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CRITICAL EXAMINATION OF THE IMPACT OF CONCRETE BUILDINGS ON URBAN AESTHETICS AND THE URBAN ENVIRONMENT: A CASE STUDY OF HERAT CITY

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Abstract. *In recent decades, the city of Herat, as one of Afghanistan's major historical and cultural cities, has experienced rapid and extensive growth in concrete-based construction. This study aims to examine the impacts of the expansion of concrete buildings on the visual aesthetics of the city and its environmental consequences. Data were collected through a 20-question interview questionnaire administered to experts in architecture, urban planning, and environmental studies. The findings indicate that the increasing use of concrete as the primary construction material has led to reduced harmony with the historical urban fabric, the emergence of monotonous and harsh architectural façades, and the weakening of Herat's indigenous and traditional architectural identity.*

On the other hand, the environmental consequences of this construction pattern include increased urban temperatures (urban heat island effect), reduction of green spaces, large-scale generation of construction waste, and high energy consumption. Based on qualitative and quantitative analyses, most experts believe that ineffective supervision, weaknesses in climate-responsive design, and the absence of sustainable development approaches are among the principal factors intensifying these challenges.

The paper concludes by proposing solutions such as utilizing alternative materials, implementing environmental policies in urban planning, and enhancing public awareness to improve architectural quality and preserve the urban environment.

Keywords: *Concrete, Urban Architecture, Environment, Herat City, Sustainable Development, Urban Aesthetics, Construction Materials.*

1. Introduction

The rapid growth of urbanization in developing countries, including Afghanistan, has transformed the expansion of residential, commercial, and administrative spaces into a major concern for urban managers and policymakers. Urban growth, while creating opportunities for economic development and infrastructure expansion, also presents significant challenges related to

sustainability, social equity, and environmental quality (United Nations Human Settlements Program [UN-Habitat], 2020). Herat, one of Afghanistan's oldest and most densely populated cities, has experienced a substantial wave of modern construction during the last two decades, particularly through the widespread use of concrete structures. This process of urban transformation has reshaped the physical and social landscape of the city.

Although concrete provides important technical advantages such as structural durability, accessibility, and rapid construction capability, its extensive application has also generated numerous concerns related to urban aesthetics, preservation of cultural identity, and environmental sustainability (Mehta & Monteiro, 2014). Contemporary urban studies indicate that construction materials and architectural forms significantly influence the visual identity and experiential quality of urban environments (Carmona et al., 2010). In cities with rich historical backgrounds such as Herat, the replacement of traditional architectural forms with standardized concrete structures may weaken the relationship between the built environment and local cultural identity (Alavi & Tanaka, 2023).

Concrete buildings, through their increasing presence in both newly developed and historical urban areas, directly affect the visual character of cities, patterns of social interaction, energy consumption, construction waste generation, thermal conditions, and access to open and green spaces (Gehl, 2011; United Nations Environment Programme [UNEP], 2022). In many urban neighborhoods, traditional courtyard houses have gradually been replaced by multi-story concrete buildings that are often designed without adequate consideration of façade regulations, climatic responsiveness, or human-centered principles.

Such transformations frequently contribute to visual disorder, architectural inconsistency, and declining levels of urban livability. Urban design scholars emphasize that the quality of public environments and architectural coherence strongly influence citizens' sense of place, belonging, and psychological well-being (Carmona et al., 2010; Gehl, 2011).

Meanwhile, as global urban development increasingly shifts toward sustainable and environmentally responsive architecture, conventional concrete construction practices-particularly those lacking innovative technologies and ecological considerations—pose substantial threats to urban environments. Research demonstrates that concrete-intensive urban development contributes to increased urban heat accumulation, environmental pollution, and ecological degradation (Santa Mouris, 2015). The accumulation and release of heat by urban materials contribute to the emergence of the Urban Heat Island phenomenon, particularly in hot and dry climates (Oke, 1982). Furthermore, concrete production and construction activities significantly contribute to carbon emissions and environmental degradation (Miller et al., 2016).

Considering the increasing importance of these issues, the present study employs a qualitative approach and analyzes expert perspectives regarding the impacts of concrete buildings to explore the challenges, opportunities, and potential solutions for improving architecture and urban planning in Herat.

The principal objective of this study is to critically examine the structural, environmental, and social consequences associated with the extensive use of concrete structures in Herat and to

propose practical recommendations for improving quality of life and preserving the city's cultural identity. Moreover, the study contributes to broader discussions concerning sustainable urban development, environmentally responsive architecture, and the integration of local identity into rapidly urbanizing cities (UN-Habitat, 2020; Alavi & Tanaka, 2023).

2. Theoretical Framework and Literature Review

2.1. Theoretical Framework

The study of the impacts of concrete buildings on urban aesthetics and environmental conditions requires an interdisciplinary approach drawing from architecture, urban planning, urban sociology, and environmental studies. Several key theoretical frameworks form the scientific basis of this research:

A. Urban Aesthetics Theory

This theory emphasizes that urban beauty is achieved through harmony among structure, color, scale, proportion, texture, lighting, materials, and surrounding spaces. According to this perspective, any structural intervention in the city-including concrete buildings-should be implemented in accordance with the historical, cultural, and climatic context of the area.

When building materials and construction styles are incompatible with local contexts, they create visual disturbances and reduce the aesthetic quality of urban environments.

B. Vernacular Architecture Theory

This theory highlights the importance of using local materials, traditional patterns, and climate-responsive designs. In Herat's traditional urban fabric, the use of baked brick, mud, wood, vaulted roofs, and courtyard-centered housing represented an important part of indigenous and historical architecture. The introduction of engineered concrete structures without adaptation to these principles has created discontinuities in cultural continuity and transformed the traditional architectural identity of the city.

C. Sustainable Urban Development Theory

Sustainable development refers to meeting present needs without compromising future generations' ability to satisfy their own needs. In architecture, this concept involves designing infrastructure using green materials, reducing energy consumption, recycling materials, utilizing clean technologies, and integrating structures with nature. If concrete buildings lack such characteristics, they conflict with sustainability principles.

D. The Right to the City Theory

This theory, rooted in the works of Henri Lefebvre, emphasizes citizens' rights to enjoy high-quality, healthy, beautiful, and socially inclusive urban spaces Lefebvre, H. (1996).

Uncontrolled concrete construction that restricts public spaces, damages urban landscapes, or contributes to environmental degradation violates this fundamental right. Cities are places where large populations live, and citizens' rights should be fulfilled through the provision of high-quality green spaces and healthy, aesthetically pleasing designs that respect the historical and cultural perspectives of the city.

2.2. Literature Review

Studies conducted in cities facing rapid urbanization and modernization indicate that the environmental and aesthetic consequences of concrete-based development have increasingly attracted scholarly attention worldwide. Existing literature suggests that although concrete construction offers structural and economic advantages, its widespread and uncontrolled use may generate considerable environmental, social, and visual challenges.

Research on urban environmental sustainability demonstrates that construction materials significantly influence urban climate conditions and ecological performance. For example, Gomez et al. (2019), in a study conducted in Mexico City, reported that concrete structures lacking climate-responsive design principles contribute to increased local temperatures, intensified air pollution, and higher energy consumption. Similar findings have been emphasized in studies examining the urban heat island phenomenon, which identify urban materials such as concrete and asphalt as major contributors to heat accumulation in cities (Oke, 1982; Santa Mouris, 2015).

The environmental implications of concrete extend beyond thermal effects. Concrete production itself is associated with substantial carbon emissions and environmental impacts.

Miller et al. (2016) demonstrated that concrete manufacturing significantly contributes to global CO_2 emissions, although improvements in production techniques can reduce environmental impacts. Likewise, the United Nations Environment Program (UNEP, 2022) emphasized that the building sector remains among the largest contributors to environmental degradation and energy consumption worldwide.

Urban aesthetics and architectural identity have also emerged as critical concerns in contemporary urban studies. Research by Abdollahzadeh et al. (2019) in Isfahan found that modern concrete buildings that lacked compatibility with indigenous architectural forms and materials negatively affected visual quality and weakened residents' sense of place. Similar arguments are presented by Amos Rapoport (1969), who argued that architectural forms are closely related to cultural values and environmental contexts. In addition, Carmona et al. (2010) emphasized that urban design quality depends heavily on visual coherence, architectural harmony, and contextual responsiveness.

A case study conducted in Cairo by the Arab Center for Architectural Studies (2020) further suggested that combining traditional architectural elements with modern concrete structures contributes positively to preserving urban identity while enhancing environmental quality. Comparable observations were made by Alavi and Tanaka (2023), whose research on Herat highlighted the importance of preserving historical architectural identity amid rapid modernization processes.

Studies concerning urban life and public spaces also indicate that architectural environments substantially affect social interactions and human well-being. Gehl (2011) argued that the design and physical quality of urban spaces shape patterns of social activity, human behavior, and citizens' experiences of place. Poorly designed built environments can contribute to social alienation and reduce urban livability.

In Afghanistan, however, scholarly research specifically examining the impacts of concrete structures on urban aesthetics and environmental sustainability remains limited.

Although studies concerning traditional architecture and urban planning have been conducted within universities and research institutions, focused investigations addressing the relationship between concrete buildings, environmental quality, and urban identity remain at an early stage. This research gap itself highlights both the significance and originality of the present study.

Based on the reviewed literature and theoretical perspectives, it can be concluded that urban development centered on concrete structures, when implemented without climate-responsive design principles, aesthetic considerations, and sensitivity toward local identity, may contribute not only to environmental degradation but also to the deterioration of urban quality and citizens' well-being. Therefore, the present study seeks to examine these issues within the local context of Herat as a historical city experiencing ongoing modernization.

3. Methodology

3.1. Research Type and Approach

The present study employed a qualitative research design using a content analysis approach based on interviews conducted with architects, civil engineers, and university professors specializing in architecture and building engineering. The selection of this method was based on the multidimensional nature of the research topic, namely the impact of concrete buildings on urban aesthetics and the urban environment in Herat, which requires an in-depth understanding of professional experiences, perceptions, and expert knowledge.

The qualitative approach made it possible to examine complex urban realities that cannot be adequately measured through quantitative indicators and statistical methods. By utilizing expert perspectives, the study sought to provide a deeper analytical understanding of the environmental, social, and aesthetic dimensions associated with concrete structures.

3.2. Data Collection Instruments

The primary instrument used for data collection was the semi-structured interview method.

The interviews were developed based on 20 scientific, purposeful, and practical questions designed to cover various dimensions of the research topic. These dimensions included:

- Urban aesthetics and visual landscape
- Environmental sustainability
- Climate-responsive design and building materials
- Public awareness and social participation
- Urban regulations and policy-making

The questions were designed to elicit both technical viewpoints and critical reflections from participants. Interviews were conducted in written form with the informed consent of participants and subsequently analyzed.

3.3. Population and Sampling Procedure

The study population consisted of professional groups directly related to the research topic, including:

- Local architects and university professors in architecture and urban planning
- Structural engineers and construction consultants actively working in Herat

- Environmental specialists
- Representatives of civil society organizations involved in urban issues
- Employees of the municipality and cultural heritage institutions

A purposive sampling technique was employed to select participants with relevant expertise and practical experience. In total, the perspectives of 20 participants were included in the analysis.

4. Data Analysis

The collected data were analyzed using Thematic Analysis. The responses to the 20 interview questions underwent several analytical stages: Initial coding: identification of key concepts and recurring ideas;

Categorization: grouping concepts into subthemes such as façade impacts, energy consumption, and sense of place; Extraction of major themes, organized into four principal categories:

- Urban aesthetics
- Urban environmental sustainability
- Urban governance and policy management
- Public awareness and social culture in Herat

In the final stage, comparative and interpretive analyses were conducted to synthesize findings and generate broader scientific conclusions.

4.1. Research Validity and Ethical Considerations

Several measures were undertaken to enhance the scientific validity and credibility of the research:

- Careful design of interview questions based on theoretical literature and comparable standardized questionnaires;
- Selection of participants possessing specialized knowledge and practical experience;
- In-depth comparative analysis supported by relevant theoretical frameworks;
- Repeated review of responses to minimize researcher bias during interpretation;
- Adherence to research ethics principles, including informed consent, confidentiality, privacy protection, and anonymization of participants.

4.2. Methodological Limitations

Although qualitative research provides rich and in-depth understanding of social and environmental phenomena, several limitations should be acknowledged:

- Findings are context-specific and cannot be generalized to all populations;
- Interpretation of responses depends partly on researcher judgment;
- Some participants may have expressed views influenced by personal or institutional perspectives.

Nevertheless, efforts were made to ensure analytical rigor and credibility through participant diversity and multilayered analysis.

5. Findings and Discussion

5.1. Theme One: Urban Aesthetics and Architecture

Concrete buildings, as the dominant construction form in Herat over the past two decades, have exerted profound and multidimensional impacts on urban aesthetics. Analysis of expert responses indicates several significant concerns.

Most participants emphasized that the uncontrolled expansion of concrete buildings, combined with insufficient supervision of exterior façade design, has reduced visual coherence, material diversity, and color harmony within the urban landscape of Herat.

The dominant gray appearance of concrete surfaces, repetitive textures, sharp geometric forms, and the absence of traditional architectural ornamentation have contributed to urban environments perceived as monotonous, harsh, and visually unfriendly.

In the absence of context-sensitive architecture, many façades appear imitative and lacking identity, while multi-story buildings with inconsistent styles have emerged side by side throughout urban neighborhoods.

One senior architect stated:

"There is no such thing as proportionality in façades. Everyone builds according to personal preferences—glass, stone, cement, ceramic-without coherence or compatibility. What we currently observe in Herat is visual chaos."

Another frequently repeated concern among participants involved the growing disconnection between contemporary architecture and Herat's historical identity. Traditional urban fabric in Herat historically consisted of mud-brick houses, domed roofs, arched spaces, central courtyards, and modest yet aesthetically pleasing architectural details.

These features not only responded effectively to climatic conditions but also reflected social values, cultural identity, and local ways of life.

The emergence of concrete structures lacking climatic responsiveness and historical continuity has generated a form of architectural fragmentation and identity disruption, particularly in newly developed peripheral areas where urban growth has occurred without adequate planning.

As one participant remarked:

"Concrete buildings have disconnected the city from its traditions and identity. We no longer resemble authentic architecture, nor have we achieved the qualities of modern beauty. In reality, we have become neither one nor the other."

According to respondents, urban aesthetics directly influence psychological well-being, sense of belonging, and emotional attachment to place.

In neighborhoods characterized by harsh and disproportionate building forms, residents frequently experience feelings of alienation and dissatisfaction.

Participants further argued that aesthetically insensitive concrete apartment developments have transformed urban spaces from human-centered environments into industrial structures.

The disappearance of courtyards, attractive balconies, green spaces, and warm colors has created environments perceived as cold, repetitive, and lacking vitality.

Table 1. Evaluation of the Impact of Concrete Buildings on Urban Aesthetics in Herat City

No.	Indicators	Positive Impact	Negative Impact	No Impact
1	Urban visual coherence	5%	75%	20%
2	Compatibility with the historical urban fabric	3%	85%	12%
3	Diversity of materials and colors	10%	70%	20%
4	Enhancement of sense of belonging and psychological security	8%	77%	15%
5	Development of harsh and lifeless **façades**	0%	90%	10%

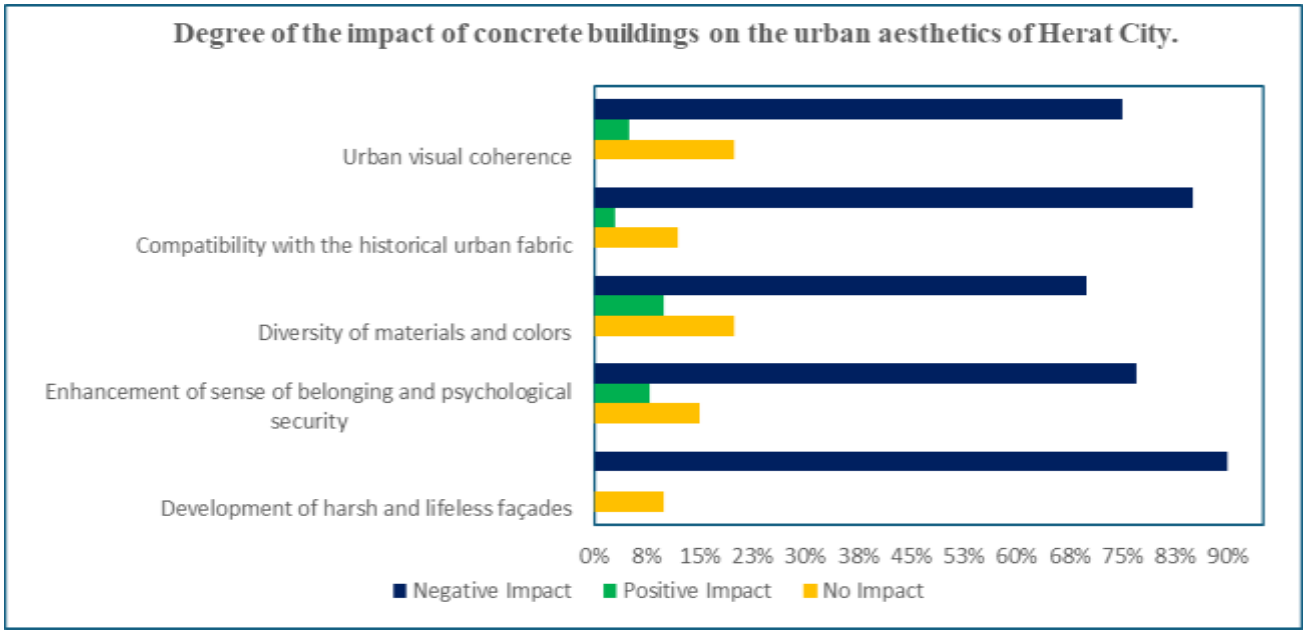

Figure 1: Degree of the impact of concrete buildings on the urban aesthetics of Herat City.

One of the primary reasons behind this situation has been identified as the absence of façade design regulations and the lack of effective supervisory mechanisms within Herat Municipality. Although some general regulations exist, experts argue that these guidelines are either not implemented or lack sufficient enforcement authority.

According to specialists, some buildings are constructed based on Western or Eastern architectural models without adaptation to the cultural and climatic context of the city, and there are no effective legal restrictions preventing such practices.

As one expert stated: “Neither the architect nor the engineer is entirely responsible; the system itself is problematic. If there is no clear regulation, for example, requiring façades to incorporate local materials or climate-responsive designs, it is natural that everyone follows their own preferences.”

Participants' Recommendations for Improving Urban Aesthetics: Analysis of participants' recommendations indicates several fundamental strategies for improving urban aesthetics in response to concrete-based construction:

- Formulating and implementing façade design regulations through the municipality, with emphasis on compatibility with indigenous urban fabric and the use of appropriate local and traditional materials.
- Requiring diversity in color, texture, and construction materials in exterior façades while prohibiting the use of exposed or repetitive concrete surfaces.
- Integrating vernacular architecture with concrete structures through educational programs for architects, designers, and builders.
- Encouraging artistic designs, warm color palettes, arches and vaults, and restoring the role of courtyards and balconies in apartment design.
- Establishing urban design committees within supervisory institutions to review and approve façade designs for large-scale buildings.
- Organizing urban architectural competitions to create exemplary beautiful and localized building designs.

The expansion of concrete structures in Herat, without consideration for aesthetic and identity-related dimensions, has resulted in a crisis in the city's visual character. Harsh, identity-less, and disproportionate façades have diminished residents' sense of belonging, weakened cultural connections, and contributed to the erosion of the city's historical and indigenous identity.

Potential solutions lie in revising supervisory policies, reviving traditional and historical architectural values, and integrating them with contemporary design approaches.

5.2. Theme Two: **The Impact of Concrete Buildings on Environmental Sustainability in Herat City**

The rapid growth of concrete-based construction in Herat, similar to its influence on urban aesthetics, has generated substantial environmental consequences. Analysis of interview responses demonstrates that, from an environmental perspective, the uncontrolled expansion of such buildings has created challenges including localized warming, air and soil pollution, excessive energy consumption, production of non-recyclable waste, and destruction of vegetation cover.

Due to their physical and thermal characteristics, concrete buildings intensify localized warming in Herat's hot and arid climate. Concrete, as a material with high thermal capacity, absorbs and stores heat during the day and gradually releases it at night.

This process contributes to the formation of the Urban Heat Island (UHI) phenomenon, leading to increased nighttime temperatures and reduced thermal comfort for residents.

According to environmental engineers, increasing density of concrete buildings has also reduced sunlight reflection, restricted airflow, and lowered environmental humidity. Consequently, energy demand for cooling during summer has increased significantly.

Another significant issue emerging from the collected data is the large volume of concrete construction debris. In urban renewal, demolition, and reconstruction projects, substantial quantities of concrete materials are discarded as waste.

The absence of facilities and infrastructure for recycling construction materials-particularly concrete-has resulted in soil contamination, increased pressure on landfill sites, and occupation of urban peripheral lands and roadsides.

The accumulation of concrete construction waste has inflicted irreparable damage on Herat's traditional and historical identity from both environmental and aesthetic perspectives.

As one specialist noted: "Concrete recycling is virtually nonexistent in Herat. When an old building is demolished, debris is either piled up outside the city or dumped into rivers, which is environmentally disastrous."

Conventional concrete buildings lacking thermal insulation, natural ventilation systems, or climate-responsive designs exhibit high dependency on heating and cooling systems. Many newly constructed buildings in Herat are equipped with air-conditioning systems and evaporative coolers which, due to their substantial electricity consumption, impose heavy pressure on the city's energy network.

In contrast, traditional architecture historically maintained thermal balance naturally through the use of wind catchers, thick walls, breathable materials, and courtyard-centered layouts. Experts also highlighted several major shortcomings, including:

- Lack of double-glazed windows
- Absence of shading systems
- Improper and technically unsuitable orientation of buildings relative to sunlight

Concrete structures, due to efforts to maximize land utilization, are frequently constructed without courtyards, gardens, or open spaces. Consequently, many urban neighborhoods-particularly apartment complexes-contain almost no internal or semi-public green areas. This phenomenon contributes to:

- Reduction in urban vegetation cover
- Lower oxygen levels
- Increased pollution
- Greater difficulty in thermal exchange within urban environments

Many respondents emphasized that the removal of trees, courtyards, and green surfaces directly affects psychological well-being, visual comfort, and environmental pollution levels.

Interviews with experts further revealed that Green Concrete or low-carbon alternative materials have not yet become common in Herat. Current concrete production relies heavily on Portland cement, considered one of the world's most carbon-intensive construction materials in terms of carbon dioxide emissions.

Furthermore, technologies such as green roofs, green walls, and solar energy systems have not yet been integrated into building design processes.

As one participant explained: "If we equip the same concrete building with solar panels, thermal insulation, and green roofs, its environmental impacts could be significantly reduced. But we lack regulations, awareness, and resources."

Table 2. Evaluation of the Impact of Concrete Buildings on the Urban Environment of Herat City

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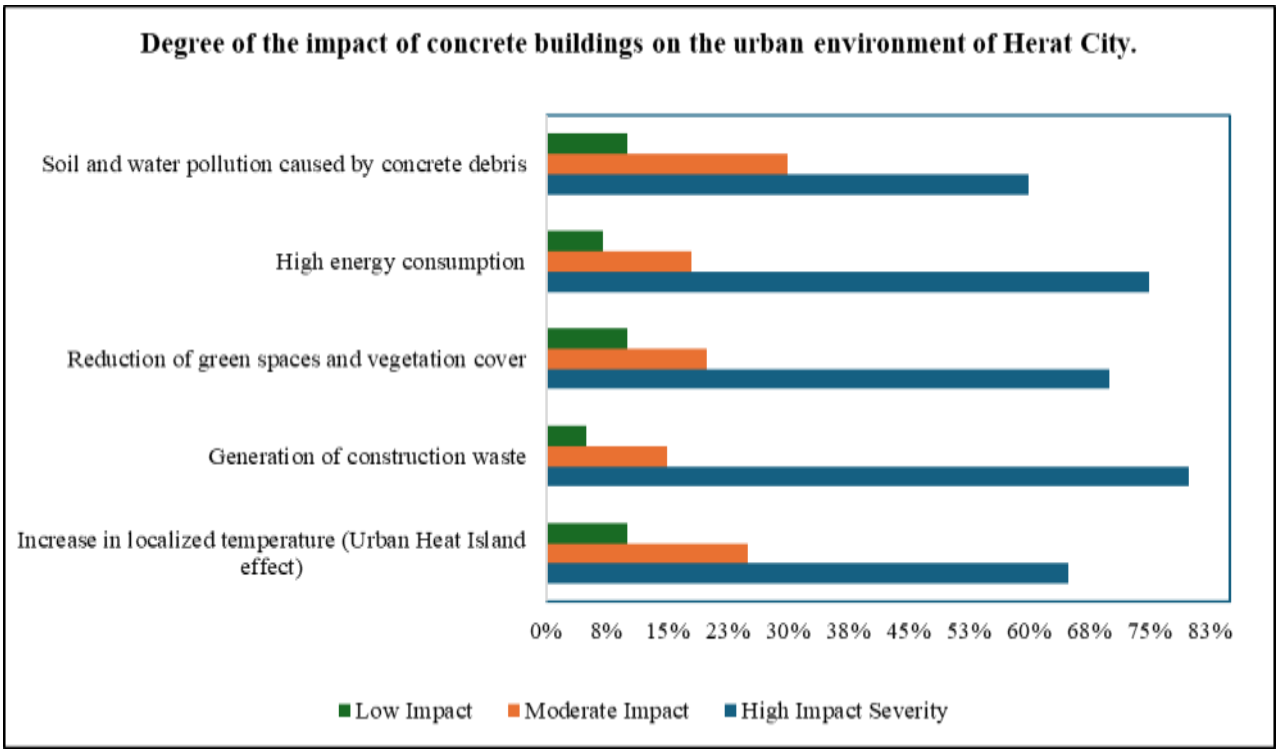
No.	Indicators	High Impact Severity	Moderate Impact	Low Impact
1	Increase in localized temperature (Urban Heat Island effect)	65%	25%	10%
2	Generation of construction waste	80%	15%	5%
3	Reduction of green spaces and vegetation cover	70%	20%	10%
4	High energy consumption	75%	18%	7%
5	Soil and water pollution caused by concrete debris	60%	30%	10%

Figure 2: Degree of the impact of concrete buildings on the urban environment of Herat City.



Respondents' Recommendations for Reducing the Environmental Effects of Concrete Buildings

Analysis of the findings demonstrates that specialists proposed practical and localized solutions for mitigating the environmental impacts of such structures, including:

- Using alternative materials such as green concrete or concrete containing recycled materials.
- Insulating walls and roofs using lightweight construction materials resistant to heat and cold.
- Incorporating skylights, shading devices, green roofs, and vegetated walls.

- Designing buildings according to climatic principles by considering solar orientation, wind flow, and natural ventilation.
- Establishing strict regulations for managing concrete debris and creating concrete recycling centers.
- Encouraging residents and developers to establish home gardens and green landscaping.
- Training contractors regarding environmental compatibility throughout construction processes.

Concrete structures in Herat, when not developed according to environmental sustainability principles and regulations, contribute significantly to urban warming, excessive energy consumption, pollution caused by construction waste, and the elimination of green spaces.

Moreover, they accelerate and intensify these challenges, thereby creating a major obstacle to sustainable urban development.

Addressing these issues requires integrating modern architecture with green technologies, public education, reforming construction laws, and supporting low-carbon building materials.

Additional challenges contributing to the worsening of urban development problems in Herat include:

- Limited awareness among property owners regarding the benefits of climate-responsive building designs;
- Weak specialization and inadequate professional expertise within the construction industry;
- Insufficient technical knowledge among builders concerning environmentally adaptive architectural design;
- Inadequate attention to environmental, visual, and aesthetic pollutants associated with construction;
- Execution of the majority of residential, commercial, and industrial construction projects by contractors and organizations lacking qualified technical and professional personnel.

5.3. Theme Three: Policy-Making, Regulations, and Urban Management Regarding Concrete Buildings in Herat

One of the most significant findings of this study concerns the extensive shortcomings and challenges related to policymaking, supervision, and management of concrete construction in Herat.

Analysis of expert responses reveals that legal gaps, weak supervision, lack of façade design regulations, and the absence of a long-term urban development vision are among the primary causes of the unbalanced and harmful growth of concrete structures in the city.

Lack of Specific Regulations for Façade Design and Material Selection

Most respondents emphasized that Herat Municipality currently lacks clear regulations and guidelines concerning building façades, material selection, color schemes, permissible building heights, architectural styles, and compatibility with local urban fabric.

As a result, owners and developers can freely choose façade designs, often selecting non-standard styles without restriction.

This situation has generated visual disorder and severe inconsistency within the urban landscape.

As one respondent stated:

"We do not have regulations specifying which façade materials are permitted or prohibited.

Exposed concrete, glossy ceramics, dark glass-everything is used, and neither the municipality nor any other institution intervenes."

Analysis of the interviews further indicates that one of the most critical weaknesses in Herat's urban management system is the absence of a comprehensive urban development document outlining long-term construction directions.

Consequently, urban growth proceeds randomly, driven by market demand and personal interests rather than by sustainability-oriented urban planning, cultural identity considerations, or social needs.

As one participant explained: "We have neither an updated master plan nor an operational detailed plan. Without a roadmap, construction merely responds to immediate housing needs rather than functioning as a tool for urban management."

According to most respondents, monitoring and inspection of construction projects-particularly concerning material selection and façade design-are either absent or highly ineffective.

Several participants noted that even when stop-work orders are issued, projects continue, and municipal officials lack the authority and tools necessary to prevent violations.

Weak supervision has enabled builders to reduce costs by using low-quality concrete, non-standard formwork, and inexpensive materials, resulting not only in reduced structural durability but also in environmental and aesthetic damage.

Some interviewees also emphasized severe shortages of qualified professionals within municipal structures and institutions related to construction, particularly in architecture, façade design, environmental management, and energy efficiency.

Consequently, many decisions are made by administrative personnel lacking technical expertise.

This problem is particularly evident within planning approval commissions, project supervision processes, and climate compatibility assessments.

Interviews further revealed that no financial incentives, tax reductions, banking facilities, or legal advantages have yet been established in Herat for green building projects or structures reflecting local architectural identity.

In contrast, municipalities in many neighboring countries encourage developers through incentive policies to utilize sustainable materials and indigenous architectural designs. The absence of such incentives has reduced the economic attractiveness of green buildings and culturally compatible architecture for contractors.

Respondents' Recommendations for Improving Urban Policy and Supervision

- Participants proposed several recommendations to improve urban policy regarding the expansion of concrete structures:

- Developing comprehensive regulations for façade design and construction materials considering Herat's climate, culture, and urban fabric;
- Establishing an "Urban Design Council" consisting of architects, façade designers, environmental engineers, and sociologists;
- Developing and implementing comprehensive urban master and detailed plans emphasizing sustainability, aesthetics, and urban justice;
- Strengthening technical and legal supervision of construction through qualified specialists;
- Providing financial incentives, permit discounts, and special privileges for green, aesthetically pleasing, and traditionally inspired buildings;
- Implementing technical and cultural training programs for builders and property owners concerning façade design, sustainable materials, and environmental issues;
- Encouraging public participation in monitoring façade implementation and unauthorized construction.

Analysis suggests that ineffective policymaking infrastructure, weak technical regulations, inadequate supervision, and absence of a development vision are the principal causes of environmentally incompatible and aesthetically inappropriate concrete buildings in Herat.

Without reforming these managerial foundations, sustainable architectural interventions cannot become institutionalized. Therefore, revising legal structures and strengthening supervisory capacities represent essential requirements for Herat's urban future.

5.4. Theme Four: Public Participation, Citizen Awareness, and Education in the Management of Concrete Construction.

In addition to technical, environmental, and managerial factors, one of the key dimensions highlighted in the analysis of interviews was the role of people, public culture, and social awareness in addressing the expansion of concrete buildings. Construction within urban environments is not merely a technical process; rather, it is a social, cultural, and economic phenomenon in which public behavior, aesthetic preferences, cultural attitudes, and educational systems play significant roles.

Most respondents emphasized that part of the visual disorder and inappropriate use of concrete results from insufficient architectural awareness and aesthetic literacy among the general public and building owners. In many cases, individuals select façade types, colors, and construction materials based solely on personal preferences or recommendations from local builders and craftsmen, without consulting architects or professional designers. Such individual decisions, when repeatedly implemented at the urban scale, contribute significantly to visual inconsistency and disorder within the urban landscape.

As one respondent explained: "In many cases, we suggest that owners use traditional and local designs or environmentally compatible façades; however, they respond by saying: 'No, we prefer glossy stone or exposed concrete because it appears modern.'"

Participants also expressed serious concern regarding the lack of public education in architecture, environmental sustainability, and urban aesthetics.

Within schools, universities, and even mass media platforms, concepts related to architectural aesthetics, green materials, and sustainable design receive little attention.

Consequently, even many educated individuals remain unaware of the environmental and visual implications associated with their decisions concerning building design, construction, or purchase.

One interview participant stated: “If we do not teach concepts related to architecture, green spaces, environmental pollution, and aesthetics from childhood within our educational system, we cannot expect individuals to act responsibly when they grow up and begin constructing buildings.”

Analysis of responses further indicated that another factor contributing to the spread of architecturally incompatible buildings is the limited involvement of citizens in urban decision-making and planning processes. Citizens are generally regarded as passive consumers or property owners rather than active participants in shaping the city. As a result, public dissatisfaction concerning urban landscapes, traffic conditions, pollution, or land prices often remains absent from formal planning discussions, and mechanisms for social feedback regarding construction practices are lacking.

Several respondents recommended the establishment of local advisory institutions, neighborhood beautification councils, and public reporting systems for construction-related violations.

Some participants also argued that media platforms, social networks, and construction advertising promote misleading aesthetic standards among the public. Luxurious façades, stone buildings, and extensive glass structures are frequently presented as symbols of modernity despite lacking any meaningful connection to sustainability, climatic responsiveness, or local cultural identity. In the absence of educational media initiatives, such misconceptions continue to expand.

Respondents’ Recommendations for Improving Public Awareness and Participation

Participants proposed several measures aimed at improving construction culture, increasing public awareness, and encouraging social participation:

- Organizing educational campaigns and public awareness programs through municipalities, media outlets, and universities regarding the impacts of concrete construction;
- Integrating concepts related to urban aesthetics, traditional architecture, and environmental sustainability into school curricula;
- Encouraging media organizations to introduce successful examples of sustainable and aesthetically valuable architecture;
- Establishing local reporting systems for construction violations and incompatible building façades;
- Creating neighborhood beautification councils throughout urban districts;
- Implementing collaborative educational programs between municipalities and universities within local communities;
- Providing awards and incentives for outstanding traditional and environmentally responsive building designs through urban festivals and competitions.

Public culture, education, and citizen participation play crucial roles in the sustainable management of concrete construction. Without changing social attitudes and public behavior, even the most effective regulations and oversight mechanisms are unlikely to succeed.

Therefore, long-term solutions depend on improving public awareness, enhancing aesthetic understanding, and strengthening active citizen participation in urban decision-making processes.

6. Conclusion

The findings of this study demonstrate that concrete buildings, as the dominant form of construction in Herat, exert multidimensional and complex impacts on urban aesthetics, environmental sustainability, governance structures, and public culture. The expansion of concrete buildings without coordination with historical identity, indigenous materials, and architectural design principles has contributed to visual inconsistency and urban disorder. Lifeless and incoherent façades have weakened citizens' sense of belonging and psychological comfort. High energy consumption, extensive construction waste generation, reduction of green spaces, and intensification of the urban heat island effect represent major environmental consequences of concrete construction in Herat. The absence of comprehensive façade regulations, weak monitoring systems, and shortages of qualified specialists have encouraged unplanned and technically inappropriate construction practices. Furthermore, the lack of a long-term sustainable development vision has contributed to ineffective urban growth patterns.

Insufficient public awareness, weak environmental and architectural education, limited citizen participation in planning processes, and misleading media influences have slowed efforts toward improving concrete construction practices. Together, these explained dimensions have created a problematic cycle that remains difficult to address without coordinated interventions across multiple institutional and social levels.

7. Recommendations

7.1. Reforming Regulations and Policy Frameworks: Develop comprehensive façade design guidelines that regulate materials, colors, architectural styles, and building heights according to historical and climatic contexts. Require approval of façade designs by specialized committees before construction permits are issued. Establish regulations for construction waste management and concrete recycling.

7.2. Strengthening Monitoring and Institutional Capacity: Increase the number of specialized professionals within municipal institutions. Provide regulatory bodies with stronger legal and technical capacities. Establish transparent public reporting systems for construction violations.

7.3. Improving Public Awareness and Education: Integrate traditional architecture, sustainability principles, and urban aesthetics into educational curricula. Conduct workshops and public awareness campaigns for owners and builders. Utilize media platforms to promote sustainable and culturally appropriate architectural models.

7.4. Promoting Sustainable Architecture and Green Materials: Encourage the use of green concrete, recycled materials, and energy-efficient technologies. Provide tax incentives and

financial support for sustainable building projects. Develop pilot projects demonstrating successful sustainable construction practices.

7.5. Enhancing Participatory Urban Planning: Establish local construction and beautification councils within municipalities. Encourage public participation in urban design and construction oversight processes. Create dialogue platforms connecting architects, engineers, officials, and citizens.

Herat, with its rich historical and cultural heritage, possesses substantial capacity to integrate modernity with indigenous architecture. However, this potential can only be realized through comprehensive attention to aesthetics, environmental sustainability, urban governance, and public culture. Concrete buildings should not be viewed solely as a threat but rather as an opportunity to redefine urban identity and achieve sustainable development through scientifically informed, culturally responsive, and people-centered approaches.

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