Paskuqan Lake's Regeneration as a Pathway for Decentralizing Traffic and Revitalizing Tirana's Urban Fabric

Integrating Heritage, Ecology, and Mobility in Albania's Capital

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Abstract - *Tirana, the capital of Albania, faces severe traffic congestion due to its monocentric structure and rapid population growth (reaching 925,000 by 2023), with critical arteries handling over 20,000 vehicles daily and an average commute time of 45 minutes, exacerbating environmental degradation and declining quality of life. Focusing on the Paskuqan Lake area as a key case study, this research explores innovative urban restructuring strategies to alleviate congestion. Historically, Paskuqan Lake served as an agricultural irrigation hub and later evolved into a workers' settlement during industrialization, offering underutilized low-density housing and vacant factories for functional revitalization. However, current population density disparities—800 inhabitants/km² in the hollowed core versus 1,500/km² in peripheral informal settlements—and reliance on cross-city commutes (75% of workers) intensify congestion on Rruga e Elbasanit. To address this, the study proposes a tripartite strategy: extending a new boulevard to the lake to form a north-south axis (diverting 20% of traffic), creating a green corridor along the lakeshore (8m² of green space per capita) with adaptive reuse of industrial heritage for eco-housing and cultural hubs, and integrating tramlines, buses, and shared mobility to reduce commutes to 25 minutes while boosting local employment by 40%. Projections indicate a population density increase to 2,500/km² within a decade, attracting young families and remote workers, synergizing with Shkoza's riverside development and Kombinat's industrial revival to establish Tirana's polycentric network. The findings demonstrate that the Paskuqan Lake initiative—combining heritage revitalization, ecological resilience, and mobility innovation—provides a replicable paradigm for high-density cities to overcome monocentric challenges while balancing cultural identity and sustainable growth.*

Keywords - Traffic mitigation; Polycentric development; Paskuqan Lake; Industrial heritage; Mobility integration

Introduction

Urban transportation is a critical infrastructure supporting socioeconomic development and residents' quality of life. However, rapid global urbanization, marked by concentrated populations and economic activities, has made traffic congestion a central challenge to sustainable development (Handy, 1999, p. 108.; Mcmanus, 1999, p. 35). Tirana, the capital of Albania, epitomizes this struggle in the Balkans. Since the 1990s, its population has surged from under 300,000 to 925,000 by 2023 (INSTAT, 2023), with annual private vehicle growth rates of 12%, while infrastructure and planning lag severely. Critical arteries endure daily traffic exceeding 20,000 vehicles, average commute times of 45 minutes, and worsening air pollution, reflecting a systemic crisis rooted in monocentric urban structures. Historical planning legacies—such as Armando Brasini's 1926 radial road network—have entrenched a "core-periphery" divide (Pojani, 2010, P.483), exacerbated by inadequate public transit and green infrastructure, forcing overreliance on private vehicles (Pantoleon, 2017, p.81).

Globally, cities are adopting innovative strategies to decentralize functions. Polycentric models disperse urban nodes to reduce cross-city commutes (Hoornweg et al., 2011 P.207; Li, 2019, p.100), while smart mobility systems optimize efficiency, and sustainable transit policies—such as bus prioritization and walkable networks—curb emissions (Lee, 2024, p.7924).

Theoretically, Kevin Lynch's "urban imageability" emphasizes legible paths and nodes, Christopher Alexander's "semi-lattice" advocates functional overlap, and Jan Gehl's "human-centered design" prioritizes walkability (Lynch, 1960; Alexander, 1965; Gehl, 2006). Yet, existing studies often focus on singular dimensions, neglecting the integration of historical revitalization, ecological restoration, and mobility synergy.

This study addresses this gap through the Paskuqan Lake area, Tirana's western gateway. First, it traces the area's evolution from an agricultural hub (pre-20th century) to an industrial enclave (1950s), highlighting underutilized factories and low-density housing as spatial assets. Second, GIS heatmaps quantify current population stratification (800 inhabitants/km² in the hollowed core vs. 1,500/km² in peripheral informal settlements) and commuting patterns (75% cross-city employment), revealing their impact on Rruga e Elbasanit's congestion (20,000 vehicles/day).

Finally, a tripartite strategy is proposed: extending a new boulevard to form a north-south axis (diverting 20% of traffic), creating a lakeside green corridor (8m² green space per capita) with adaptive reuse of industrial heritage for cultural hubs and eco-housing, and integrating tramlines with a MaaS (Mobility as a Service) platform to reduce commutes to 25 minutes.

Employment growth was estimated by applying a land-use elasticity approach: of the 43 ha of industrial wasteland, 70% is adaptable, with adaptive reuse for cultural and creative industries projected to generate 30–40 new jobs per hectare, consistent with Kombinat's cultural park performance. This yields a potential 40% increase in local employment relative to the current 2,500 jobs (Baumgardner, 2019, p.136).

This research not only charts a path for Tirana to reconcile historical identity with ecological resilience but also advances a polycentric framework for high-density cities. Future work must address climate adaptability (e.g., flood risks) and social equity (e.g., affordable housing quotas), while exploring rural-urban linkages (e.g., integrating Ndroq's agricultural markets) to enhance systemic resilience. Through cross-scale collaboration and dynamic monitoring, the Paskuqan initiative may emerge as a model for Global North cities navigating monocentric legacies.

Historical Dimension: From Agricultural Settlement to Industrial Enclave

The history of the Paskuqan Lake area dates back to the Ottoman Empire, when its low-lying terrain and abundant water resources established it as a vital agricultural irrigation hub west of Tirana. Late 19th-century cadastral maps reveal scattered family-based villages (e.g., Vaqarr, Paskuqani) around the lake, sustained by wheat cultivation, olive groves, and livestock. This self-sufficient economy fostered a low-density, decentralized spatial structure, with a population density below 200 inhabitants/km². (see Figure 1: Master plan 1939/1943). The mid-20th century marked a transformative era under Albania's socialist industrialization drive. Leveraging its proximity to Tirana, Paskuqan was designated a light industrial base. In 1952, the Stalin Textile Factory (Kombinati Stalin) was constructed, accompanied by worker dormitories, schools, and community centers, forming a self-contained "factory-village complex". The architecture, characterized by functionalist principles, featured prefabricated concrete frameworks and sawtooth-roofed factories, while residential zones adopted rigid grid layouts, embodying the utopian ideals of collective socialist living (see Figure 2: project in 1950s Albania: the birth of the textile complex). By 1975, the population density surged to 2,000 inhabitants/km², solidifying Paskuqan's role as a key industrial satellite city, though its mono-functional economy fostered heavy reliance on cross-city commuting.

Current Challenges: Post-Industrial Decline and Monocentric Dependency

Following the 1990s regime collapse, state-owned factories shuttered, plunging Paskuqan into structural decline. Vacant factories became ruins, while informal economies emerged: workshops occupied abandoned buildings, and residents expanded homes haphazardly, creating a fragmented urban fabric. This grassroots adaptability revealed community resilience but also underscored the consequences of planning neglect, setting the stage for future regeneration challenges. By 2023, the lake's core area had a density of 800 inhabitants/km², while peripheral informal

settlements (e.g., near Sharra Lake) reached 1,500/km², reflecting a paradoxical "hollowed core and swollen periphery" dynamic (see Figure 3: 2023 Paskuqan Population Density Heatmap). Vacant factories occupy 70% of industrial land, with only 30% repurposed as small workshops or storage facilities, while 60% of residential units are dilapidated dormitories and 30% are unregulated self-built extensions (Nepravishta, 2015, p.1237).

Transportation epitomizes Tirana's monocentric crisis: 75% of Paskuqan's workforce commutes daily to the city center via Rruga e Elbasanit, a corridor handling over 20,000 vehicles daily with a peak congestion index of 2.4 (1.0 being free-flow conditions) (Transport Ministry Report, 2023). Centralized public services—hospitals and schools—force residents to cross districts, compounding traffic pressures. Although the renovation project of Paskuqan Lake Park in 2024 added 10,000 trees and 8 kilometers of walking trails in attempt to enhance the region's attractiveness through ecological restoration, its potential as a public space has not yet been fully realized. Although land transactions around the lake are active (average price 42 euros per square meter), the lack of unified planning has led to fragmented development, and the coexistence of high-end residential projects and low-income communities continues to deepen (Latreille et al., 2024, p.102407).

This dual tension between space and socio-economics actually reveals the unique potential of Paskuqan in the contemporary urbanization process. Grimshaw's master plan pointed out that of the 43 hectares of industrial wasteland in the area, 70% of the factory structures are still adaptable to transformation, and the restoration of the lake ecosystem can connect the Tirana River Green Corridor to build a "blue-green infrastructure network" at the urban scale. At the same time, grassroots innovations in informal settlements - such as small workshops or community farms opened in abandoned factories - suggest the possibility of bottom-up regeneration (Aritenang, 2025, p.10585). However, unclear property rights, lack of funds and lack of governance are still the key bottlenecks restricting its transformation, and it is urgent to break through through policy intervention and community participation.

Future Prospects: Synergizing Ecology, Heritage, and Mobility

1. Industrial heritage revitalization and cultural economic empowerment

The core of Paskuqan's regeneration lies in transforming the industrial heritage of the socialist period into a cultural and economic driving force. Vacant factories such as the Stalin Textile Factory are not only material remains, but also carriers of collective memory. Drawing on the transformation experience of the Bovisa Industrial Zone in Milan (Moro, 2022, p.36) and the Zollverein Mine in the Ruhr area of Germany, a cultural production hub can be created by retaining the building shell and implanting art workshops and digital archives. This strategy has already achieved initial results in the Kombinat district, where the occupancy rate of its cultural and creative park has increased to 65% within three years (Baumgardner, 2019, p.136), providing a practical model for Paskuqan. At the same time, combining with the local Albanian artist and artisan community to develop handicraft markets and industrial heritage tourism routes can activate the regional economy and attract young creative talents to return.

Ecological Restoration and Green Infrastructure Networks

2. The ecological rehabilitation of Paskuqan Lake is foundational to the area's transformation. The 2024 lakeside park marks an initial shift from industrial decay to green public space. Future efforts should expand an 8-meter-wide green corridor around the lake, integrating constructed wetlands, native vegetation zones, and pedestrian pathways to raise per capita green space to 8m² (WHO standards). Inspired by the Emscher Landscape Park in Germany's Ruhr Valley (Nepravishta, 2015, p.1237), abandoned drainage channels could be repurposed into ecological corridors, forming a "blue-green respiratory system." Additionally, vertical gardens, rooftop farms, and community gardens in low-density residential areas could enhance climate resilience, mitigating floods and urban heat islands.

Mobility Restructuring and Mixed-Use Community Development

3. Optimizing transportation is critical to dismantling Paskuqan's marginalization. Extending a new boulevard to the lake would divert 20% of traffic from Rruga e Elbasanit (Latreille et al., 2024, p.102407), while integrating tramlines with a Mobility-as-a-Service (MaaS) platform—using real-time data to optimize public transit and shared mobility—could reduce average commutes to 25 minutes. Residential development must prioritize mixed-use communities: lakeside passive-design energy-efficient housing with community farms and co-working spaces could attract remote workers, while retaining "gray spaces" in former dormitories for resident-led modifications, as seen in Berlin's Tempelhofer Feld, would foster social cohesion through participatory workshops and temporary installations.

Fig. 1. Master plan 1939/1943
Source/ Gherardo Bosio-Archivio Tecnico delle Costruzioni di Tirana (2011)

Fig. 2. "1951"—the birth of the textile complex
Source/ Gherardo Bosio-Archivio Tecnico delle Costruzioni di Tirana (2011)

Fig. 3. "2023 Paskuqan Population Density Heatmap.
Source/ Municipal Unit in Albania (2023)

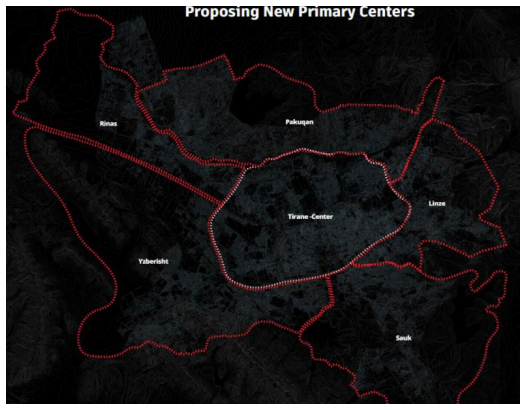

Fig. 4. Tirana's western polycentric network
Source/ : Albania, Tirana, Polis University, student Ledia Sulaj, Juri Hibraj,Liselda Haruni,Ana Kratelli,Sindi Sopaj (2024)

Challenges and Pathways: From Experiment to Paradigm

Paskuqan's revival faces fragmented land ownership, funding gaps, and limited community engagement. A phased "pilot-to-scale" approach is proposed: initiate lakeside parks and small cultural hubs (2025–2030) to attract public-private partnerships; expand to heritage retrofits and mobility hubs (2030–2040); and ultimately integrate with Kombinat and Shkoza to form Tirana's western polycentric network(See Figure 4 for details) (2040–2050). This trajectory positions Paskuqan as a Global South exemplar of "historical-ecological-mobility synergy," offering lessons for cities navigating post-industrial transitions.

Analysis

Opportunities

Strategic location and urbanisation trend. Paskuqan's proximity to Tirana's core and Albania's rising urbanisation rate (65.4% in 2024) provide strong growth potential (World Bank, 2024).

Existing pilot projects. Interventions such as the Paskuqan Lake Park demonstrate institutional capacity to deliver improvements (RTSH, 2022).

International alignment. EU integration and donor frameworks create access to funding and technical expertise (OECD, 2024).

Socio-economic dividends. Regeneration offers opportunities for job creation, improved air quality, and enhanced quality of life (Housing Europe/ UNECE, 2024) .

Governance obstacles

Administrative fragmentation and jurisdictional ambiguity. Paskuqan is an administrative unit within Kamëz municipality (Government of Albania, 2015). This limits its autonomy in urban planning and requires coordination with Kamëz and Tirana metropolitan authorities.

Government of Albania. (2015). Administrative and territorial reform law. Official Gazette of Albania.

- Regulatory and planning discontinuities. The Tirana 2030 plan (TR030) articulates a vision for metropolitan polycentric growth, green corridors, and controlled densification, but achieving coherence across zoning and informal settlements requires stronger regulatory enforcement (Stefano Boeri Architetti, 2016).
- Lack of participatory governance and local capacity. Recent projects such as the Paskuqan Lake Park illustrate the state's ability to deliver amenities, yet citizen engagement and municipal technical capacity remain limited (RTSH, 2022).

Economic

Land-tenure insecurity and informal constructions. Many parcels remain unregistered or developed without formal title, complicating land assembly and redevelopment (World Bank, 2019; UNECE, 2024).

Funding constraints and budget fragmentation. Local governments have limited fiscal capacity, and large-scale infrastructure depends on multi-source funding including EU support (OECD, 2024).

Market risk and displacement pressures. Redevelopment risks raising property values and displacing vulnerable groups if safeguards are absent (ID Publications, 2017).

Economic obstacles primarily manifest in funding gaps and investment risks. According to the Albanian Development Fund, the comprehensive renovation of Paskuqan requires approximately €280 million, of which 40% is for industrial heritage restoration, 35% for transportation infrastructure, and 25% for ecological restoration. Currently, public funding covers only 30%, leaving the remainder dependent on private investment. However, investors are deterred by unclear property rights—70% of industrial land is state-owned, but 30% is privately owned by hundreds of heirs of former factory workers (INSTAT, 2023). To address this issue, the "land trust fund" model used in the renovation of the Lozno Textile Mill in Poland could be used as a model (Lódź City Council, 2022): the government acquires land ownership, private enterprises participate in development through a 40-year concession, and 20% of the profits are used to fund the construction of affordable housing. Furthermore, it is recommended that the EU's Western Balkans Investment Framework (WBIF) establish a dedicated Resilient Cities Fund to provide low-interest loans and risk guarantees.

Implementation

Phasing and political cycles. Long-term visions such as TR030 face risks from short electoral cycles and shifting municipal leadership (Boeri Architetti, 2016).

Infrastructure deficits. Peripheral areas like Paskuqan lack adequate transport, drainage, and utilities (JICA, 2019).

Environmental constraints. Legacy pollution from old industrial facilities and degraded riverfronts require costly remediation (ACQJ, 2023).

Conclusions and recommendations

Paskuqan's regeneration offers a transformative pathway for Tirana to transition from monocentric congestion to a polycentric, resilient urban model. By leveraging its industrial heritage—such as repurposing the Stalin Textile Plant into cultural hubs—and restoring ecological assets like the

lakefront green corridor, the area can bridge historical identity with sustainable development. A GIS-based traffic assignment model using 2023 Transport Ministry data (20,000 vehicles/day) indicates that the proposed north-south boulevard could divert approximately 4,000 vehicles daily, corresponding to a 20% reduction on Rruga e Elbasanit under peak conditions.

However, fragmented governance and gentrification risks demand a phased, equity-focused approach. Priority actions include: launching pilot projects like a lakeside cultural incubator and floating wetland park to demonstrate viability; establishing a Regional Regeneration Task Force to coordinate stakeholders and streamline permits; mandating a certain amount of affordable housing in new developments to prevent displacement; and deploying smart monitoring tools (GIS, IoT) to track ecological and social impacts. Crucially, Paskuqan's revival must align with broader regional strategies, such as integrating lake restoration into Tirana's stormwater management network and partnering with villages like Ndroq for agro-tourism. By balancing heritage preservation, climate resilience, and inclusive governance, Paskuqan can catalyze Tirana's shift toward equitable, post-carbon urbanism—a model relevant to Global South cities navigating similar historical and ecological tensions.

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