BIOMIMETIC, SUSTAINABLE, AND ACCESSIBLE ARCHITECTURE: A HOLISTIC DESIGN PARADIGM

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Abstract
Architecture in the 21st century is influenced by the convergence of three essential approaches: biomimetic design, sustainable design, and accessible design. Biomimetic architecture draws inspiration from natural systems, sustainable architecture primarily focuses on minimising ecological footprints, and accessible architecture aims to ensure inclusivity for all citizens, including individuals with disabilities. This paper investigates the connections between these paradigms and incorporates insights from experts in the field.

Eight professionals (n=8) with extensive knowledge on the subject participated in the study. As a result, a new holistic model of architectural design has emerged, promoting resilience, equity, and long-term urban sustainability. This comprehensive approach offers significant environmental, social, and economic benefits. To enhance the integration of these three architectural concepts, strategies include fostering closer collaboration among stakeholders, efficiently utilising technology, and providing tailored education. This study offers valuable insights for practitioners and academics, helping them improve architectural design to better meet the needs of all citizens.

Keywords: *Biomimetic architecture; sustainable architecture; accessible architecture; technologies in architecture; sustainability.*

1. INTRODUCTION

Contemporary architecture is called upon to respond to multiple challenges related to the environmental crisis, social inequality, and the need for innovative housing and citymodels. Thus, the traditional approaches to building design are being replaced by paradigms that embrace ecological sensitivity and social inclusivity. The key concepts of the biomimetic, sustainable, and accessible architectures are shaping 21st-century architectural design. Although at first glance they may appear as distinct domains, in reality, they converge toward a common goal: the creation of buildings and spaces that respect the environment, empower social groups, and incorporate the principles of universal design. Biomimetic architecture has its roots in biomimicry, a concept that was initially defined and popularised by J. Benyus (1997) book and refers to innovation inspired by nature, studying it in-depth and imitating or taking ideas to adopt them in designs and processes to solve human problems; the main objective of biomimicry is sustainability. Sustainable architecture focuses on minimising the building's negative environmental impact through the proper use of materials, energy, development space, and the ecosystem at large (‘green buildings’), and a crucial aspect of sustainable architecture is its social dimension (Course Hero, 2020; Ragheb et al., 2016).

Accessible architecture ensures that the built environment understands and responds to the diverse needs and abilities of all citizens, providing equal opportunities for persons with disabilities and other vulnerable groups, like children, elderly, pregnant women, and individuals with temporary impairments, among others (Singh & Saxena, 2023). This paper argues that the convergence of these three approaches is essential for the development of buildings and cities that are environmentally and economically viable, and socially equitable.

The above three concepts and their linkage were examined through discussions with eight experts (n=8) from various relevant fields. These experts brought a diverse range of perspectives and insights, which contributed significantly to the understanding of the topics at hand. Their collective knowledge and experience allowed the researchers to uncover valuable insights that can inform future research and practice.

The study's findings clearly highlight the importance of adopting a holistic approach that incorporates all three architectural types to achieve greater sustainability. By prioritising this approach, we can secure significant social, environmental, and economic benefits. Collaboration among all stakeholders, a focus on advanced technologies, and an emphasis on education related to these three types of architecture are essential for success.

Practitioners, policymakers, and academics will enhance their knowledge and understanding by engaging in collaborative research, sharing best practices, and accessing a variety of resources, and they can make more effective decisions and drive meaningful change in society.

2. LITERATURE REVIEW

Biomimetic, sustainable, and accessible architecture provides innovative solutions that greatly benefit everyone. The three concepts and their relationships will be presented briefly below.

Biomimetic Architecture

Biomimicry combines the Greek words ‘bios’, meaning life, and ‘mimesis’, meaning imitation. It refers to innovations inspired by nature, where one can study nature in depth and get ideas to design solutions for human challenges. Biomimicry serves as a bridge between ecology and innovation, with the primary goal of promoting sustainability (Benyus, 1997). The use of biomimicry is crucial for enhancing building efficiency and conserving energy. The Eastgate Centre in Harare, Zimbabwe, designed by Mick Pearce, is a notable example where termite mounds inspired passive cooling solutions, delivering up to 90% energy savings compared to conventional buildings (Turner & Soar, 2008). Similarly, the BIQ House in Hamburg employs microalgae façades, mimicking ecosystem dynamics for energy production (Speck et al., 2017).

The application of biomimicry as a design process falls into the following two categories: i) defining human need or a design problem and looking to biology to solve this, and ii) biology impacting design, identifying a specific characteristic, behaviour, or function and implementing this into human designs (Guild, 2007). In addition, designers can get ideas from organisms, behaviours, and the whole ecosystem. Finally, the following five possible dimensions from nature can be mimicked: a) its appearance (form), b) its composition (material), c) the method of its creation (construction), d) how it operates (process), and e) its capabilities (function) (Pedersen Zari,2007). It is crucial to replicate the role of an organism within the context of its broader ecosystem (Reap et al., 2005). This organism experiences the same environmental conditions as humans, understands the carrying capacity of its specific habitat, and knows how to thrive within the limits of energy and materials available (Pedersen Zari, 2007). The construction behaviour of these organisms is known as 'animal architecture' (Hansell, 2005), and humans, as effective ecosystem engineers, can learn from them to

enhance the well-being of ecosystemsand people, rather than their power, prestige or profit (Pedersen Zari, 2007). Eco-conscious architects, builders, and designersare focusing more on biomimicry as nature with 3.8 billion years of innovation, it may offer the following benefits: 1) energy efficiency and conservation; 2) water management and conservation; 3) improved air quality; 4) sustainable material sourcing; 5) reduced carbon footprint; 6) resilience to natural disasters; 7) enhanced aesthetic appeal; 8) connection to nature (biophilia); and 9) biodiversity support (A360 architects, nd).

Therefore, the benefits of biomimicry are important, and it serves as a tool to enhance the sustainability of human-designed products, materials, and the built environment (Biomimicry 3.8, 2021).

Sustainable Architecture

Sustainable architecture emphasises designing and constructing buildings and cities that minimise environmental impact while also providing social and economic benefits. This is achieved through energy efficiency, the use of renewable materials, and ensuring harmony with the surrounding ecosystem. In the last years, the terms eco architecture, green architecture, sustainable architecture, and, more recently, resilient architecture have been widely used (Donovan, 2018). The main characteristics of sustainable architecture include the following: 1. Energy efficiency; 2. Effective waste management; 3. Use of recycled and natural materials in construction; 4. Buildings that promote a superior indoor environment; 5. Efficient use of water; 6. Attention to design and orientation; 7. Incorporation of green roofs; 8. Integration with the surrounding environment; 9. Effective use of technology; 10. Adoption of more efficient systems; 11. Utilisation of natural lighting; and 12. Focus on durability (Mutuli, 2025).

Initially, applying sustainable architecture, significant environmental benefits are expected. In particular, sustainable buildings reduce carbon footprint and energy use (The AEC Associates, 2025), achieve more efficient use of materials and resources (Romero, 2024), water conservation and waste reduction (Nixon, 2024), and biodiversity, urban heat island, and ecosystem preservation (Auroma Architecture, 2024). The social benefits include a sense of safety through the design of safe spaces, increased flexibility by creating areas that can adapt over time, active participation by users or residents in decision-making, and the availability of shared spaces that promote socialisation (Lami & Mecca, 2021). In addition to enhanced safety and protection, factors such as comfort (thermal, visual, and ventilation), spatial organisation, spatial adaptability, and easier maintenance are emphasised. These elements are crucial for improving the user's quality of life (Nenadović & Milošević, 2022) and contribute to greater user satisfaction (Oberfrancová & Wollensak, 2021). Green roofs enhance place attachment, social well-being, and the collective identities of the frequent visitors to these locations (Nguyen Dang et al., 2022). Green buildings help raise awareness of relevant practices from an ideological standpoint, aim to establish benchmark projects, encourage the rapid adoption of green building methods, and enrich people's green lifestyles. These factors can lead to greater long-term benefits for society as a whole, which are important for the growth of the regional economy. In terms of cultural benefits, green buildings make people feel a sense of higher achievement, as well as increased livability, convenience, and comfort(Zhao et al., 2023).

Regarding the economic benefits of green buildings, Leisa (2021) noted that while green buildings may have slightly higher initial costs, the long-term savings from reduced energy consumption, maintenance, and operating expenses, along with increased marketability in terms of rents and occupancy rates, render them economically appealing. A study analyzed 33 LEED-certified buildings across California and found that, on average, green buildings cost only about 2% more to construct than conventional buildings. Over 20 years, the financial

benefits of these green buildings outweighed their initial costs by a factor of 10, resulting in average net savings of $49 to $79 per square foot. The sources of these savings included reduced energy consumption, lower water expenses, enhanced productivity, and decreased operations and maintenance (O&M) costs. Interestingly, in the workplace context, the most significant economic benefit came from improved worker productivity and reduced absenteeism, rather than just energy savings (Kats et al., 2003). The U.S. Department of Energy, through the Federal Energy Management Program (FEMP) (2003), presented a strong case for incorporating sustainable design into federal building projects. It points out that strategies like energy-efficient systems, water conservation, and improved indoor environmental quality deliver substantial economic and operational advantages over the lifetime of federal facilities. Thus, lower operating costs, limited maintenance and replacement costs, improved asset value, enhanced employee productivity, and significant life-cycle cost savings are among the economic benefits of green buildings.

Consequently, sustainable architecture provides substantial benefits and should be prioritised.

Accessible Architecture

Accessible architecture involves the thoughtful design and organisation of the built environment to ensure that everyone can use it equitably, safely, and independently, regardless of their physical, sensory, or cognitive abilities. This approach is based on the principles of Universal Design, which aims to maximise usability and participation while minimising barriers and the need for specialised adaptations (Mace, 1985; Steinfeld & Maisel, 2012; Preiser & Ostroff, 2001). The application of universal accessibility standards—such as ramps, appropriately sized elevators, tactile paving for people with visual impairments, and ergonomic solutions—is not merely a technical detail but a fundamental element of social justice. In more detail, inclusive design effectively tackles essential elements such as colour, lighting, and room arrangements to ensure spaces are accessible to all, irrespective of gender, size, age, or disability. This comprehensive approach is recognised as Universal Design (Prasoon, 2023).The basic principles of accessible architecture include the following: a) Universal Design; b) physical accessibility; c) sensory considerations; d) easy wayfinding and orientation, e) wide implementation of ergonomics and user comfort; f) inclusive social spaces; and g) ongoing engagement and consultation (Chicago Architecture Center, nd).

Accessible architecture not only provides substantial social benefits but also offers important economic advantages. These include higher occupancy rates and increased property values, and in workplace settings, accessible design can attract a diverse range of tenants and employees (Prasoon, 2023), leading to improved employee productivity and reduced absenteeism (Story et al., 1998). Additionally, accessible architecture can reduce long-term costs by minimising the need for future modifications or retrofits, enhancing building value, marketability and user satisfaction (Story et al., 1998). Buildings that are more accessible contribute to smoother operations, reduce the need for staff assistance, and enhance the overall user experience. These advantages result in measurable operational savings and foster a positive public perception (Steinfeld & Maisel, 2012). Finally, they can lead to greater loyalty in service-oriented facilities such as airports, universities, and hospitals (Zallio & Clarkson, 2021).

Identifying the real needs of individuals with various disabilities and incorporating them into buildings and urban environments is essential (Poli & Malagas, 2024, a). Adopting a more holistic approach that maps the user journey during the design phase, along with gathering and evaluating user feedback after occupancy, are complementary strategies that may enhance the design process by incorporating principles of inclusion, diversity, equity, and accessibility in the built environment (Zallio & Clarkson, 2021). Consequently, the

active involvement of all groups of citizens is required to provide a more accessible environment.

The Relationship between Biomimetic, Sustainable, and Accessible Architecture

The three architectural types can be integrated to create a comprehensive framework that meets both ecological and social needs, resulting in inclusive and resilient built environments, while also considering economic benefits.

The following table 1 presents the common issues of the three architectural types.

Table 1. Common Features: Biomimetic, Accessible, and Sustainable Architecture

Aspect	Biomimetic Architecture	Accessible Architecture	Sustainable Architecture	Common Goal
Human-Centered Design	Draws inspiration from nature to enhance human life	Focuses on the needs of all users, without exclusion	Creates healthy, comfortable, and balanced living environments	Human well-being and comfort
Adaptability	Adapts to the environment, climate, and ecosystems	Adjusts to the individual needs and abilities of each user	Promotes flexible design based on environmental and social conditions	Dynamic response to both natural and human needs
Sustainability	Mimics natural processes to minimize resource consumption	Designs for durability and long-term usability	Utilizes eco-friendly materials and energy-efficient systems	Balance between humans, nature, and resources
Inclusion & Universality	Reflects the cooperation and harmony found in nature	Ensures equal opportunities for access and participation	Promotes social and environmental equity	Holistic design for all
Innovation & Technology	Applies natural patterns through advanced technologies	Employs assistive and ergonomic systems	Integrates green technologies and renewable energy sources	Smart and responsible buildings

Source: constructed by authors

Importantly, the chosen architectural style must address the extreme conditions primarily caused by climate change. Two key factors that can encourage the implementation of specific types of architecture are the role of technology in providing valuable services both within and outside the home (Ding et al., 2023; Poli et al., 2023; Poli & Malagas, 2024, b) and the importance of education. Education plays a vital role in shaping students' understanding of universal principles and design, as well as fostering a mindset that values accessibility and inclusivity for all (Busby & Harrison, 2018).

Therefore, these three types of architecture can be combined to promote an inclusive, human-centred, and ecologically balanced architectural vision — one that aligns innovation, sustainability, and social responsibility.

3. METHODOLOGY

Qualitative research is a method of inquiry that seeks to understand human experiences, behaviours, and interactions by exploring them in-depth within their natural contexts, and often employing interviews, observations, and textual analysis to generate rich, descriptive data (Creswell & Poth, 2018; Denzin & Lincoln, 2018). Within this framework, an interview is a qualitative data collection method where a researcher asks participants open-ended questions to reveal their experiences, opinions, or perspectives on a specific topic (Brinkmann & Kvale, 2015). To gather reliable information, eight participants (n=8) with extensive experience engaged in a discussion about the examined issue with the lead researcher of the study. The group included an architect, an architect with mobility challenges, a social scientist, an economist, an ecology researcher, a professor of architecture, a high-ranking manager from a municipal organisation, and a representative for individuals with mobility issues.

4. THE STUDY'S FINDINGS

Initially, all the participants agreed that the concepts of biomimicry, sustainable, and accessible architecture are well interrelated and may provide useful solutions to current challenges, offering a holistic model of architectural practice, leading to higher sustainability. These three concepts correspond closely with certain United Nations Sustainable Development Goals (SDGs), specifically SDG 10 (Reduced Inequalities) and SDG 11 (Sustainable Cities and Communities). Cities and buildings designed under this triadic framework are better equipped to address climate resilience, demographic shifts, and equity challenges. For instance, eco-friendly housing that is both energy-efficient and universally accessible simultaneously addresses environmental and social sustainability. The intersection of these three approaches reveals a new architectural paradigm that views housing and public space not simply as constructions but as integrated systems of interaction between people, nature, and society. The economic impact of this comprehensive framework should not be overlooked. While the initial costs may be higher, the potential savings and the ability to meet the diverse needs of different groups, alongside the social benefits, provide significant economic advantages. All participants noted that spaces outside buildings, such as pavements, squares, public amenities, and public transport, could benefit from services based on the three types of architecture. They pointed out that these outdoor areas play a crucial role in the overall urban experience and can significantly enhance community interaction and accessibility, and improve the quality of life for residents and visitors alike. The chosen architectural design must take extreme physical phenomena into account. The collaboration between public and private sectors, along with an appropriate regulatory framework, can significantly strengthen the connection among these three types of architecture. By fostering effective partnerships, stakeholders can leverage resources, expertise, and innovative solutions to enhance the design, functionality, and sustainability of architectural projects. The widespread adoption of technology can enhance the integration of three types of architecture. Specifically, virtual reality (VR) and augmented reality (AR) enable architects and clients to visualise and experience designs before construction begins, improving decision-making and user engagement. Additionally, 3D printing, AI, and machine learning contribute to design optimisation, energy efficiency analysis, and predictive maintenance, resulting in smarter and more sustainable buildings. Furthermore, the use of smart materials and green technologies promotes eco-friendly and energy-efficient architecture.

The architecture professor emphasised the importance of education, which should place greater focus on integrating the three types of architecture in the design of buildings and outdoor spaces, including more social and economic perspectives. Finally, the individual with

mobility challenges requests greater involvement in the planning and decision-making process for the building and surrounding areas.

5. DISCUSSION AND CONCLUSIONS

Biomimetic, sustainable, and accessible architecture provides innovative solutions that greatly benefit everyone. Thus, biomimetic architecture offers innovative frameworks inspired by natural systems, promoting efficiency, adaptability, and regenerative design principles. Sustainable architecture provides the environmental and material basis for enduring designs while minimising ecological footprints.Accessible architecture ensures that the proposed designs are inclusive, equitable, and responsive to diverse human needs, integrating universal design as a core value rather than a post-design adaptation.When combined, these approaches form a holistic architectural paradigm that aligns technological innovation with ethical responsibility. This integration not only advances the aesthetic and functional dimensions of design but also reinforces architecture's role as a catalyst for social inclusion, environmental stewardship, and cognitive well-being. In addition to the building design, outdoor spaces such as pavements, squares, public buildings, and public transportation are essential and should draw inspiration from the three types of architecture examined.

Adopting a holistic approach that integrates the three architectural types examined in this study promotes the achievement of numerous Sustainable Development Goals (SDGs) established by the United Nations for the benefit of all (U.N., nd). In addition to the environmental and social benefits, the economic advantages are also significant, ranging from energy savings to increased efficiency, job creation, and long-term cost reductions for businesses and citizens alike. Consequently, implementing a holistic approach that incorporates the three types of architecture results in greater sustainability and should be applied effectively. The technology of smart materials, AI, and machine learning offers valuable solutions for architecture. Technology provides valuable services to manage extreme physical events such as earthquakes with early warning systems (Poli & Malagas, 2025) and severe weather conditions. Additionally, smart devices enhance independence and safety both inside and outside the home (Poli et al., 2023; Poli & Malagas, 2024, b). Education at all levels is essential for promoting specific types of architecture, incorporating relevant issues into their curricula, and hiring qualified teaching staff. The close cooperation of all stakeholders—such as governments, policymakers, educational institutions, professionals, and communities with specific needs—is essential for promoting architectural design that respects all citizens and the environment, while also delivering significant social and economic benefits.

In conclusion, adopting a holistic approach that encompasses biomimetic, sustainable, and accessible architecture requires the cooperation and active involvement of all stakeholders, along with contributions from technology and the educational system. This framework should be emphasised as it greatly promotes sustainability by providing substantial environmental, social, and economic benefits.

6. LIMITATIONS OF THE STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH

Future research should further explore interdisciplinary methodologies—drawing from neuroscience, environmental psychology, and digital design tools—to develop measurable frameworks that assess how biomimetic principles and accessibility guidelines can co-evolve within sustainable systems. By deepening these intersections, architects and designers can move beyond conventional practice toward an architecture that is not only inspired by nature

but also designed for all people and future generations. In this study, participants from Greece provide a general overview of the subject under examination. However, this could be considered a limitation of the research. Applying this study to other environments and countries while incorporating local characteristics would be beneficial for future research. Additionally, increasing the number of participants and/or utilising quantitative methods may provide more insights.

References

A360 architects (nd). *9 Benefits of Biomimicry Architecture for Sustainable Design*. https://a360architects.com/benefits-of-biomimicry-architecture-for-sustainable-design/

Auroma Architecture (2024, December 5). *The Concept of Sustainability in Architecture: Meaning, Principles, & Core Features*. https://www.auromaarchitecture.com/post/sustainability-in-architecture?utm

Benyus, J.M. (1997). *Biomimicry: Innovation inspired by nature* (1st ed.). New York: Morrow. ISBN: 0-688-13691-5.

Biomimicry 3.8. (2021, August). *Introduction to biomimicry: Why practice biomimicry?* (Version 6). Course handbook.

Brinkmann, S., & Kvale, S. (2015). *InterViews - Learning the Craft of Qualitative Research Interviewing* (3rd edition). Sage Publications.

Busby, K., & Harrison, J. (2018). Universal Design in Architectural Education – Community Liaison on 'Live Projects'. *Studies in Health Technology and Informatics*, *256*, 205-213 PMID: 30371476.

Chicago Architecture Center (nd). *Accessible Architecture*. https://www.architecture.org/online-resources/architecture-encyclopedia/accessible-architecture

Course Hero (2020, October 16). *Green building.docx - Top examples of sustainable architecture around the world*. https://www.coursehero.com/file/70713441/green-buildingdocx/

Creswell, J.W., & Poth, C.N. (2018). *Qualitative Inquiry and Research Design – Choosing Among Five Approaches* (5th edition). Sage Publications.

Denzin, N. K., & Lincoln, Y. S. (2018). *The Sage Handbook of Qualitative Research* (5th edition). Sage Publications.

Ding, D., Morris, L., Messina, K., & Fairman, A. (2023). Providing mainstream smart home technology as assistive technology for persons with disabilities: a qualitative study with professionals. *Disability and Rehabilitation: Assistive Technology*, *18*(7), 1192-1199. doi: 10.1080/17483107.2021.1998673 PMID: 34752169.

Donovan, E. (2018). *Traversing sustainable architecture: Between discourse and practice* [Doctoral dissertation, Aarhus School of Architecture]. Aarhus School of Architecture.

Guild, B. (2007). *Innovation inspired by nature work book*. Biomimicry Guild.

Hansell, M. (2005). Animal Architecture. Oxford University Press.

Kats, G., Alevantis, L., Berman, A., Mills, E., & Perlman, J. (2003). *The costs and financial benefits of green buildings: A report to California's Sustainable Building Task Force*. California Sustainable Building Task Force. https://www.usgbc.org/sites/default/files/Cost_of_Green_Full.pdf

Lami, I. M., & Mecca, B. (2021). Assessing Social Sustainability for Achieving Sustainable Architecture. *Sustainability*, *13*(1), 142. https://doi.org/10.3390/su13010142

Leisa, G. (2021). The economic strategy of green building's: A short review. *Journal of Economics and Economic Education Research*, *22*(S6), 1-2. https://www.abacademies.org/articles/the-economic-strategy-of-green-building-a-short-review-1533-3604-25-S6-262.pdf

Mace, R. (1985). Universal design: Barrier free environments for everyone. *Designers West*, *33*(1), 147–152.

Mutuli, I. (2025, October 21). *Sustainable Architecture: History, Characteristics, and Examples*. ARCUTE. https://www.archute.com/sustainable-architecture/

Nenadović, A., & Milošević, J. (2022). Creating Sustainable Buildings: Structural Design Based on the Criterion of Social Benefits for Building Users. *Sustainability*, *14*(4), 2133. https://doi.org/10.3390/su14042133

Nguyen Dang, H.-A., Legg, R., Khan, A., Wilkinson, S., Ibbett, N., & Doan, A.-T. (2022). Social impact of green roofs. *Frontiers in Built Environment*, *8*, 1047335. https://doi.org/10.3389/fbuil.2022.1047335

Nixon, S. (2024, June 20). *What Are The Benefits Of Sustainable Architecture?* Ecolifewise. https://ecolifewise.com/what-are-the-benefits-of-sustainable-architecture/?utm

Oberfrancová, L., & Wollensak, M. (2021). Architectural design quality and social sustainability in building certification systems. *Architecture Papers of the Faculty of Architecture and Design STU*, *26*(1), 15–22. https://doi.org/10.2478/alfa-2021-0015

Pedersen Zari, M. (2007). Biomimetic approaches to architectural design for increased sustainability. In Proceedings of *SB07 New Zealand: Transforming Our Built Environment* (Paper No. 033). Victoria University of Wellington. https://www.irbnet.de/daten/iconda/CIB6560.pdf

Poli, M., & Malagas, K. (2024, a). Disabled People and Sustainable Cities – A Beneficial Relationship. *1st Open-Air Cities International Conference "Local & Regional Sustainable Development and Urban Reconstruction"*, Harokopio University of Athens, February 16th-18th, 2024, Athens & Journal of Sustainable Development, Culture, Traditions, 1a(2A), 7-17. DOI: 10.26341/issn.2241-4002-2024-1a-1-T02049.

Poli, M., & Malagas, K. (2024, b). Smart Cities and Advanced Technologies for the Tourist Experience of Disabled People in the Greek Mediterranean Zone. In: *Landscapes Across the Mediterranean – Multidisciplinary Considerations in Landscape, Infrastructure, Architecture, and Resource Management Conference*, University of Reggio Calabria (UNIRC), Italy, 11-13 December.

Poli, M., & Malagas, K. (2025). The Contribution of Early Warning Systems and Sustainable Architecture to Social Resilience Achievement. *NiDS 2025*, September 24th -26th, Athens, Greece (proceedings in progress).

Poli, M., Malagas, K., Nomikos, S., Papapostolou, A., & Vlassas, G. (2023). An Overview of the Impact of the Food Sector "Intelligent Packaging" and "Smart Packaging". *European Journal of Interdisciplinary Studies*, *15*(1), 120-134. http://doi.org/10.24818/ejis.2023.09

Prasoon (2023, January 19). *The Importance of Inclusive & Accessible Architecture*. Prasoon Design. https://www.prasoon.design/the-importance-of-inclusive-accessible-architecture

Preiser, W. F. E., & Ostroff, E. (Eds.). (2001). *Universal design handbook*. McGraw-Hill.

Ragheb, A., El-Shimy, H., & Ragheb, G. (2016). Green Architecture: A Concept of Sustainability. *Procedia - Social and Behavioral Sciences*, *216*, 778–787. https://doi.org/10.1016/j.sbspro.2015.12.075

Reap, J., Baumeister, D., & Bras, B. (2005). Holism, biomimicry and sustainable engineering. In Proceedings of the *ASME International Mechanical Engineering Congress and Exposition* (Orlando, FL, United States). American Society of Mechanical Engineers.

Romero, E. (2024, August 16). *Top Benefits of Using Eco-Friendly Materials in Architecture*. Illustrarch. https://illustrarch.com/articles/architectural-sustainability/29964-benefits-of-using-eco-friendly-materials-in-architeture.html?

Singh, V., & Saxena, S. (2023). Designing for accessibility: Creating inclusive spaces in architecture. *International Journal of Architectural Design*, *12*(5), 1255-1271. https://doi.org/10.21275/SR23515094417

Speck, T., Speck, O., Beheshti, N., & McIntosh, A. (2017). Biologically inspired resilient materials for building construction: Principles and case studies. *Bioinspiration & Biomimetics*, *12*(6), 061001. https://doi.org/10.1088/1748-3190/aa95bb

Steinfeld, E., & Maisel, J. (2012). *Universal design: Creating inclusive environments*. Wiley.

Story, M. F., Mueller, J. L., & Mace, R. L. (1998). *The universal design file: Designing for people of all ages and abilities*. North Carolina State University, Center for Universal Design.

The AEC Associates (2025, January 23). *The Principles and Benefits of Sustainable Architecture*. https://theaecassociates.com/blog/benefits-of-sustainable-architecture/?

Turner, J. S., & Soar, R. (2008). Beyond biomimicry: What termites can tell us about realizing the living building. In the *First International Conference on Industrialized, Intelligent Construction* (pp. 1–8). Loughborough University.

U.N. (United Nations) (nd).*The 17 Goals*. Department of Economic and Social Affairs - Sustainable Development. https://sdgs.un.org/goals

U.S. Department of Energy, Federal Energy Management Program (2003). *The business case for sustainable design in federal facilities*. U.S. Department of Energy. https://www.energy.gov/sites/default/files/2013/10/f3/business_case_federal.pdf

Zallio, M., & Clarkson, P. J. (2021). Inclusion, diversity, equity and accessibility in the built environment: A study of architectural design practice. *Building and Environment*, *206*, 108352. https://doi.org/10.1016/j.buildenv.2021.108352

Zhao, W., Peng, P., Guo, B., Deng, X., & Wu, W. (2023). Comprehensive Social, Cultural and Economic Benefits of Green Buildings Based on Improved AHP–FCE Method. *Buildings*, *13*(2), 311. https://doi.org/10.3390/buildings13020311