

Summaries

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SCENARIO-BASED FACILITY PLANT DESIGN STRATEGIES FOR POST-INDUSTRIAL COASTAL AREA TRANSFORMATION: A DECISION SUPPORT FRAMEWORK FOR SUSTAINABLE URBAN LANDSCAPE AT İZMİR PORT, TÜRKİYE

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Keywords: post-industrial landscape, İzmir Port, plant design strategies, Analytic Hierarchy Process (AHP), scenario-based design, urban ecological transformation

The transformation of post-industrial coastal areas holds critical potential for sustainable urban development, yet planting design decisions in this process are largely based on qualitative and subjective principles. Particularly in coastal cities, the revitalisation of defunct port zones constitutes a main focal point of urban landscape restructuring. However, there remains a significant gap in systematic, ecology-prioritised plant design methodologies tailored for coastal industrial heritage areas.

This study aims to develop a scenario-based, quantitative decision support model for multifunctional plant design in the post-industrial transformation of İzmir Port, Türkiye. Instead of managing design as a purely intuitive exercise, the approach encapsulates ecological, social, and economic priorities into a structured decision-making framework. The objective is to establish an integrated workflow that prevents arbitrary decisions and provides transparent, repeatable strategies for urban ecological transformation.

The methodology integrates site-specific data obtained through SWOT analysis, based on field observations, with the Analytic Hierarchy Process (AHP). An expert panel performed pairwise comparisons of six key criteria: Ecological Suitability, Social Use Potential, Aesthetic Quality, Feasibility/Cost, Industrial Heritage Protection, and Green Infrastructure Connectivity. The AHP results revealed that Ecological Suitability (0.3319) received the highest priority, followed by Green Infrastructure (0.1946) and Aesthetic Quality (0.1946), confirming the central role of nature-based solutions in the region's transformation.

Using these criterion weight distributions, four distinct plant design scenarios were developed and systematically compared. Scenario 1 (Ecological Maximisation) prioritises native salt and wind-tolerant species, bioswales, and pervious surfaces. Scenario 2 (Social-Aesthetic Focused) emphasises shade trees and sensory plants for user interaction, while Scenario 3 (Cultural Heritage Focused) integrates grey-green species and Corten steel planters with industrial relics. Scenario 4 (Economic-Feasibility Focused) tests low-cost, modular, xeriscape species and portable systems for budget-limited interventions.

The proposed SWOT-AHP-Scenario framework successfully translates subjective planning factors into a transparent, quantifiable process. For the specific context of

İzmir Port, the Ecological Maximisation strategy is recommended as the primary approach, with complementary integration of social and cultural elements from other scenarios. Ultimately, this research provides an adaptable methodological contribution and functional strategy for similar post-industrial coastal transformation projects.

MAX ROSENFELD AS ARCHITECTURAL EDUCATOR: TRANSLATING CZECHOSLOVAK FUNCTIONALISM INTO NEW ZEALAND DOMESTIC PRACTICE

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Keywords: functionalism, architectural dissemination, architectural communication, émigré architects, New Zealand architecture, Max Rosenfeld

This paper examines the work of Max Rosenfeld (1902–1985), a Czechoslovak-trained architect who emigrated from Czechoslovakia to New Zealand in 1939, and argues that his contribution to post-war domestic architecture was realised primarily through publication and architectural communication rather than through a substantial body of built work. While the histories of émigré architects have traditionally focused on professional practice, architectural production, and individual buildings, Rosenfeld's career demonstrates the importance of considering alternative forms of architectural activity operating through dissemination, education, and public engagement.

The study situates Rosenfeld within the broader context of interwar Czechoslovak modernism, where architectural ideas circulated not only through buildings but also through journals, exhibitions, technical publications, and public debate. Functionalist principles associated with rational planning, standardisation, environmental responsiveness, and social reform were disseminated through a rich culture of architectural communication. This context is important because it informed Rosenfeld's later activities in New Zealand, where publication became the principal site of his architectural practice.

Following his immigration to New Zealand in 1939, Rosenfeld encountered many of the professional obstacles experienced by émigré architects, including the limited recognition of overseas qualifications and restricted opportunities for architectural commissions. At the same time, he entered a housing culture in which the vast majority of domestic buildings were designed and constructed without direct architectural involvement. Post-war suburban expansion increased demand for affordable housing while creating a significant gap between architectural expertise and everyday building practice.

Within this context, Rosenfeld developed a distinctive mode of architectural communication. Between 1949 and 1965 he authored more than 800 instalments of The Home Architect Page in The Weekly News, one of New Zealand's most widely circulated publications. Through reader submissions, design advice, technical guidance, and illustrated proposals, the column addressed homeowners and builders directly. Rather than promoting modernism as an aesthetic programme, Rosenfeld introduced practical principles of planning, construction economy, environmental performance, and spatial organisation in forms accessible to non-professional audiences.

The paper also examines Rosenfeld's series of house-plan books published between 1951 and 1973. Across thirteen editions and more than 600 designs, these publications expanded and systematised ideas first developed through the newspaper column. The books combined architectural instruction, construction guidance, environmental advice, and adaptable house plans, enabling readers not only to understand architectural principles but also to apply them in practice. The availability of working drawings further extended the books beyond representation into the realm of construction, creating an alternative mechanism through which architectural expertise could circulate within New Zealand's builder-led housing culture.

Drawing on archival research undertaken in New Zealand, Slovakia, and the Czech Republic, the paper argues that Rosenfeld's significance extended beyond the popularisation of modernist ideas. Rather than simply transmitting architectural knowledge,

he translated professional design principles into practical frameworks capable of operating within local social, economic, and material conditions. His work demonstrates how modern architectural ideas could be adapted through processes of migration, dissemination, and cultural translation.

The study further argues that Rosenfeld functioned as a cultural mediator, translating principles derived from interwar Czechoslovak functionalism into forms suited to everyday housing production in post-war New Zealand. Unlike contemporaries such as Ernst Plischke and Henry Kulka, whose influence operated primarily through professional practice and built work, Rosenfeld developed a distributed model of architectural practice based on publication, pedagogy, and public engagement. Through newspapers, plan books, drawings, diagrams, and working drawings, architectural knowledge was made accessible to audiences operating beyond conventional professional networks.

More broadly, the paper contributes to discussions surrounding émigré architects, the global circulation of modernism, and the role of publishing within architectural history. It suggests that the history of modern architecture cannot be understood solely through buildings and authorship but must also account for the infrastructures of communication through which architectural ideas were transmitted, adapted, and incorporated into everyday building practice. Rosenfeld's career demonstrates that publication could function not merely as a vehicle for representation but as a form of architectural practice in its own right.

LANDSCAPE AS A STRUCTURING FRAMEWORK FOR URBAN DEVELOPMENT: RESEARCH-BY-DESIGN COMPARISON OF ZONING-ORIENTED AND LANDSCAPE-ORIENTED PLANNING IN NITRA, SLOVAKIA

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Keywords: landscape-oriented planning, research by design, statutory planning, blue-green infrastructure, nature-based solutions, urban resilience, post-socialist city

Contemporary cities face increasing pressure from climate change, biodiversity loss, landscape fragmentation, urban expansion, and growing demands on land. These pressures reveal limits in planning approaches based mainly on functional zoning and fixed land-use boundaries. Zoning remains important for regulating development and providing legal certainty, but ecological processes, water systems, public-space networks, and transitions between urban and non-urban areas often cross these boundaries.

Landscape architecture and spatial planning increasingly understand landscape as a connected and multifunctional system. Landscape urbanism, landscape infrastructure, landscape ecology, green infrastructure, blue-green infrastructure, and nature-based solutions emphasise relationships between ecological processes, water systems, public space, infrastructure, and urban development. Their translation into statutory municipal planning, however, remains less clear.

This study examines this issue through an exploratory case study of Nitra, Slovakia. The city combines a historic core, post-war development, suburban growth, agricultural land, the Nitra River, and the Zobor Massif. The research compares the current statutory Land-Use Plan of the City of Nitra with the landscape-oriented study *Maturing Nitra*, developed through research by design. The aim is to examine how landscape-oriented planning can complement statutory zoning rather than replace it.

The research combines a focused theoretical review, qualitative analysis of planning documents, research by design, and a structured comparison. The empirical material includes the current Land-Use Plan, the Analysis of the Valid Land-Use Plan, ecological-stability documents, relevant Slovak planning legislation, and the *Maturing Nitra* study. Research by design explored spatial relationships through mapping, spatial analysis, and scenario development at regional, city, and local scales.

The two planning approaches were compared using eight criteria: spatial continuity, ecological connectivity, the urban-landscape relationship, integration of public spaces, adaptability and resilience, multiscale relationships, blue-green infrastructure, and landscape as a structuring framework for development. A qualitative three-

point scale indicated whether each principle was absent, partially present, or strongly expressed. The assessment compares the expression of selected landscape-oriented principles, not the overall quality of the two planning systems.

The analysis shows that landscape is already recognised in Nitra through ecological-stability systems, watercourses, forests, agricultural land, vegetation, open spaces, and environmental regulations. However, these elements are only partly connected with development, mobility, public space, and long-term spatial change. Landscape therefore often operates as a protected or sectoral layer rather than as a framework that actively structures urban development.

Research by design produced five main findings. The urban-landscape interface can be understood as a gradual transition rather than only as a fixed boundary. Fragmented landscape elements may contain relationships relevant to future reconnection. Landscape structures can help inform the configuration and limits of development. Local spatial conflicts are often linked to processes operating at wider scales. Planning categories and language also influence which spatial relationships become visible and can affect later planning decisions.

The comparative assessment showed a stronger expression of most landscape-oriented principles in the research-by-design concept, especially spatial continuity, transition zones, multiscale relationships, blue-green infrastructure, and the use of landscape to guide development. This does not demonstrate the general superiority of landscape-oriented planning. The statutory plan has legal force and provides regulatory certainty, while research by design can more freely explore relationships across functional boundaries. The findings therefore support a complementary approach.

Possible implementation routes include a city-wide landscape framework, urban-landscape transition zones, connected blue-green infrastructure, landscape-informed development areas, stronger coordination across municipal and regional scales, and the use of research by design during plan preparation. Implementation would require clear planning mechanisms, reliable spatial data, institutional cooperation, financing, and monitoring.

The main contribution of the study is both methodological and practical. It provides a transparent framework for comparing two planning approaches and shows how research by design can reveal spatial relationships that may remain less visible in conventional zoning. The study is limited by its single-case design, the author's involvement in the landscape-oriented concept, the qualitative scoring system, the absence of independent inter-rater validation, and the lack of post-implementation evaluation. Within these limits, the planning challenge is not to replace zoning, but to combine its regulatory strengths with a broader understanding of spatial relationships, continuity, and change.

ENHANCING COMFORT AND ENERGY EFFICIENCY IN BUILDINGS: A SYSTEMATIC REVIEW OF DOUBLE SKIN FAÇADE PERFORMANCE

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Keywords: occupancy comfort, double skin façade, sustainable building, passive design, energy efficiency

This study presents a systematic review of double skin façades (DSFs) and their role in improving building energy efficiency, thermal comfort, and environmental performance. DSFs consist of two façade layers separated by an air cavity, which acts as a thermal buffer and ventilation channel. By regulating solar heat gain, reducing heat loss, and enhancing natural ventilation, DSFs contribute significantly to sustainable building design.

The review analyses 80 studies published between 2019 and present using a PRISMA-based methodology. The literature demonstrates that DSFs can reduce building heating and cooling energy demands by approximately 15–59%, depending on climate conditions, façade configuration, ventilation strategy, and design parameters. Key performance factors include cavity width, glazing type, shading devices, building orientation, and airflow management.

Six primary DSF typologies are identified and evaluated: box-window, corridor, shaft-box, double-glazed glass façade (DGGF), multi-story, and curved façades. Box-window systems provide strong thermal performance but often face economic challenges due to high construction costs and long payback periods. Corridor façades show potential for both energy savings and wind energy harvesting. Shaft-box systems achieve high energy savings in temperate climates but raise fire safety concerns related to smoke propagation. DGGFs demonstrate excellent insulation and ventilation performance, reducing heat gains and losses significantly. Multi-story façades offer substantial energy savings in high-rise buildings, while curved façades improve ventilation and aerodynamic performance through optimised geometry.

The review highlights the strong influence of climate on DSF effectiveness. Temperate and Mediterranean climates generally achieve the highest performance improvements, whereas hot climates require careful control of overheating risks. Advanced technologies such as smart controls, adaptive shading systems, phase-change materials, and renewable energy integration further enhance DSF performance.

Despite their benefits, DSFs face several challenges. Current research lacks standardised performance assessment methods, making comparisons between studies difficult. Many studies rely heavily on simulation tools with limited long-term experimental validation. Economic feasibility remains uncertain in some contexts due to high installation and maintenance costs. Additional concerns include overheating, fire safety, and the need for more comprehensive life-cycle assessments.

The study concludes that DSFs are a highly promising solution for sustainable architecture, capable of improving occupant comfort, reducing energy consumption, and supporting climate-responsive building design. Future research should focus on long-term operational performance, smart adaptive façade technologies, renewable energy integration, standardised evaluation frameworks, and holistic sustainability assessments to maximise the effectiveness of DSF systems in future buildings.