term and responsible use (Fletcher, Sustainable fashion and textiles: Design journeys, (2014)).

In this light, upcycling creates an intermediate space where art and design intersect. It can function both as a form of critical artistic expression and as a concrete design strategy. This duality makes upcycling a powerful tool for rethinking the relationship between material, function, and meaning.

6. AS AN ART FORM

In art, upcycling becomes a powerful means of creative expression and conceptual reflection. Artist use recycle materials not only for their physical values but also for the history and symbolism they carry. Each reused object can tell a new narrative, linking the past with the present and challenging traditional perceptions of value and beauty. The artistic process is often experimental and open-ended, prioritizing ideas, messages, and emotional impact over functionality.

7. AS A DESIGN PRACTICE

In design, upcycling adopts a more functional and user-oriented approach. Recycled materials are treated as resources that must meet practical and aesthetic requirements. Designers aim to create durable, usable products that integrate into everyday life while balancing creativity and functionality. Here, structure, durability, and performance are as important as the conceptual idea.

While art and design pursue different goals in their use of upcycling, they share a common core: the. Creative transformation of material. Art focuses an meaning, symbolism, and communication, while design emphasizes usability and practical application. Despite these differences, both approaches are united by a shared philosophy-the restoration of value to discarded. Or forgotten materials.

8. ANALYSIS OF STUDENT WORK: MATERIAL–PRODUCT AND CONCEPT–PRODUCT CYCLES

Within the framework of this study, the students practical work was developed through two distinct methodological approaches, reflecting different ways of thinking and acting in design: the **material–product cycle** and the **concept–product cycle**. Both approaches were employed as pedagogical tools to explore not only the final outcome, but also the creative process as a form of knowledge production and critical reflection.

In the **material–product cycle**, students initiated the design process directly from the material itself, specifically by working with textile remnants sourced from the university's tent

structures. These materials, marked by prior use, exposure, and environmental conditions, were not treated merely as passive resources but as active agents in the design process. Through upcycling practices, students explored the transformative potential of the material by cutting, weaving, layering, and reconfiguring it in various ways.

Within this process, form was not predefined but emerged through direct engagement with the material. This generated a continuous interaction between artistic practice and design thinking, where decision-making was iterative rather than linear. Students developed textile surfaces characterized by different rhythms, textures, and structural variations, leading to outcomes that embody not only function but also material narrative and ecological awareness. In this case, the project does not conclude with a single fixed product; rather, it remains open-ended, allowing for further development and reinterpretation, particularly in relation to sustainability, craft, and cultural identity.

In contrast, the **concept–product cycle** was developed by starting from a clearly defined conceptual framework, inspired by the theme *"Biologic and Cybernetic World."* In this approach, the student first constructed a theoretical and visual narrative, exploring the relationship between biological systems and technological structures. This conceptual investigation was then translated into form through drawing, modeling, and systematic development of the product.

Material selection occurred at a later stage and was guided by the need to accurately express the initial concept. Form and function were developed in a more controlled and linear manner, following a structured design logic. The final product represents a synthesis of the original idea, where biological and cybernetic elements are integrated into a coherent and articulated formal language.

The comparison between these two approaches highlights important pedagogical differences. While the concept–product cycle strengthens the ability to structure and articulate ideas with clarity, the material–product cycle fosters material sensitivity and encourages an exploratory and experimental mode of thinking. In the first case, the design cycle is relatively closed and outcome-oriented; in the second, it remains open, enabling continuous expansion and reinterpretation.

These two experiences demonstrate that integrating both approaches in design education is essential for developing a balanced practice, where conceptual thinking and material intelligence coexist and inform one another.



Figure 1. Work by student Klea Tahiri created in the Fashion Design studio in Polis during the 2024-2025 academic year.



Figure 2. Work of first-year students at Polis, in the subject Study of Form and Material.

9. PEDAGOCICAL APPROACH

In contemporary design education, the learning process is often dominated by conceptual approaches, where students are encouraged to develop abstract ideas and then materialize them. While useful for structuring thought, this. Model often places material in a secondary role-as merely a means of realization rather than a source of knowledge and inspiration.

This study proposes a shift in this paradigm by placing material at the center of the pedagogical process. Instead of ideas always preceding form, material itself becomes the starting point of creation. This approach encourages students to directly engage. With textures, structures, durability, and the behavior of materials during transformation. Through this process, concepts are no longer fixed starting point but emerge from interaction with material.

Analysis of student projects reveal two main creative models: “Concept – Product” and “Materail-Product” . The latter proves more effective in developing deeper material awareness, as it fosters experimentation and discovery.

In this context, upcycling emerges as a particular valuable pedagogical tool. It compels students to work with existing, often imperfect materials, pushing them to find creative and innovative solutions. This process develops not only technical and aesthetic skills but also critical thinking about consumption, waste, and material life cycles.

Reconceptualize designer’s role.

The findings of this study suggest a profound reconceptualization of the designer’s role. Traditionally seen as a central author, the designer is now repositioned as. A mediator who. Collaborates with material. The creative process becomes a partnership, where material properties. Influence the evolution of ideas. This shift rapresents atransformation from “design as form” to” design as material process”. The focus moves from the final object to dynamic interaction and transformation of material.

Such a reconceptualization also. Demands a new. Ethical and ecological awareness. By viewing material as a partner rather than an infinite recourse, designers become more conscious of their environmental impact, fostering more responsible and sustainable practices.

10. CONCLUSION

Upcycling should not be understood merely as a temporary trend but as a deep structural transformation in how design is conceived, thought, and practiced. It redefines the relationship between materials, form and creative responsibility, shifting focus from the final product to the process of interaction with material.

Material is no longer passive but an active agent in decision-making. Design becomes a reflective and exploratory dialogue between ideas and matter.

From a pedagogical perspective, starting from material leads to deeper engagement and more grounded outcomes, while concept-driven approaches often remain more abstract. Upcycling acts as a bridge these approaches, encouraging a balance between creativity and material reality.

Ultimately, upcycling represents a new way of thinking about design- one that integrates aesthetics, ethics, and critical reflection into a more conscious and responsible creative practice.

11. SWOT ANALYSIS

Strengths

Repositions material as an active, supporting the shift from “design as form” to “design as material process”. Aligns with sustainability goals by reducing waste and extending material life cycles.

Encourage a reflective, experimental, and process-based approach to design. Bridges theory and practice by integrating material engagement into design thinking. Integrates aesthetics, ethics, and critical reflection into one design framework. Supports interdisciplinary connections between art and design.

Weaknesses

Dependence on existing materials limits predictability and full control over outcomes. Time-intensive and less efficient compared to industrial mass production Challenges in standardization, scalability, and repeatability. Requires adaptive material knowledge and adaptive technical skills.

May be perceived as niche, experimental, or non-mainstream. Inconsistent material quality can affect performance and durability.

Opportunities

Redefines design education through the “material-concept approach. Enables development of circular economy models in design practice. Opens new creative territories through hybrid practices (art + design). Increases ecological and social awareness among designer and users.

Supports innovation driven by constraints and material exploration. Encourages more responsible and ethical design methodologies.

Threats

Dominance of linear production systems and fast fashion industries. Risk of superficial adoption as a trend without conceptual depth. Greenwashing and commercialization of sustainability narratives. Limited industrial infrastructure for large-scale application. Cultural resistance to redefining value and aesthetics of reused materials. Economic pressures favoring speed, uniformity, and low cost over sustainability.

This SWOT analysis reinforces the central argument of the study: upcycling is not merely a technical strategy for waste reduction, but a paradigm shift in design thinking. Its strengths and opportunities highlight its role in redefining design as a material – driven, ethical, and reflective process. At the same time, its weaknesses and threats reveal the structural and cultural barriers that must be addressed for this transformation to move beyond experimental on niche practices into broader systemic change.

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