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The Greater Aleppo Project: A Harmonious Synthesis of Authentic Arab Urban Identity and Advanced Technological Infrastructure

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Abstract: An urban development plan that intends to reconstruct and extend one of the most historically significant cities in the Middle East while conserving its unique Arab architectural character and integrating cutting-edge technology is known as the Greater Aleppo Project. This paper symbolises a paradigm change in urban development. This forward-thinking master plan, which was initiated in September 2025 under the direction of the Governor of Aleppo, meets the dual imperatives of post-war rehabilitation and sustainable urban expansion. The paper incorporates a complete strategic framework that goes beyond the simple act of reconstructing the physical structure. It also includes the revitalisation of the economy, the preservation of social cohesion, and the protection of cultural heritage. The paper includes a comprehensive strategic framework beyond physical structural reconstruction. It also involves economic revitalization, social harmony, and cultural preservation. This study examines the Greater Aleppo Project's multifaceted strategy. It examines its participatory planning approach, its commitment to preserving Aleppo's UNESCO-listed heritage while meeting modern urban needs, and its ambitious technological infrastructure, particularly high-speed fiber optic networks and smart city systems. This research examines the master plan, infrastructural strategies, and architectural guidelines to show how the paper can be replicated for post-conflict urban regeneration that incorporates cultural identity and the digital revolution. The findings show that the paper's success depends on its integrated strategy of community participation, cultural conservation, technical innovation, and sustainable development.

Keywords: Smart City System; Participatory Planning; Urban Development; Sustainable Urban Expansion; Social Cohesion; Cultural Conservation; Urban Regeneration; Technical Innovation.

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1. Introduction

The Greater Aleppo Project represents a major paradigm shift in the understanding of urban development and post-conflict reconstruction in one of the most historically important cities in the Middle East [1]. Aleppo has long been recognised for the geographical and economic importance of the city, but also for the exceptional cultural and architectural heritage embedded in its urban fabric. The city's history can be traced to the sixth millennium BC, and successive civilisations and historical periods have built it up to give it a distinctive urban identity that is Arab, Islamic, commercial and Mediterranean. Its historic center, with its covered souks, traditional courtyard houses, religious buildings, public spaces and connecting streets, is an important example of traditional Arab Islamic urbanism [2]. The designation of the Ancient City of Aleppo as a UNESCO World Heritage site further emphasises its international cultural value and the need for reconstruction approaches that respect its architectural authenticity while meeting the demands of contemporary urban life. But the Syrian conflict has caused extensive damage to the physical environment of Aleppo and severely disrupted its social and economic fabric. Reconstruction should therefore not be seen solely as replacement of damaged buildings or infrastructure but as a multi-dimensional process that includes physical recovery, economic revitalisation, social restoration, cultural preservation, technological modernisation and long-term sustainable development [3]. The destruction that followed the conflict represented a complex urban challenge since the damage affected different elements of the city in different ways. All types of infrastructure, from historic buildings to residential areas, commercial districts, transportation systems, public utilities and community facilities, were affected to some degree. Meanwhile, the relationship between residents and the urban environment was modified by displacement and social disruption.

The consequences are thus not only physical damage, but also the weakening of local economies, the disruption of community networks, the loss of cultural continuity and changes in patterns of settlement and mobility [4]. Under such circumstances, reconstruction requires a strategic framework that can respond to immediate needs, but also sustain a long-term vision for the city. In this context, the Greater Aleppo Project, launched in September 2025 under the leadership of the Governor of Aleppo, is an ambitious attempt to rethink the future development of the city and its surrounding region. Rather than treating reconstruction as a separate exercise in engineering or architecture, the paper treats urban transformation as an integrated process in which physical renewal, cultural preservation, social participation, economic development and technological innovation can mutually reinforce one another [5]. The importance of the Greater Aleppo Project can be understood through its attempt to reconcile two goals that are often considered difficult to reconcile together. The first is to preserve Aleppo's authentic Arab Islamic architectural and cultural identity and the second is to establish a modern urban environment capable of meeting the needs of a burgeoning population and an increasingly digital economy [6]. Post-conflict cities often are under pressure to rebuild quickly, leading to standardised construction, replacement of historic forms or introduction of development models poorly adapted to local cultural conditions. Aleppo, by contrast, requires a reconstruction plan that regards heritage not as an obstacle to modernisation but as a vital part of the city's future identity and economic potential. Traditional architecture, historic public spaces, market buildings and neighbourhood patterns can be sources of cultural continuity and can also support tourism, local enterprise, education and community life.

Therefore, the Greater Aleppo Project places cultural preservation within a larger vision of urban development, where modernisation and heritage are supposed to coexist. The architectural identity of Aleppo is of particular significance, as its historic character is not only expressed in individual monuments but also in the relationships between buildings, streets, courtyards, markets and public spaces [7]. Traditional Arab Islamic urbanism is based on spatial arrangements responding to climatic, cultural, social and economic conditions. Courtyard houses, narrow and shady streets, covered commercial routes, mosques, public baths, and market spaces are not isolated architectural objects, but interconnected systems. Rebuilding single buildings in isolation might not recreate the wider urban relationships that lend historic cities their meaning. Thus, the Greater Aleppo Project's focus on the preservation of authentic architectural character can be read as a preservation of both tangible heritage and the spatial logic through which the city has functioned [8]. This approach is important to create a sense of continuity for residents and to make sure that reconstruction does not wipe out the historical identity that sets Aleppo apart from newly developed urban environments. But the paper also recognises that protecting historical identity cannot mean that the city is not able to change to suit the needs of the present. Aleppo must be prepared for modern transport systems, communication infrastructure, public services, economic activity, housing needs and technological progress. The integration of high-speed fibre optic networks and smart city systems is thus particularly important in the proposed transformation of the city [9]. Digital connectivity has become an ever more fundamental component of modern urban development, underpinning communication, education, commerce, public administration, health, emergency response and economic activity.

In a city that is being rebuilt, modern digital infrastructure can also help institutions coordinate better, support business, provide access to information and deliver more efficient public services. The Greater Aleppo Project's emphasis on high-speed internet

is thus a wider recognition that reconstruction must not just rebuild physical infrastructure but also the digital infrastructure needed to engage in the modern economy [10]. This technological dimension is further expanded by smart city systems, which bring the possibility of data-driven urban management. Transportation management, energy efficiency, environmental monitoring, public safety, utility management and service delivery are other fields where integrated digital systems can be used. Within the framework of post-conflict reconstruction, these technologies may provide opportunities to improve the efficiency and resilience of infrastructure while establishing new mechanisms for monitoring urban conditions [11]. However, technological integration also calls for careful consideration of accessibility, institutional capacity, affordability, maintenance, interoperability and sustainability over the long term. An advanced technological city cannot rely on imported systems or short-term investment. It requires local knowledge, institutional arrangements, reliable connectivity, appropriate regulations, and strategies to sustain digital infrastructure over the long term. The Greater Aleppo Project is therefore significant not only for the technological modernisation it proposes but also for the broader agenda of urban transformation within which it places digital infrastructure. The paper is also characterised by its emphasis on participatory planning. Post-conflict reconstruction can be centrally driven, especially where governments and external organisations emphasise speed, technical efficiency and large-scale infrastructure delivery [13]. While centralised coordination can be beneficial, development processes that fail to involve local communities can lead to projects that fail to reflect residents' needs, experiences, cultural practices, or priorities. Residents become active contributors to reconstruction in participatory planning, which offers an alternative.

In the Greater Aleppo Project context, this principle means that communities should be given the opportunity to articulate their needs, to share their local knowledge, to debate development priorities and to help shape the future of their neighbourhoods [14]. This participation can help strengthen the relationship between residents and institutions, and increase the social legitimacy of reconstruction decisions. In a city affected by conflict, community participation is especially crucial, as urban destruction brings social fragmentation and displacement [15]. Reconstruction can therefore be not only a process of rebuilding physical environments but also an opportunity to rebuild relationships, trust and collective identities. Getting the community involved in planning can help residents reconnect to their neighbourhoods and the city as a whole. Local knowledge can also provide essential information on traditional spatial practices, historical buildings, cultural traditions and everyday patterns of use that technical surveys may not fully capture [1]. Thus, participatory approaches can help both better planning and preservation of culture. Reconstruction may find better social foundations and better continuity between the city's historical identity and its future development when residents become contributors rather than passive recipients. The economic dimension of the Greater Aleppo Project is also of great importance. Long-term reconstruction is not only about physical rebuilding, but also repairing damaged economies and employment systems that can limit the ability of communities to recover. Historically, Aleppo has been a vital commercial center, and the revival of economic activities is likely to be closely linked to the revitalisation of its urban spaces and infrastructure. Some of the ways to achieve economic revitalisation are through the rehabilitation of traditional markets, supporting local businesses, improving transportation and communication systems, and creating new opportunities for entrepreneurship [2].

Digital infrastructure can also help to develop modern businesses and link local businesses to regional and international markets. The paper, linking heritage, infrastructure, technology and economic development, puts forward reconstruction as a process through which the city can regain not only its physical shape but also its role as a center of commerce and cultural exchange. The social dimension is equally central since sustainable urban regeneration depends on the capacity of reconstructed neighbourhoods to support safe, inclusive and functional communities. Housing, educational and health institutions, public spaces, transport systems and community services must be incorporated into the larger development framework [3]. Reconstruction of physical structures without consideration of patterns of access, social interaction and community needs can replicate inequalities or create environments that are disconnected from the day-to-day lives of residents. A participatory and socially oriented planning model that integrates community viewpoints into urban decision-making can help mitigate this risk. In this sense, the social objectives of the paper go beyond restoration of physical loss, and aim at creating conditions for long-term human development and social cohesion [4]. The paper also has implications for heritage management and the use of digital technologies in the future of cultural conservation. Modern reconstruction is increasingly a matter of digital mapping, geographic information systems, 3-D documentation, digital archives and other forms of information management. Such technologies can facilitate detailed recording of historic buildings and urban space, while creating permanent repositories of cultural information. Such systems could help document architectural features, monitor reconstruction progress, manage heritage assets, and support education and interpretation for Aleppo [5]. Digital technologies can also provide opportunities for virtual access to heritage sites that are damaged or restricted, integrating with heritage preservation.

Thus, the technological modernisation within the framework of the Greater Aleppo Project has the potential to serve both the tasks of modern urbanism and the preservation of historical memory. The multilayered approach to reconstruction, therefore, is a key feature of the paper. Physical reconstruction, heritage conservation, technological development, economic revitalisation and community participation are not viewed as separate activities, but as interconnected parts of urban regeneration [6]. This integrated approach is especially relevant in post-conflict settings where problems are interlinked and cannot be tackled effectively by isolated interventions. For instance, the restoration of a historic market can contribute simultaneously to heritage

preservation, local economic recovery, tourism development, social interaction and community identity. Fibre optic networks can also support education, entrepreneurship, public administration and smart infrastructure. Part of the value of the paper is to recognise these relationships, and to try to coordinate various forms of urban investment according to a common strategic framework. But the realisation of such an ambitious project has its own considerable challenges. Reconstruction of a historically significant city, while preserving its authenticity, requires well-planned architectural guidelines, technical expertise, financial resources, institutional coordination and effective regulatory mechanisms [7]. The interaction between smart technologies and historical urban environments may also create tensions between innovation and conservation. Digital infrastructure must be adapted to local conditions, and smart city systems need to be accessible and sustainable. Community participation should be substantive rather than symbolic, and require institutional mechanisms through which public input can influence planning decisions. The complexity of these requirements means that the success of the Greater Aleppo Project depends not only on the quality of the master plan but also on the capacity to implement, monitor and adapt it over time.

So, the possible importance of the paper is not confined to Aleppo. If well implemented, it may provide lessons to other post-conflict cities seeking to rebuild, respond to technological change and protect cultural identity [8]. Many other conflict-affected cities face similar dilemmas of rapid reconstruction vs heritage preservation, modernisation vs local identity, and centralised planning vs community participation. Such a model incorporating these dimensions could provide a useful framework for future urban regeneration projects. Its applicability would depend on the adaptation of the approach to the local historical, social, economic and institutional conditions, rather than simply reproducing the same planning model elsewhere [9]. Therefore, the Greater Aleppo Project can be read as an ambitious attempt to redefine reconstruction as an integral process of urban transformation. While the city's focus on authentic Arab Islamic architecture seeks to preserve the city's historical and cultural continuity, its focus on high-speed digital networks and smart city systems meets the technological needs of contemporary urban life. Participatory planning, in contrast, puts residents in the driver's seat in terms of decisions impacting their neighbourhoods and their collective future [10]. The interaction between these dimensions creates a framework where heritage conservation, modernisation, economic recovery and social cohesion are viewed as complementary, rather than competing goals [11]. This integrated perspective provides a starting point for discussing the paper as a possible model of post-conflict urban regeneration and for exploring how cultural identity can be maintained while new technological and sustainable development opportunities are introduced. Therefore, this research examines the participatory planning methodology, heritage conservation principles, architectural guidelines, infrastructure strategies and technological components of the paper to understand how all these components interact with each other in a comprehensive vision for Greater Aleppo [12].

2. Review of Literature

Aleppo, one of the oldest continuously inhabited cities in the world, dates back to the sixth millennium BC and has long been an important center of Arab Islamic urban civilisation. Its Ancient City, a UNESCO World Heritage site, features unique urban characteristics like covered souks, courtyard houses, religious edifices and a complicated spatial texture that bears witness to centuries of cultural and economic evolution. Of crucial importance when considering the great destruction and disorder caused by the Syrian conflict is preserving this urban character. Therefore, the reconstruction challenge is not only the one of rebuilding damaged structures but also the one of adopting approaches that can simultaneously address cultural heritage, housing, infrastructure, economic recovery and social continuity. The cultural meaning of Aleppo is emphasised by Neglia [1], who argues for the protection and rehabilitation of its historic urban fabric as a way to protect the cultural memory of its inhabitants. This perspective places heritage conservation as an integral part of reconstruction, not a secondary concern. The city development of Aleppo has been affected by a number of planning endeavours in the past. The Plan d'Aménagement, d'embellissement et d'extension d'Alep of 1931, prepared by Cabinet Danger, was an early attempt to guide the expansion of the city, and the master plan of Thiel and Orabi [2] showed more sensitivity to the preservation of the historic urban fabric. In 2005, the 2004 master plan was approved, expanding zoning to about 18,000 ha and resulting in 30 detailed urban plans. Rapid informal growth and a heavily regulated planning environment complicated the implementation of these plans. These historical experiences demonstrate that successful urban planning in Aleppo cannot be based solely on a formal master planning process, but must consider existing social practices, development patterns, local institutions, and the historical morphology of the city.

The literature on post-conflict urban reconstruction has increasingly emphasised integrated frameworks combining physical recovery with social, economic, cultural and institutional objectives. Reviving Aleppo: Interdisciplinary Perspectives on Urban Recovery points out the necessity of interdisciplinary approaches to urban revitalisation in war-affected settings and emphasises the nexus between legal, spatial, and digital dimensions of reconstruction. UN-Habitat also recognises integrated planning, institutional coordination, community engagement, and sustainable development as important principles for post-conflict urban recovery. These perspectives are pertinent to Aleppo as the reconstruction has to address, at once, damaged infrastructure, changing demographic conditions, economic recovery, heritage preservation and the need to restore functional urban systems. Another important aspect of modern reconstruction approaches has become community engagement. Residential heritage in the Old City of Aleppo: research for participatory approaches, combining academic expertise with community knowledge. Methods: photovoice and participatory walkthroughs. Such approaches recognise that residents hold valuable knowledge about

local architecture, neighbourhood practices, historical meanings and everyday urban needs. Participation can thus lead not only to social legitimacy, but also to a better knowledge of the cultural and spatial characteristics to be preserved in a reconstruction. Recent discussions on the master plan for the recovery of Aleppo also emphasise the necessity of reconciling technical planning with the aspirations and knowledge of local communities. Digital infrastructure is a new dimension of post-conflict reconstruction of Syria. The scale of telecommunications modernisation at the national level is illustrated by the Silk Link initiative, which suggests approximately 4,500 kilometres of fibre optic infrastructure with a stated capacity of up to 100 terabits per second. The paper is aimed at connecting major cities, including Aleppo and setting up Internet Exchange Points to improve national digital connectivity. Other instances of collaboration between Syrian authorities and international technology actors, such as an agreement with Salam for Internet Points of Presence in Damascus and Aleppo, point to an increasing emphasis on digital infrastructure as part of broader recovery strategies. These developments provide an important technological background to the understanding of the Greater Aleppo Project and its proposed integration of high-speed connectivity and smart urban systems.

The preservation of the Arab Islamic identity of Aleppo is a major concern at the architectural level. Traditional courtyard houses and other historic building typologies are valued for their aesthetic qualities as well as their cultural, environmental and social functions. Studies of urban identity in historic Arab cities highlight the tension between modernisation and preservation, especially when rapid development threatens the character of traditional architecture. According to the Arab Urban Development Institute, Aleppo's recovery needs to strike a balance between conservation and the development of a modern urban environment that satisfies modern aspirations. This principle is also reflected in recent discussions of the guiding plan of Greater Aleppo, which seeks to reconcile the demands of reconstruction, urban expansion, heritage and modern development [13]. The Greater Aleppo Project thus emerges from a broader body of research and planning experience around heritage, reconstruction, participation and digital transformation. The paper is described in recent reports as a strategic vision for the reconstruction of Aleppo, with a focus on building bridges between the city and its surrounding suburbs [7]. There are signs of an attempt to transform this vision into a practical planning framework through the launch of guiding-plan initiatives, as well as consultations with experts and development institutions [11]. The integration of infrastructure investment, the conservation of heritage, participatory planning and technological modernisation constitutes the basis for considering the paper as a multi-dimensional model of post-conflict urban regeneration. In this sense, the Greater Aleppo Project can be seen as an attempt to maintain historical identity within a modern urban context, on the shoulders of modern infrastructure, digital connectivity and community-based planning. Thus, the literature provides a conceptual framework to analyse how reconstruction strategies can meet the complex cultural, spatial, technological, economic and social needs of Aleppo's future development.

3. Methodology

The present study adopts a qualitative case study methodology to examine the Greater Aleppo Project as a post-conflict urban reconstruction and development project that integrates cultural protection, technological innovation, community participation, and sustainable urban expansion. The technique treats the paper as a linked urban system and does not deal with individual reconstruction initiatives. The case study technique is appropriate because it allows for the deep evaluation of social, cultural, geographical, economic and technological aspects of reconstruction in the specific setting of Aleppo. It also provides a basis for understanding how to deal with cultural conservation and contemporary urban growth in a simultaneous post-conflict scenario. The main method of data collection is documentary analysis of materials related to the paper, including the Master Plan of Greater Aleppo, guiding planning documents, strategies for architectural and urban development, proposals for infrastructure, official statements and relevant reports on the reconstruction of Aleppo. These materials are methodically analysed for the identification of development objectives, principles of spatial planning, priorities of infrastructure, architectural approaches, and procedures of community participation. The documentary assessment also examines the relationship between the proposed modifications and the existing urban fabric and historic identity of Aleppo. Secondary sources include scholarly books, heritage studies, urban planning literature, institutional reports, and research on post-conflict reconstruction, smart cities, digital infrastructure, and Arab Islamic architectural identity (Table 1).

Table 1: Data sources and analytical purpose

Data Source	Examples of Materials	Analytical Purpose
Project documents	Greater Aleppo master plan, guiding planning documents, development strategies	Identify planning objectives, spatial strategies, and development priorities
Architectural and infrastructure documents	Architectural guidelines, infrastructure proposals, digital connectivity and smart-city plans	Assess technological, architectural, and infrastructure integration
Official and institutional sources	Official statements and relevant reconstruction reports	Examine institutional approaches and proposed reconstruction mechanisms

Academic and secondary sources	Heritage studies, urban planning literature, post-conflict reconstruction and smart-city research	Provide contextual and interpretive support for the case analysis

Particular attention is paid to material relating to the conservation of UNESCO-recognized heritage, participatory planning approaches, high-speed fibre-optic infrastructure, smart-city technologies and proposed procedures for sustainable urban management. The research discusses these themes to understand how physical rebuilding, digital change and social involvement are linked. The analysis includes the projected infrastructure and development initiatives and the interaction between them and the cultural and historical traits of the city. This approach enables the study to investigate how far technological modernisation may be integrated without compromising the architectural character and cultural identity related to Aleppo's historic value. The collected material is organised around four main analytical dimensions: historical preservation, technological advancement, participatory planning and sustainable urban regeneration. The analysis discusses the project's efforts to conserve Aleppo's conventional architectural character and historical urban identity in the dimension of heritage preservation. The dimension of technical development examines the projected integration of digital connectivity, smart infrastructure and data-driven urban management. The participatory-planning factor considers involvement in the community, inclusiveness, participant engagement, and citizen participation in planning choices. The sustainability aspect looks at the interaction between rebuilding, economic recovery, social cohesion, infrastructure development and long-term urban resilience (Table 2).

Table 2: Four-dimensional analytical framework

Analytical Dimension	Focus	Key Issues Examined
Heritage preservation	Conservation of historical and architectural identity	Traditional architectural character, historical urban identity, UNESCO-recognised heritage
Technological development	Integration of digital and smart infrastructure	High-speed fibre optics, smart-city systems, digital connectivity, data-driven management
Participatory planning	Community involvement in reconstruction	Community engagement, transparency, stakeholder participation, planning decisions
Sustainable urban regeneration	Long-term social, economic, and spatial resilience	Economic revitalisation, social cohesion, infrastructure development, sustainable urban expansion

The analysis is performed via theme interpretation. Information from the reviewed papers is organised according to the four analytical dimensions and analysed for links, possibilities and difficulties. The thematic method enables the revelation of common themes and links in heritage, technology, participation and sustainability. The interplay of various factors is considered in particular, such as the utilisation of digital technology to assist historical management, the importance of community engagement in reconstruction choices, and the significance of infrastructure upgrades in ensuring long-term urban resilience. Instead of producing numerical scores, the study qualitatively assesses the material to understand how the various components interact within the Greater Aleppo Project. Finally, the data are synthesised to assess the extent to which the Greater Aleppo Project tries to strike a balance between cultural continuity and modernisation, and the extent to which its integrated planning principles can provide a transferable framework for post-conflict urban reconstruction. The synthesis explores the opportunities arising from the combination of cultural protection, technological innovation, community participation and sustainable development, but also recognises the possible contradictions between these objectives. The resulting framework explains relationships among the project's key planning components. It highlights lessons that may be useful to other post-conflict urban environments with considerable cultural assets and rebuilding demands.

4. Results and Discussions

4.1. The Greater Aleppo Project: Vision and Strategic Framework

The Greater Aleppo Project was formally launched in September 2025 under the leadership of Aleppo Governor Eng. Azzam Al-Gharib, with Eng. Alaa Al-Jabri appointed to lead the vision development team. The paper is distinguished by its participatory nature, built in partnership with city residents, experts, institutions, local councils, and professional syndicates. This collaborative governance structure ensures that urban planning is grounded in the actual needs and aspirations of the population. The project's organizational framework includes a Technical Committee for Rapid Response to study urgent projects affecting people's daily lives, including housing, infrastructure, and property regulation. A Community Participation System has been established, integrating representatives from local councils, syndicates, experts, and civil society. Additionally,

an Urban Observatory is being launched as an institution to monitor the city's reality and development, publishing transparent and open data to the community. The project's master plan, developed in cooperation with local and international partners, is structured as a multi-layered vision extending from the regional framework of Greater Aleppo down to neighborhoods and individual architectural elements. This approach enables coordination and integration of recovery projects across different scales (Figure 1).

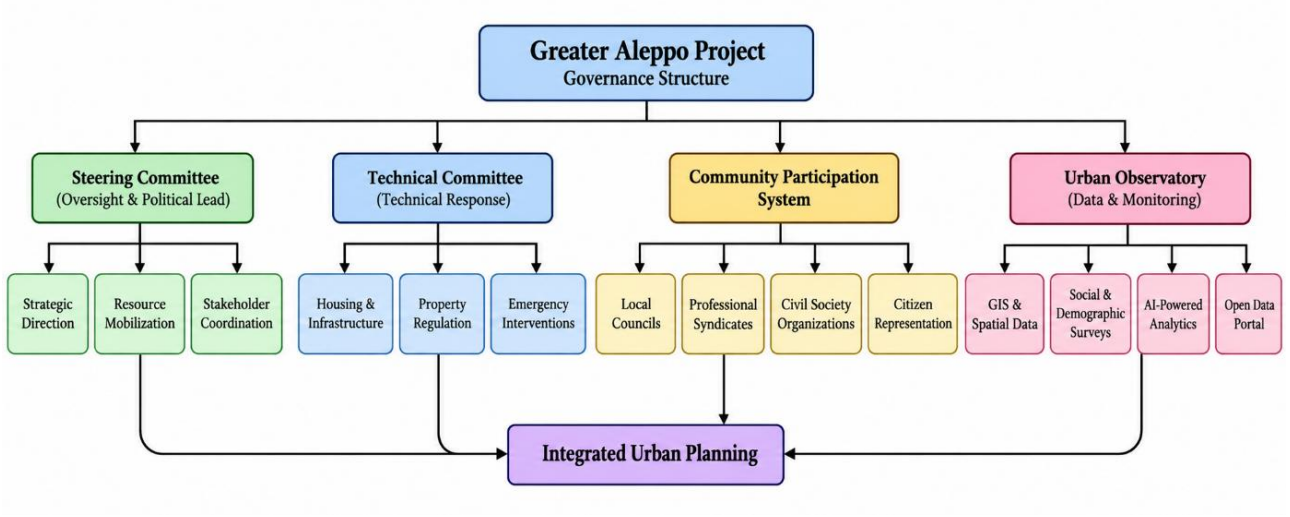


Figure 1: Illustrates the governance structure of the Greater Aleppo Project

The Syrian Development Organization (SDO) completed the first version of the Greater Aleppo master plan in early 2026, marking a key step toward a comprehensive urban vision for the city and its surroundings. The pilot version of the guiding plan was launched in April 2026, with the project transitioning to its second phase. The master plan addresses two primary dimensions: a strategic dimension concerned with the future urban planning of the entire Aleppo Governorate, and an emergency urban response dimension addressing pressing issues such as housing and the return of displaced persons. This dual approach allows the project to address both immediate humanitarian needs and long-term development goals. A distinguishing feature of the Greater Aleppo Project is its commitment to participatory planning. The paper recognizes that meaningful reconstruction must emerge from genuine community engagement rather than top-down directives (Figure 2).

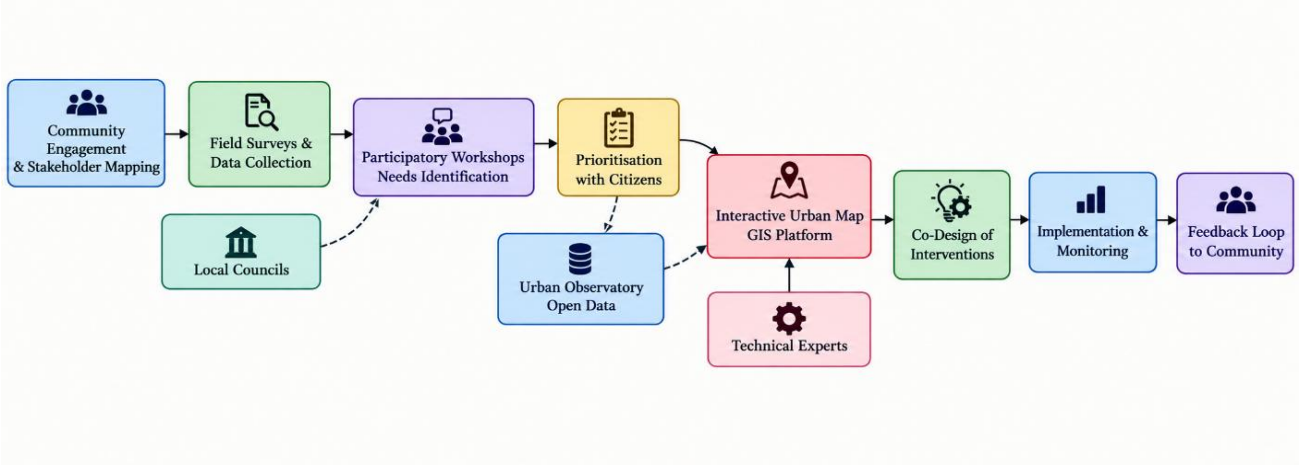


Figure 2: Depicts the participatory planning process

To this end, the paper has established a comprehensive participatory planning system built on a Geographic Information Systems (GIS) platform to promote community engagement in decision-making. The participatory methodology includes spatial and field surveys that begin from reality and are based on accurate knowledge of population needs. Workshops for participatory planning are being implemented in various areas, with the aim of hearing residents' opinions and determining priorities directly with them. An interactive urban map is being developed to enable citizens to understand their city's reality and participate in shaping its future. This approach is consistent with best practices identified in the literature, which emphasize that reconstruction interventions must be grounded in local knowledge and stimulate active participation of residents.

4.2. Preserving Authentic Arab Urban Identity

The preservation of Aleppo's authentic Arab-Islamic architectural character stands as a foundational principle of the Greater Aleppo Project. The paper explicitly aims to preserve the city's historical character while employing modern technologies to ensure comprehensive urban sustainability. The conservation strategy recognizes that Aleppo's traditional architecture—particularly its courtyard houses, covered souks, and dense urban fabric—represents not merely physical structures but the cultural memory and identity of the city's inhabitants. The paper draws on the expertise of heritage specialists, including the Directorate-General of Antiquities and Museums (DGAM), which has outlined the administrative, social, and economic challenges facing the Old City during reconstruction efforts. The paper strikes a delicate balance between preservation and development, recognizing that heritage conservation cannot be pursued at the expense of meeting residents' contemporary needs (Figure 3).

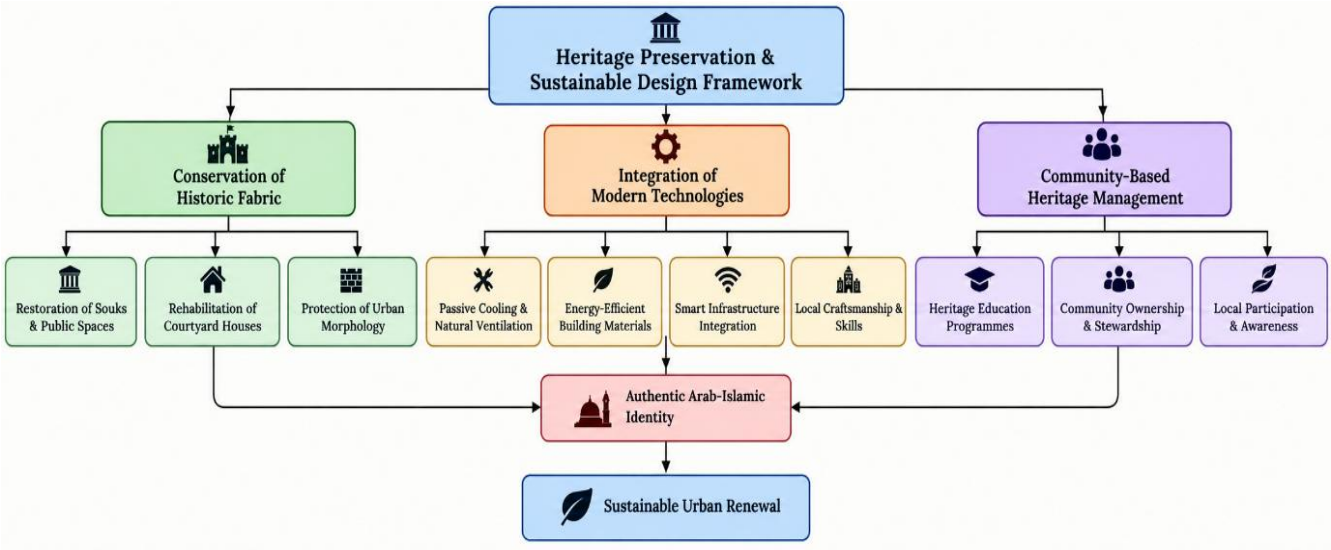


Figure 3: Illustrates the heritage preservation and sustainable design framework

The framework is built on two interlinked pathways: preservation—safeguarding the city's heritage and identity—and development—ensuring basic services delivery, affordable housing, and economic and social opportunities. This approach acknowledges that Aleppo's historic fabric must be protected while simultaneously creating a modern urban environment that meets residents' aspirations. The rehabilitation of the ancient city is pursued not as a museumification exercise but as a living urban renewal that gives back to the Syrian people their cultural identity, their homes, and their urban spaces. Traditional Arab architectural typologies play a crucial role in the paper's sustainability strategy. Research has demonstrated that traditional architectural forms, particularly the courtyard house, offer significant environmental benefits through passive cooling and natural ventilation. The paper seeks to integrate these sustainable design principles with contemporary construction techniques, creating buildings that are both environmentally responsive and culturally appropriate.

4.3. Technological Infrastructure and Smart City Integration

A cornerstone of the Greater Aleppo Project is the deployment of advanced digital infrastructure, particularly high-speed internet connectivity. The paper recognizes that modern urban development cannot succeed without robust digital foundations that enable economic growth, educational opportunities, and social connectivity. The SilkLink project represents the national backbone for this digital transformation. Spanning approximately 4,500 kilometers of optical fiber, SilkLink connects Aleppo with Damascus, regional switching centers in Palmyra, and eastern and southern regions, in addition to a landing point for submarine cables in Tartus. The paper establishes five primary Internet Exchange Points (IXPs) in Damascus, Aleppo, Tartus, Palmyra, and Qamishli, supporting both domestic and international peering with an initial capacity of 10 Tbps. International partnerships are accelerating this digital infrastructure development. A memorandum of understanding between Salam and Syrian authorities includes plans to establish IP Points of Presence (PoPs) in Damascus and Aleppo, providing Tier-1 connectivity both locally and globally, backed by over SAR 4 billion in Saudi technology investments. Additionally, the BARQ NET FTTP initiative represents a comprehensive fibre-to-the-premises infrastructure deployment across all 14 governorates. Beyond basic connectivity, the Greater Aleppo Project incorporates smart city technologies to enhance urban management and quality of life. The vision of "Aleppo Smart City" connects technology with urban development, creating an integrated system for urban monitoring, service delivery, and citizen engagement. The Urban Observatory, being established as part of the paper,

will leverage artificial intelligence and spatial analysis to conduct social and spatial surveys across all villages and towns in Aleppo Governorate. This data-driven approach enables evidence-based planning and real-time monitoring of urban development (Figure 4).

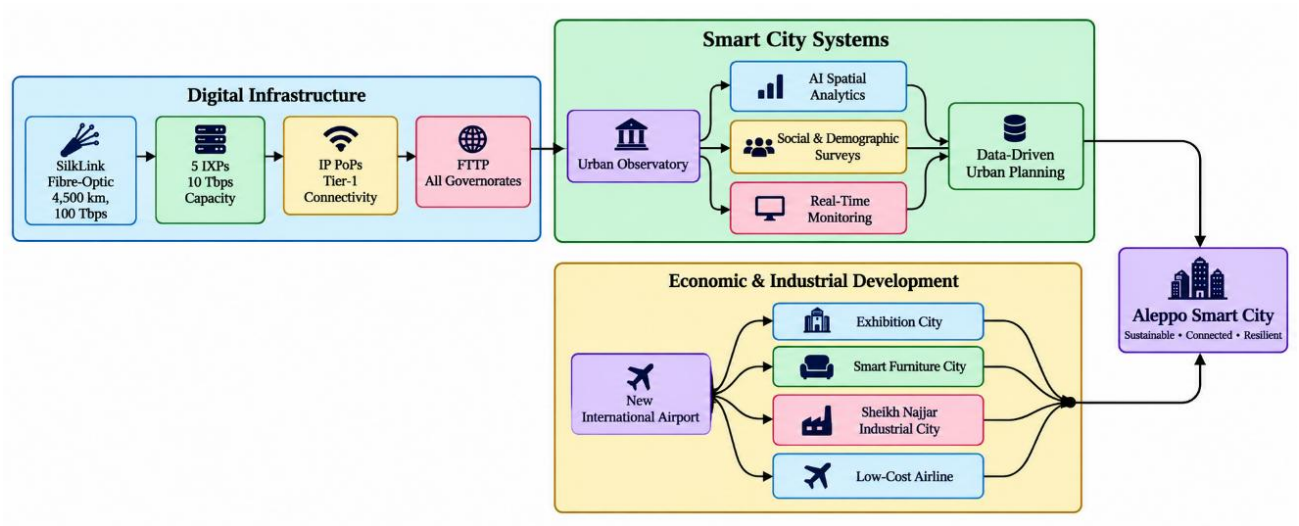


Figure 4: Provides a comprehensive view of the smart city and economic infrastructure

The technological infrastructure supports broader economic modernization objectives. Plans include the establishment of a new international airport meeting future requirements, an exhibition city, and the largest industrial city in Sheikh Najjar. A smart furniture city in Aleppo has been announced as one of the first projects under new investment platforms. These economic initiatives are complemented by telecommunications infrastructure development valued at nearly $1 billion, designed to improve digital connectivity and integration with regional networks. A new low-cost Syrian-Saudi airline is also planned to enhance regional and international air links.

4.4. Urban Expansion and Regional Integration

The concept of "Greater Aleppo" extends beyond the traditional city boundaries to encompass the surrounding suburbs and vital hinterland through an integrated network of services and infrastructure. This regional approach transforms suburbs into independent economic and social centres, reducing pressure on the historic city centre while promoting balanced regional development. The paper addresses challenges of urban expansion through systematic planning of proposed expansion areas and their future trajectories within the general vision of urban development in the governorate (Figure 5).

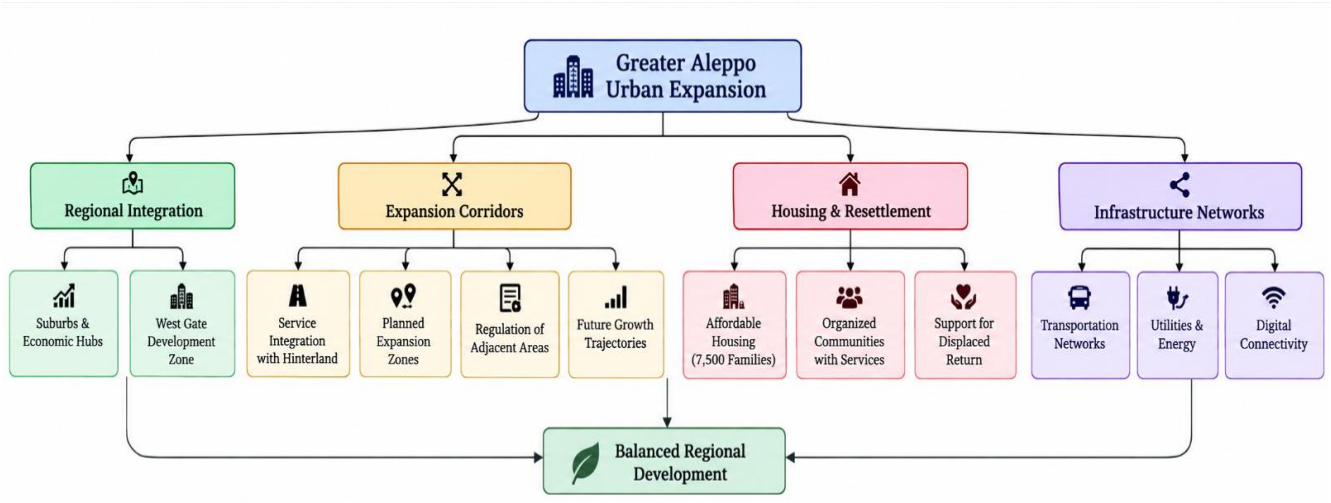


Figure 5: Outlines the urban expansion and regional integration framework

This includes reviewing the reality of existing urban agglomerations and mechanisms for regulating future expansion. Since the approval of Aleppo's master zoning plan in 2004, the City Council has prepared detailed studies and plans for 14 expansion areas. The Greater Aleppo Project builds on this foundation, proposing new development corridors that connect the city with the countryside along western and eastern axes. Housing represents a critical priority, with papers such as Al-Haidariya planned to accommodate 7,500 families. These housing initiatives are designed to support the return and stabilisation of displaced populations while creating organised residential communities with adequate services.

4.5. Emergency Response and Immediate Interventions

The Greater Aleppo Project incorporates an emergency urban response component designed to address immediate challenges facing the governorate. This includes interventions in housing, the return of displaced persons, and basic service delivery. The paper establishes a technical committee for rapid response to study urgent projects that directly affect people's lives. The paper follows a phased implementation approach. The first phase, completed in early 2026, involved the pilot version of the guiding plan and its alignment with national planning frameworks and relevant ministries (Figure 6).

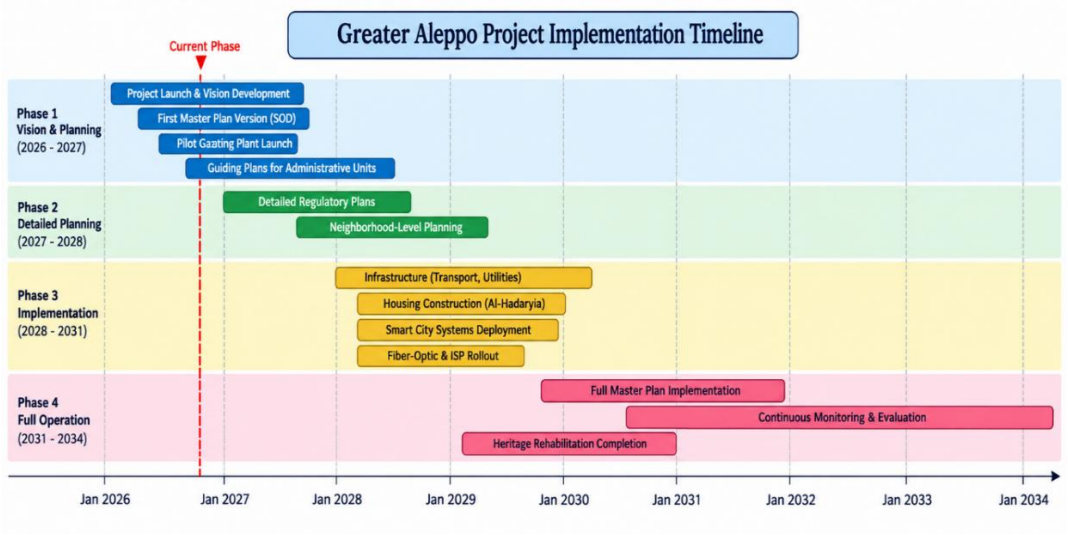


Figure 6: Presents the implementation timeline with key milestones

The second phase involves issuing guiding plans within local administrative units, followed by detailed regulatory plans. This sequencing allows for systematic coordination with ministries including Local Administration, Housing, and Culture (concerned with antiquities and museums), as well as the Investment Office and all relevant higher administration entities.

4.6. Sustainable Development and Environmental Considerations

The Greater Aleppo Project integrates environmental sustainability as a core principle (Figure 7).

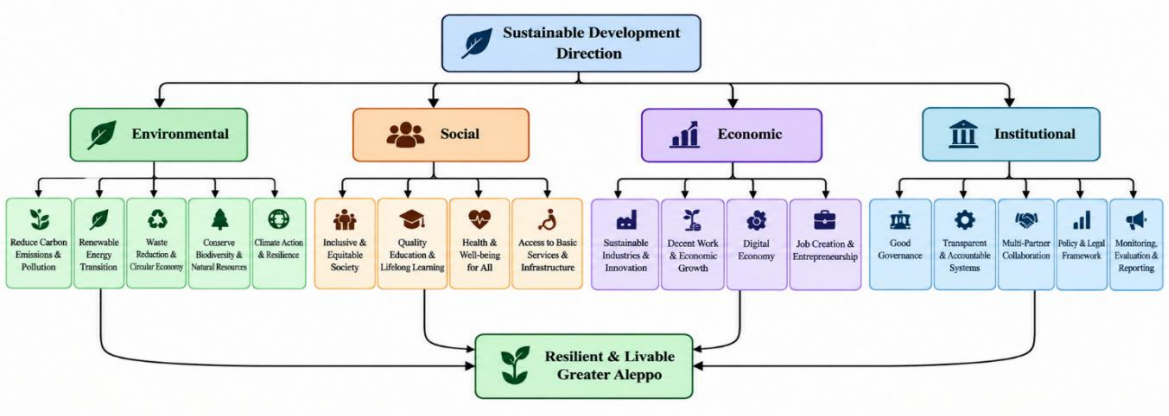


Figure 7: Illustrates the sustainability dimensions

Traditional Arab urban forms inherently offer sustainable solutions—dense, walkable urban fabric reduces energy consumption, courtyard houses provide natural climate control, and the use of local materials minimizes transportation emissions. The paper builds on these traditional strengths while introducing modern green technologies such as solar energy, rainwater harvesting, and waste-to-energy systems. Social sustainability is addressed through the participatory planning framework that ensures equitable access to services, housing, and economic opportunities. The paper aims to create mixed-income neighborhoods and preserve the social fabric that characterized historic Aleppo. Economic sustainability is pursued through the development of industrial zones, technology parks, and tourism infrastructure that leverage Aleppo's cultural heritage.

5. Findings

The analysis reveals that the Greater Aleppo Project has successfully established a comprehensive framework for heritage preservation that extends beyond mere physical conservation to encompass cultural memory and identity. The project's dual preservation-development pathway ensures that heritage protection is pursued in tandem with meeting contemporary needs. The integration of community participation in heritage decisions represents a significant advancement over previous top-down approaches. The paper's recognition that "recovery is about more than rebuilding structures—it is about reviving memory, identity, and daily life" reflects a sophisticated understanding of heritage as living culture rather than a static monument. The digital infrastructure components of the paper demonstrate substantial progress. The Silk Link fiber-optic network, with its 4,500 kilometers of optical fiber and 10 Tbps initial capacity, establishes a robust foundation for high-speed internet connectivity. The establishment of IP Points of Presence in Aleppo provides Tier-1 connectivity that positions the city as a regional digital hub.

The integration of smart city technologies through the Urban Observatory and AI-powered spatial analysis enables data-driven urban management unprecedented in the Syrian context. The paper's participatory planning methodology has demonstrated effectiveness in grounding urban decisions in local realities and needs. The establishment of community participation systems, including representatives from local councils, syndicates, and civil society, ensures that diverse voices are heard in planning processes. The commitment to transparent data sharing through the Urban Observatory addresses a critical gap identified in previous planning efforts, where over-regulation and lack of transparency hindered implementation. Despite these achievements, several challenges remain. The scale of destruction in Aleppo—described as the most damaged city in Syria—presents immense logistical and financial challenges. The paper's success depends heavily on securing backing from international organisations and donors. The tension between rapid response needs and long-term planning objectives requires careful management. Balancing the imperative to provide immediate housing and services with the need for thoughtful, sustainable urban design presents ongoing challenges.

For policymakers, dependable and sustained investment through international collaborations, development finance institutions and public-private partnerships for the Greater Aleppo Project's long-term success should be established. The multi-disciplinary nature of the paper also warrants training and capacity-building programs for local planning authorities, heritage conservation experts and urban management professionals to improve institutional capacity. Community participation tools need to be kept active across all phases of a project, so that participatory planning is a continual element of urban governance rather than a one-off activity. Heritage protection must also be integrated into regulatory structures through regulations that require heritage-sensitive design for new buildings in and close to historic sites. Urban planners and designers should produce detailed historic criteria for new development that preserve the traditional Arab-Islamic architectural principles and incorporate current technologies and sustainable design aspects. Sustainable construction methods should incorporate the old passive strategies of courtyard ventilation and thermal mass, with modern sustainable technologies to provide environmentally responsive buildings. Technologies for smart cities and high-speed internet infrastructure should be designed to promote digital inclusion and ensure access for all people, thereby decreasing the likelihood of technology-induced socioeconomic inequities.

Urban planning must be complemented by measures to ensure climate resilience to respond to the special challenges of Aleppo's semi-arid environment. Heritage preservation, as an important feature of sustainable urban recovery, should be supported by international partners and donors as it can contribute to tourism, economic development and social cohesion. Investment needs to be made in the fundamentals of digital infrastructure, including fibre-optic networks, internet exchange points and smart-city technologies. Knowledge exchange programs should allow Syrian planners and professionals to learn from international practice in post-conflict reconstruction, heritage preservation and smart cities. The funding arrangements should also foster transparency and accountability by fostering open-data practices and community participation as major elements of project governance. Systematic documentation by researchers and academics of the implementation, outcomes and lessons learnt from the Greater Aleppo Project can provide evidence for future post-conflict reconstruction endeavours. They should also develop rigorous evaluation frameworks to assess impacts on heritage preservation, economic development, social cohesion and quality of life. Further research should examine the effectiveness of participatory planning mechanisms in the Syrian context and identify factors that support or constrain meaningful community engagement.

6. Conclusion

The Greater Aleppo Project is a holistic approach to urban reconstruction that addresses the interconnected issues of heritage preservation, technological advancement, economic revival, and community engagement. The paper examines reconstruction not only as a process of repairing damaged buildings and infrastructure but also in a broader sense encompassing the physical, cultural, social and technological aspects of urban development. The paper anchors planning decisions in the realities of the local community and its needs, and the history of Aleppo, with residents at the center of the reconstruction process, and assures that urban transformation stays socially relevant and culturally appropriate. One of the most important aspects of the paper is its attempt to reconcile the preservation of the authentic Arab Islamic architectural identity of Aleppo with the needs of a modern and technologically advanced city. The combination of high-speed internet infrastructure and smart city technologies presents opportunities to improve communication, stimulate economic activity, improve public services and better connect Aleppo to the wider digital economy.

In addition, the preservation of traditional architectural types and urban characteristics can contribute to cultural continuity and protect the historical identity of the city. This combination shows that heritage conservation and technological development can be tackled in a single urban strategy, rather than being seen as competing priorities. Furthermore, the paper benefits from the participatory planning methodology, which encourages community participation and transparent availability of planning information. The proposed Urban Observatory and the use of AI-driven spatial analysis can help support evidence-based decision-making, improvement of urban monitoring, and provision of more accurate information to planners to manage reconstruction and future growth. However, the long-term success of the Greater Aleppo Project depends on sustained institutional commitment, adequate financial resources, effective implementation and continued participation from local communities. Reconstruction is a huge task in scale and complexity, but the paper presents a clear vision for an Aleppo that retains its historical legacy, yet embraces technological and urban transformation. The paper provides a possible framework for resilient, people-centred post-conflict urban regeneration by incorporating these elements.

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