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A strategic urban framework for the reconstruction of war-damaged cities: A case study of Kabul City

Abstract. Urban reconstruction post-war was one of the most challenging problems of modern planning, in which physical loss, institutional collapse, and social exposures came together to thwart post-war recovery. Kabul, the capital of Afghanistan, presented the ideal study of the issues caused by war that had weakened its city infrastructure and institutions. The purpose of study was to construct a strategic urban plan for Kabul encompassing resilience, sustainability, and citizen participation in post-war reconstruction. The findings showed deep spatial inequities in urban exposure to damage throughout Kabul. An analysis of destruction data indicated Dasht-e-Barchi district suffered most damage with 60% of buildings destroyed, while the greatest damage to the transport network, which included 18 important roads, was borne along the Jalalabad Road corridor. Composite Vulnerability Index modeling emphasised that just 18% of the city's territory, defined as "Red zones", held 63% of Kabul's key infrastructure and 68% of overall building loss and required urgent consideration. Stakeholder interviews also reflected systematic institutional deficits: 92% of the stakeholders name data shortages and institutional duplication as the key obstacles, and 76% name corruption as a persistent inhibition. The adoption of geospatial technologies (68%), participatory planning models (81%), and enhanced inter-agency collaboration (68%) were the major opportunities. Thematic interview coding reiterated governance fragmentation, ethnic cleavages, and short-sighted planning horizons as common challenges. The proposed conceptual framework was based on three pillars that were interdependent: passive defense (spatial planning and resilient networks), sustainable development (green, critical, and equitable infrastructure-based reconstruction), and local participation (accountability mechanisms and community-led planning). These observations proved rehabilitation of Kabul was contingent on spatially focused resource allocation, reform of institutions, and representative government. In practice, the study provided an application model for post-conflict urban rehabilitation in conflict-affected cities to inform resilient and efficient post-conflict urban rehabilitation

Keywords: urban planning; post-war reconstruction; sustainable redevelopment; urban resilience; post-conflict urban recovery

INTRODUCTION

Post-conflict cities were confronted with multidimensional challenges marked by widespread physical destruction, social dislocation, institutional disintegration, and environmental degradation. In such complex contexts, standard forms of urban planning were unsuitable, and strategic frameworks were needed to tackle simultaneously both post-war vulnerabilities and possibilities for long-term sustainable change. R.A. Mushkani & H. Ono (2022) noted that Kabul, the capital of Afghanistan, was a prime example of such challenges, as decades of conflict had opened

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systematically ever-wide voids in infrastructure, impaired governance structures, and dislocated coherent patterns of urban development. A.A.R.M. Al-Samurai & A.S.R. Al-Qaraghuli (2021) illustrated in their Mosul case study the essential value of integrating sustainable development values for designing conflict-affected towns resilient to prospective crises and showed how environmental considerations were an intrinsic companion to physical rebuilding. Researchers D. Dimelli & A. Kotsoni (2023) advocated integrated Aleppo conservation plans for its reconstruction and highlighted the subtle interplay between contemporary needs for modern infrastructure and the protection of cultural patrimony and provided instructive methodological insights for cities experiencing parallel challenges. The systematic Urban Recovery Framework outlined by UN-Habitat (2022) brought forward a holistic methodology combining area-based approaches, participatory planning instruments, and multi-level governance arrangements designed to ensure successful post-crisis rebuilding of cities. This framework was of particular application to cities such as Kabul, whose institutional disunity and slender means were compounded challenges. In complement to this viewpoint, M.H. Ebrahimi *et al.* (2022) discussed sustainable forms of Kabul's low-cost constructions, showing how locally modified types of building can improve both environmental sustainability and community acceptability. Kabul's pattern of urban planning demonstrated a concerning history of disjointed intervention and donor-driven approaches often lacking long-term perspective and local ownership.

Scientists F. Sarwari & H. Ono (2022) scrutinised ethnic inclusivity in Kabul's master plans and showed how planning documents tend to ignore the rich ethnic complexities of the city, thus compromising social cohesion. Diverging research proposed ever-more sophisticated methodological insights for the analysis of cities in conflict zones. A.S. Jahani (2023) investigated the use of zoning ordinances as development instruments for Kabul and presented useful regulation insights for controlling urban expansion in conflict zones. The author's M. Amini *et al.* (2024) showcase sophisticated geospatial analysis procedures for New Kabul City and showed how GIS modeling may provide evidence-based planning decisions. M.R. Amiryar *et al.* (2022) further validated such evidence, showing how the systematic marginalisation of community participation had continuously hampered Kabul's development of sustainable, inclusive cities. Recent world reconstruction experiences still reinforced the importance of adaptive, context-aware planning paradigms.

To supplement such technical procedures, A. Hanif *et al.* (2024) analysed physical attributes of Herat's unauthorised settlements, yielding comparative insights of informal urbanisation patterns also found in Kabul's expansion. Most methodological innovations continually supplemented reconstruction planning tools. V. Chaturvedi & W.T. de Vries (2025) employed agent-based modelling to analyse the preferences for residential site selection within Kabul New City, yielding novel means of forecasting post-conflict modes of settlement. D. Vishnevsky (2024) discussed risk management measures for urban plan initiatives within post-war reconstruction contexts, focusing on prioritising the application of proactive risk analysis within risky environments. The study aimed to develop a strategic urban planning framework for Kabul that bridged the gap between theoretical insight and practical application by integrating resilience, sustainability, and community-focused, institutionally informed spatial approaches for post-war reconstruction.

MATERIALS AND METHODS

This study addressed the strategic framework for reconstruction of cities affected by war, focusing specifically on Kabul. It employed a descriptive-analytical approach placing emphasis on qualitative methodologies. In the first stage, it was selected relevant documents and data concerning urban planning for Kabul, which included master plans, reports from international bodies, like Japan International Cooperation Agency to assess the level of post-conflict reconstruction progress (Japan International Cooperation Agency..., 2009). QGIS and tools under the umbrella of Geographic Information Systems (GIS) were used for the spatial analysis. The geospatial data included urban base layers, for example, road networks and landuse, post conflict damage Shapefile from OSM, as well as demographic and infrastructure data from the World Bank (World Bank Group, 2021; OpenStreetMap Data Extracts, n.d.). These datasets underwent quality assessment and geometric corrections, in addition to coordinate system unification with WGS84/UTM Zone 42N before being used in QGIS.

To explore the institutional and social gaps in the reconstruction of Kabul, it was carried out semi-structured interviews with experts in urban planning, faculty members, and representatives of local organisations. To complement the spatial and documentary analysis, the study incorporated qualitative data from 25 semi-structured interviews with key stakeholders of Kabul's urban reconstruction process. The group of interviewees was purposefully selected and comprised eight urban and architectural experts, six municipality and governmental authorities, six national and international NGO (Non-Governmental Organisation) officials, and five local community leaders and civil activists. Interviews were conducted virtually on secure internet platforms from March to June 2023. An interview protocol was designed to elicit information on perceived strengths and weaknesses, opportunities and threats in the planning process; inter-institutional coordination and its efficacy; the extent and improvement of community participation and its role; and constraints to the application of modern tools such as GIS (The Declaration of Helsinki, 2013). The qualitative data from interviews were correctly transcribed and analysed stringently along a thematic framework. A SWOT analysis was conducted to systematically structure and condense qualitative results along four strategic axes: inner strengths and weaknesses of Kabul's urban planning machinery and external opportunities and threats conditioning

the process of reconstruction. A SWOT matrix was obtained from cross-tabulating frequent codes from the thematic analysis with the specific expertise and perceptions of different stakeholder groups. This method integration permitted an inventory of the strategic landscape of post-conflict urban planning for Kabul and for the emergence of thematic challenges and possibilities, and for drawing on critical leverage points for the proposed conceptual framework.

In the analysis stage, the topological error correction, duplicate geometry removal, and boundary refinement land use cuts were done as a preprocessing task. After this, overlay analysis followed by zonal statistics was performed to reveal the areas with severely high damage adjacent to the population zones with a high concentration of people. In order to prioritise reconstruction zones, a CVI was developed in Python using geopandas, rasterio, numpy, and matplotlib. The analytical workflow included indicator normalisation, weighted based on comparative studies and expert opinion, and data fusion into the CVI model. Combining theoretical findings with empirical data, a conceptual model aimed at strategic reconstruction planning for the city of Kabul was formulated. The model was based on three main pillars: passive defense, sustainable development, and local participation. The model aimed to be tailored to other cities that had experienced war and served as a guidance document for urban recovery policy planning. For a better understanding of Kabul's urban planning, Table 1 provided geographical coordinates.

Table 1. Geographic coordinates of Kabul City

Description	Latitude (N)	Longitude (E)
City centre (Approximate)	34.5553°	69.2075°
Northern boundary	34.6500°	69.2000°
Southern boundary	34.4500°	69.2200°
Western boundary	34.5500°	69.1000°
Eastern boundary	34.5500°	69.3000°

Source: LatLong.net (n.d.)

Establishing Kabul's precise geographical boundaries was essential for this study. These coordinates provided the foundational spatial framework for all subsequent GIS analysis, ensuring the accurate integration and overlay of various datasets such as land use, infrastructure, and damage maps – within a unified and consistent geographical context (Fig. 1).

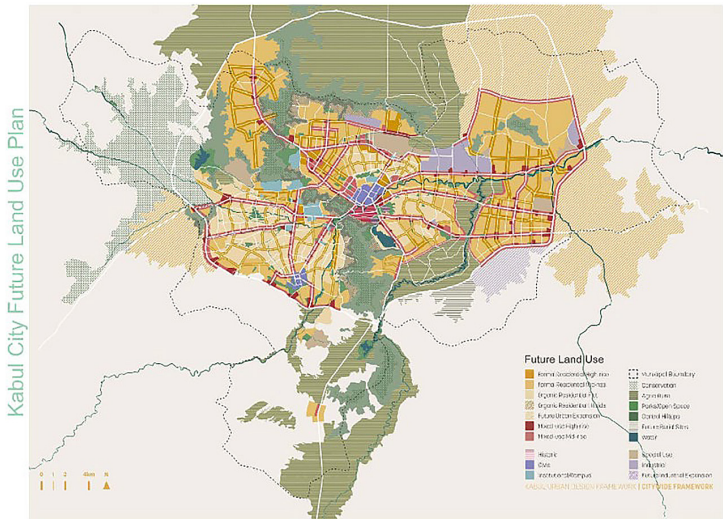

Figure 1. Land use plan in Kabul based on the detailed plan
Source: based on A.S. Jahani (2023)

Land use map was generated in QGIS using Kabul's detailed planning documents. It served as the base layer for spatial analysis and vulnerability assessment, following A.S Jahani's (2023) zoning methodology to identify disparities between planned and actual urban development patterns.

RESULTS AND DISCUSSION

Analysing the quantitative data concerning urban damage in Kabul indicated the varying extents of destruction within the city. In the Dasht-e-Barchi area, which experienced the greatest extent of devastation, roughly 60% of the structures were destroyed. This level of destruction was due to period of intense military fighting coupled with the prevailing construction standards in this district. However, M.S. Barabash *et al*. (2024) demonstrated that explosive loads can precipitate building collapse when construction standards are insufficient, underscoring the need for more robust building design in conflict-prone

areas. With 18 damaged roads, the Jalalabad Road corridor had sustained the most extensive damage to the transportation network in the city, which was detrimental to the economy and citizens' access to services. Even though the city centre showed a moderate destruction rate (45%), the destruction of 8 critical facilities, like hospitals and government offices required urgent attention. The outlying areas, although having lower destruction rates at 22%, exhibit greater social vulnerability due to the lack of adequate primary infrastructure (Fig. 2).

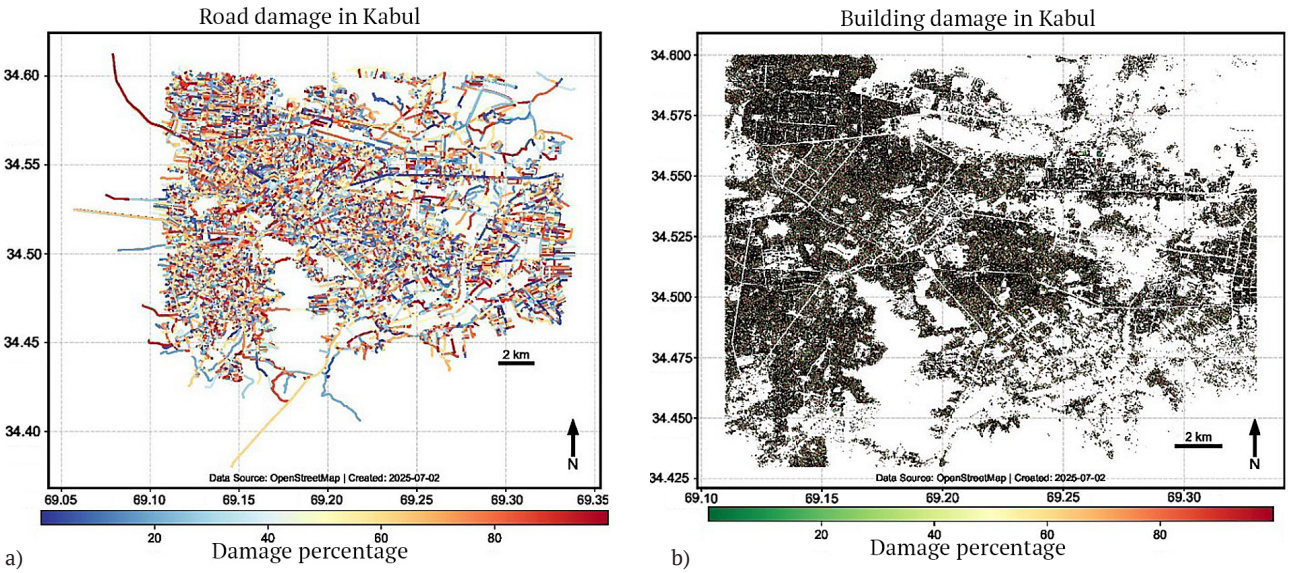

Figure 2. Spatial distribution of destruction in Kabul City
Note: a – road damage network map; b – building destruction density map
Source: OpenStreetMap Data Extracts (n.d.)

This spatial analysis presents Kabul's destruction patterns through two complementary maps. Figure 2, a showed building destruction density, with colour gradients indicating damage severity from low (green) to high (red). Figure 2, b displayed damaged road networks and critical infrastructure points. Together, these maps provided essential spatial intelligence for prioritising reconstruction efforts in the most severely affected areas. Table 2 demostrated quantitative assessment of urban destruction across various districts of Kabul.

Table 2. Quantitative measures of urban damage in different areas of Kabul

Area	Building destruction rate	Number of damaged roads	Number of destroyed critical facilities
City centre	45%	12	8 (hospitals, government offices)
Jalalabad Road	32%	18	3 (bridges, terminals)
Dasht-e-Barchi	60%	9	5 (schools, medical centres)
Peripheral areas	22%	5	1 (police stations)

Note: total buildings: 424,370; total roads: 19,300
Source: OpenStreetMap Data Extracts (n.d.)

Figure 3 presented a comprehensive typological analysis of Kabul's urban fabric, complementing the damage assessment reported in Table 2 by characterising the composition and prevalence of building and road types that constitute the city's physical assets. The figure comprised four complementary charts: Figure 3 (a) depicted the proportional distribution (%) of the top five building types, highlighting the dominance of residential structures; Figure 3 (b) showed the proportional distribution (%) of the top five road types, emphasising the high prevalence of residential roads; Figure 3 (c) presented the absolute count of the top ten building types, providing a quantitative assessment of different structural uses; and Figure 3 (d) illustrateed the absolute count of the top ten road types, detailing the composition of the transportation network. The analysis of Kabul's CVI revealed an uneven distribution of multidimensional risks across the city (Table 3). According to this assessment, the Central and Northwestern districts of Kabul demonstrated the highest vulnerability levels due to a combination of factors including high population density, deteriorating infrastructure, and proximity to strategic centres. These areas were classified as "Red zones" requiring immediate interventions, such as rehabilitation of critical infrastructure, implementation of early warning systems, and execution of community training programmes.

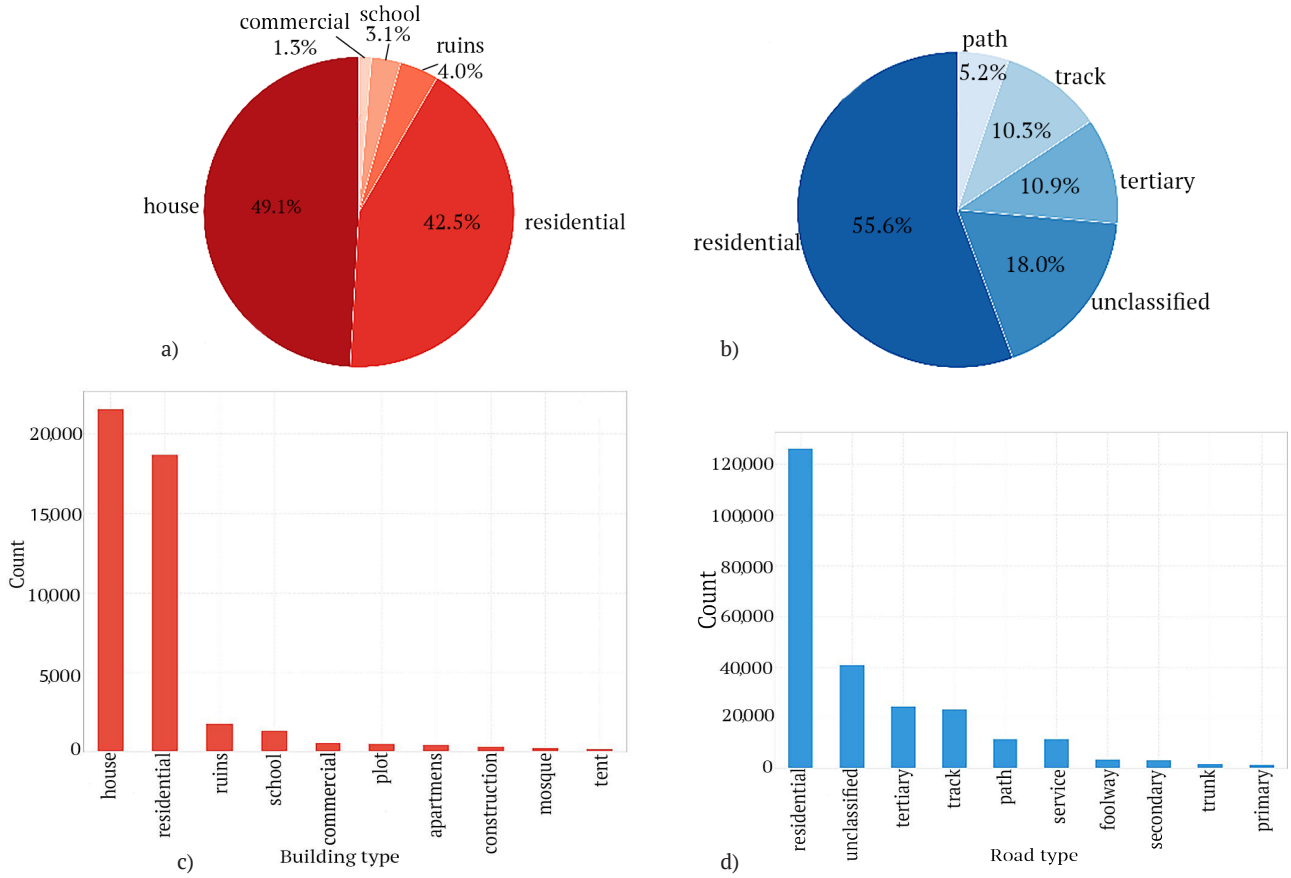

Figure 3. Typological and quantitative analysis of building and road distributions in Kabul City
Note: a – Top 5 building types; b – Top 5 road types; c – Top 10 building types; d – Top 10 road types
Source: OpenStreetMap Data Extracts (n.d.)

Table 3. Quantitative results of Kabul's CVI

Indicator	Red zones (High)	Orange zones (Medium)	Yellow zones (Low)	Green zones (Very low)
Area (km²)	32.5 (18%)	58.7 (33%)	45.2 (25%)	42.6 (24%)
Critical infrastructure	87 (63%)	32 (23%)	15 (11%)	4 (3%)
Average CVI score	82.5	64.3	42.1	21.8
Building damage (%)	68	45	28	12
Damaged roads (%)	55	28	12	5

Source: OpenStreetMap Data Extracts (n.d.)

The CVI analysis for Kabul revealed stark disparities in urban risk distribution, with Central and Northwestern districts ("Red zones") showing extreme vulnerability – containing 63% of critical infrastructure and 68% of building damage within just 18% of the city's area, while peripheral Green zones remained relatively intact with only 3% of infrastructure and 12% damage. These findings demonstrated that 83% of Kabul's urban challenges concentrated in 51% of its territory, demanding prioritised interventions, including infrastructure rehabilitation in "Red zones" (requiring 70% of resources), land-use redesign in high-risk areas, and community preparedness programmes, while suggesting that sustainable development models could be piloted in less-affected Green zones, presenting a clear roadmap for efficient post-conflict recovery through spatially-targeted resource allocation. SWOT-analysis of urban planning in Kabul based on 25 semi-structured interviews with urban reconstruction stakeholders demonstrated in Table 4.

Table 4. SWOT analysis of Kabul's urban planning

Category	No.	Factor	Analysis
Strengths	1	Specialised urban planners	Skilled professionals for modern projects
	2	NGO participation	Access to international resources
	3	Local leaders' awareness	Understanding socio-cultural challenges

Table 4. Continued

Category	No.	Factor	Analysis
Weaknesses	1	Lack of urban data	Hinders GIS utilisation
	2	Institutional overlap	Causes management inefficiencies
	3	Administrative corruption	Obstructs transparent implementation
	4	Lack of training	Deficiency in spatial analysis skills
Opportunities	1	GIS/PGIS adoption	Enhances transparency
	2	Inter-agency coordination	Improves institutional cohesion
	3	Capacity building	Reduces structural weaknesses
	4	Participatory planning	Builds community trust
Threats	1	Political instability	Disrupts long-term planning
	2	Security threats	Limits project accessibility
	3	Political interference	Biases resource allocation
	4	Ethnic divisions	Creates conflict-area challenges

Source: developed by the author

The SWOT analysis concerning the urban planning of the city of Kabul outlined a dynamic conjunction of internal strengths and weaknesses as well as external opportunities and threats shaping urban growth. On the strengths aspect, the specialised urban planners, coupled with active participation from NGOs and local leaders that were aware of socio-culturals, had sharpened the growing capacities for implementing infrastructure development. On the other hand, an insufficient urban data, overlapping institutions, administrative corruption, lack of skilled personnel, and deficient technical know-how were multiple systemic hurdles to socio-economic development programme implementation. At the same time, there were critical gaps such as the use of geospatial data and technologies, better inter agency collaboration, enhancement of local skills, fostering appreciation for participatory planning, inclusiveness, and effective and cooperative planning (Kozhobaeva *et al.*, 2024).

However, these regions tended to be overshadowed by external dangers, such as political violence, ethnic division, political bullying, security threats, violence, and instability, which heavily compromised programme sustainability and overall stability. This type of analysis led to conclude that effective urban planning in Kabul must: 1) deploy and maximise available strengths; 2) strategically diminish identified weaknesses; 3) maximise fragilities; 4) passively negotiate vulnerabilities. A mix of socio-political and technical elements bolstered with institutional strength could bring about urban change that was both transformative and enduring for this region. Analysis of stakeholder interviews indicated that the city's strengths were primarily related to technical capacity, with 84% of respondents confirming the availability of technical expertise as a key asset. Regarding weaknesses, 92% of participants identified data deficiencies and 76% cited corruption as major constraints. In terms of opportunities, 68% emphasised the potential for GIS adoption, while 81% highlighted the benefits of participatory planning for improving urban processes. Concerning threats, 88% of stakeholders expressed concern about the impact of political instability on long-term planning. Research underscored the necessity for context-sensitive, multi-stakeholder approaches in post-conflict urban reconstruction, with particular emphasis on institutional capacity building and community engagement mechanisms. Identification of key themes in stakeholder interviews was presented in Table 5.

Table 5. Thematic analysis coding of stakeholder interviews

Main code	Subcodes	Frequency
Institutional barriers	Administrative overlap, resistance	6
Technical deficiencies	Lack of GIS training, outdated systems	5
Social challenges	Ethnic divisions, distrust	5
Corruption	Corruption, lack of transparency	4
Instability	Political instability	4
Planning issues	Short planning cycles	4

Source: developed by the author

The thematic analysis of interviews with Kabul's urban reconstruction stakeholders revealed five major challenges in the urban planning process. Institutional barriers emerged as the most frequently cited issue (6 occurrences), primarily involving organisational redundancy and resistance to change. Technical deficiencies and social challenges followed closely (5 occurrences each), reflecting both skill gaps (particularly in GIS applications) and deeper societal issues like ethnic divisions and public distrust.

Administrative corruption and political instability (4 occurrences each) represented additional significant obstacles to effective urban reconstruction. Notably, the

repeated emphasis on short planning cycles (4 occurrences) highlighted the modern impossibility of long-term strategic planning in the existing environment. Figure 4 showed possible areas for reconstruction in Kabul.

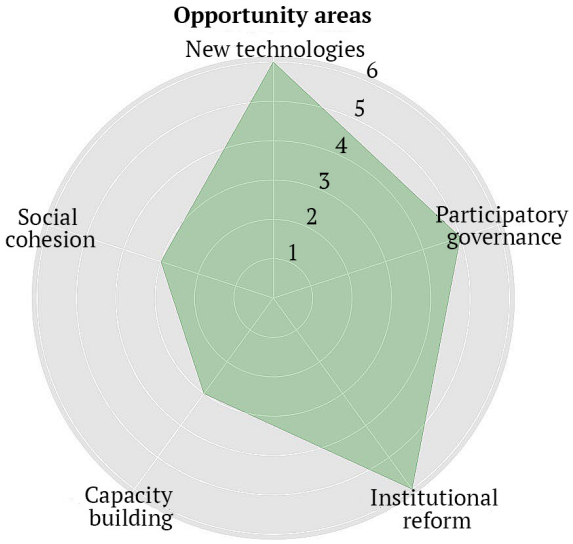

Figure 4. Opportunity areas for reconstruction in Kabul
Source: developed by the author

The findings highlighted that the most significant opportunities for Kabul's reconstruction fall into three key areas: new technologies (6 mentions), institutional reform (6 mentions), and participatory governance (5 mentions). Together, these three domains account for over 70% of identified opportunities. The radar chart visually reinforced this concentration, with the axes for technology and institutional reform showing the widest spans, indicating their prominence. In contrast, capacity building and social cohesion (each with 3 mentions) appeared less emphasised but remained relevant. The stakeholder matrix analysis of Kabul's urban reconstruction revealed significant differences in how various groups perceived challenges and opportunities (Table 6).

Table 6. Matrix of codes and roles of interviewees

Role	Institutional barriers	Corruption	Data weakness	Social challenges	Participatory opportunities
Urban planner	High	Low	High	Low	Medium
Municipal official	Medium	Medium	Low	None	Low
NGO rep	Medium	None	None	High	High
Local leader	Low	None	Low	High	Medium

Source: developed by the author

So, urban planners, as technical experts, showed the highest sensitivity to institutional barriers and data deficiencies, while municipal officials assessed corruption and institutional issues as moderate challenges. In contrast, NGO representatives and local leaders strongly emphasised social challenges and participatory opportunities, but remained indifferent to corruption and data shortcomings. Based on the word cloud analysis of the interview texts, it can identify three core thematic clusters concerning Kabul's urban reconstruction discourse (Fig. 5). The institutional factors stood out as the focal area of concern, as the terms "institutions" and "planning" appeared as the largest ones. This spoke to the acute governance and decision-making challenges on the dual governance and planning levels. At the same time, social factors came into view with the recurrent appearance of "trust" and "security", capturing the human dimensions of post-conflict recovery. The technical aspects also formed one of the other three key clusters, where "GIS" and "data" signaled the increasing attention to the role of technology in reconstruction. Particularly, striking was the visual prominence of "overlap" next to "institutions", which highlighted long-standing problems with bureaucratic overlap. At the same time, the association between "people", "trust", and "security" indicated the predominant view among the stakeholders. It was also striking to note the recurrence of "coordination" in conjunction with "change", suggesting that many people shared the idea that a reconstruction system overhaul was essential. Taken together, the texts suggested that reconstruction was a multi-layered problem that required a combination of governance shift to address fragmentation, instill social trust, and integrate modern technology.

Figure 5. Word cloud analysis of Kabul urban reconstruction stakeholder interviews
Source: developed by the author

The results of this research showed substantial methodological and contextual congruence with studies on informal settlements and urban planning challenges in Afghanistan. Revelation of extremely concentrated vulnerability within particular "Red zones" of Kabul supported the findings of A. Hanif *et al.* (2024) in Herat, who also reported the clustering of physical and infrastructural problems within high-density informal areas. The spatial focusing of damage and vulnerability within this study CVI analysis supported their results concerning the uneven nature of urban problems. The GIS-informed study of informal settlement challenges within Kabul's Thirteenth district conducted by A.K. Stanikzai *et al.* (2024) supported results of this research concerning institutional fragmentation and data dearth. Their observation of governance voids within informal settlements complements of this reseaarch SWOT results, wherein 92% of stakeholders identified institutional overlap and data credibility as major constraints. This convergence across various districts of Kabul highlighted the systemic nature of these problems. In the context of urban development planning, W. Wafa *et al.* (2023) documented integrated planning deficits in Kabul New City's waste systems, repeating the institutional coordination challenges discussed in stakeholder interviews conducted in this study. The congruent findings implied concentrated planning strategies cross-specific sectors and constituted an intrinsic property of post-conflict Afghan cities' governance. The Kandahar urban resilience study of B.A. Karimi *et al.* (2024) exposed institutional and infrastructural weaknesses similar to what was found within this study on Kabul, and indicated such weaknesses were not unique to Kabul, but rather a property of several major Afghan cities. This inter-city validation highlighted the rationale for regionally transferrable reconstruction templates. In terms of public participation, the decision support systems study of J. Haqbeen *et al.* (2021) at the municipality of Kabul supported finding of this study that 81% of stakeholders deemed participatory planning an important opportunity. Their successful application of crowd-sourced issue identification exemplified the practical, real-world applicability of the participatory approaches. J. Cifuentes-Faura (2023) discussed the Ukrainian scenario, claiming efficient post-conflict urban planning should engage complex risk management tools and intense socio-cultural considerations to reduce long-run susceptibilities. Parallel understanding came from A. Alkazei & K. Matsubara (2021), who reported Beirut's attempts to harmonise modernity and cultural heritage maintenance through identity-driven urban regeneration efforts, albeit not without intense conflicts and neoliberal doses. B.A. Kazimee & A.W. Najimi (2017) emphasised that Kabul's recovery cannot be limited to physical reconstruction but must also address the protection of its historical urban fabric and cultural heritage as a foundation for social resilience. V. Chaturvedi *et al.* (2020), through high-resolution spatial analyses, demonstrated how post-2001 urban growth in Kabul followed highly fragmented and unbalanced patterns, reinforcing the necessity for spatially guided, data-driven recovery models. In addition, P.A. Calogero (2011) provided a historical-political insight into Kabul's urban planning, showing that political fragmentation and inconsistent governance had long hindered coordinated urban strategies. These perspectives collectively supported this study's argument that effective post-conflict urban frameworks must integrate spatial intelligence, institutional reform, and socio-cultural sensitivity.

CONCLUSIONS

This study illustrated that in a post-conflict scenario, the holistic and sustainable rebuilding of Kabul needed the establishment and execution of a multi-layered, integrated strategic framework addressing physical, spatial, institutional, and social aspects simultaneously. The "Red zones" covered 18% of the city but accounted for 63% of critical infrastructure, 68% of structural damages, and the highest population density. As a result of the semi-structured interview, it was determined that among stakeholders, 92% cited institutional overlaped and lacked of credible information as major challenges, while 68-81% supported geospatial technologies, governance reform, and participatory planning as key opportunities.

The proposed conceptual model was built on three core pillars: passive defense, focusing on resilient spatial networks, protective materials, and supporting infrastructure; sustainable development, emphasising reconstruction of critical infrastructure in high-risk areas, mixed land uses, and green, energy-efficient rebuilding; and local participation, ensuring continuous community involvement, empowerment of civil society, and skill-building workshops. Together, these pillars provided a concise framework for guiding post-conflict urban reconstruction. Successful implementation of this framework will require enhanced inter agency collaboration, development of spatial and social grounded longterm frameworks, and strong counter-corruption oversight and transparency frameworks. Such an approach enabled not just swift and effective restoration of infrastructure and services, but fortified lasting social and institutional resiliency, which served as a replicable reconstruction model for sustainable and responsible recovery in other war affected cities. Future research should examine the framework's adaptability across diverse post-conflict urban

contexts and explore advanced digital tools to enhance resilient, participatory, and sustainable reconstruction.

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CONFLICT OF INTEREST

None.

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Стратегічна урбаністична концепція відновлення міст пошкоджених війною: дослідження міста Кабул

Анотація. Повоєнна урбаністична реконструкція стала однією з найскладніших проблем сучасного просторового планування, у межах якої поєднувалися фізичні втрати, інституційний колапс і соціальна вразливість, що суттєво ускладнювало процес післявоєнного відновлення. Кабул – столиця Афганістану – стала показовим прикладом міста, в якому наслідки війни призвели до ослаблення міської інфраструктури та управлінських інституцій. Метою цього дослідження стала розробка стратегічного урбаністичного плану відновлення Кабула, що інтегрує принципи стійкості, сталого розвитку та участі громадян у післявоєнній реконструкції. Результати дослідження засвідчили наявність глибоких просторових нерівностей у рівні пошкоджень міського середовища на території Кабула. Аналіз даних про руйнування показав, що район Дашт-е-Барчі зазнав найбільших втрат – зруйновано близько 60 % будівель, тоді як найбільші пошкодження транспортної мережі, зокрема 18 ключових магістралей, зафіксовано вздовж коридору дороги Джалалабад. Моделювання композитного індексу вразливості виявило, що лише 18 % території міста, визначені як «червоні зони», зосереджували 63 % ключової інфраструктури Кабула та 68 % загальних втрат забудови й потребували першочергового втручання. Інтерв'ю зі стейкхолдерами також засвідчили системні інституційні проблеми: 92 % респондентів назвали дефіцит даних і дублювання повноважень інституцій основними перешкодами, а 76 % – корупцію як постійний стримувальний чинник. Водночас, як ключові можливості було визначено впровадження геоінформаційних технологій (68 %), партисипативних моделей планування (81 %) та посилення міжвідомчої координації (68 %). Тематичне кодування інтерв'ю підтвердило фрагментацію управління, етнічні розмежування та короткострокові планувальні горизонти як типові виклики. Запропонована концептуальна рамка ґрунтувалася на трьох взаємопов'язаних опорах: пасивній обороні (просторове планування та стійкі мережі), сталому розвитку (відновлення на основі зеленої, критичної та соціально справедливої інфраструктури) та локальній участі (механізми підзвітності й планування, орієнтоване на громади). Отримані результати довели, що відновлення Кабула є залежним від просторово спрямованого розподілу ресурсів, інституційних реформ та репрезентативного врядування. Практична цінність дослідження полягає у запропонуванні прикладної моделі післяконфліктної урбаністичної реабілітації, яка може бути використана для формування стійких і ефективних стратегій відновлення міст, постраждалих від збройних конфліктів

Ключові слова: урбаністичне планування; післявоєнна реконструкція; сталий розвиток територій; урбаністична стійкість; післяконфліктне міське відновлення