



A Study on the Spatial Growth and Housing in Mingora, Pakistan (Phases of Expansions and Appraisal on the Criteria of Sustainable Cities)

Habib Ullah¹, Misbahud Din², M. Zeeshan Saqib³, Shahid Mansoor Khan⁴

¹ Ph. D. Scholar, School of Architecture, Southeast University, China. Email: 233217089@seu.edu.cn

² Assistant Architect, Pakistan Public Works Department, Islamabad, Pakistan. Email: arcmisbah@gmail.com

³ Architect, Arkitique Design Group, Islamabad, Pakistan. Email: arzeeshansaqib@gmail.com

⁴ Assistant Professor, Department of Architecture, University of Engineering & Technology Peshawar, Abbottabad Campus, Pakistan. Email: smkb72@uetpeshawar.edu.pk

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ABSTRACT

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Mingora as a city that has grown exponentially through years and has faced many challenges both manmade and natural through the phases of its development. From administrative changes to conflict, floods, earth quake and climate change, while these challenges are global, the urban fabric of Mingora Swat is majorly affected. This research critically appraises Mingora city through the lens of criteria for sustainable cities based on Land Use, Housing, Mobility, Economic development, Health and Green systems to establish its current status and finds major issues in terms of housing, haphazard expansion and transportation means in the city resulting in a lowered quality of life. This study aims to shed light on the current status of Mingora city, provide insight and devise a starting point and direction for policy and decision makers, by providing a devised development plan for sustainable interventions that the city requires.

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Corresponding Author's Email: 233217089@seu.edu.cn

1. Introduction

The discourse of urban sustainability has become increasingly significant in response to the current environmental and climate crisis. This is due to the fact that metropolitan centers are a significant source of pollution that has contributed to the current climate and environmental crisis. Presently, 56% of the world's population lived in cities, with this figure expected to rise to 70% by 2050 (World Bank, 2023). The improvement and attainment of sustainability in the urban environment are, therefore, essential for the overall global sustainability (Phillis, Kouikoglou, & Verdugo, 2017). Urban sustainability is the concept of flourishing cities that meet the needs of their inhabitants without compromising the long-term sustainability of the ecosystem. On average, urban people have more opportunity to "advanced living conditions and housing, improved living conditions, and services including education and healthcare" (Development, 2010).

Urban regions have chances to promote sustainable development due to their compactness and localized services (Newman & Jennings, 2012; Rees & Wackernagel, 2012; Wheeler, 2000). The subway system in New York City, for instance, demonstrates how cities may promote sustainable mobility by establishing an extensive and effective public transportation network that lowers vehicle emissions and strives to build a more just society in which everyone has equal access to products and services. Portland, Oregon serves as an excellent case of sustainable land use, with its limit of expansion serving as a reminder of the need to halt the city's unrelenting outward expansion in order to create an effective public transportation system, a robust local economy, and a strong sense of place for its citizens. Cities also benefit from their density, which makes it possible to use resources like water more effectively. In densely populated areas, water is pushed into a considerably smaller area to service inhabitants than in the outskirts, where water is delivered to homes via pipelines spanning many miles. Furthermore, Speir and Stephenson (2002) discovered that delivery costs increased by 30% when a

development's distance from the service center was increased from 0.25 miles to 4 miles. All things considered, metropolitan areas have the potential to significantly impact global sustainability and livability due to their distinctive urban forms, regulations, and other characteristics.

Remarkably, cities now play a significant role in the devaluation and deterioration of human health and well-being, as well as the health and vitality of the nearby natural environment that cities depend on. While huge metropolitan areas offer significant dangers to our planet's long-term sustainability (Development, 2010; Newman & Jennings, 2012; Rees & Wackernagel, 2012; Tanguay, Rajaonson, Lefebvre, & Lanoie, 2010). Urban areas are responsible for more than 70% of carbon emissions worldwide and use between 60% and 80% of global energy, according to the (IEA/OECD, 2008). This is despite the fact that cities only accommodate around half of the global population. The resultant air pollution not only negatively affects human health but also contributes to the phenomenon of global climate change and its associated repercussions. Urban heat islands, which change precipitation, wind, and humidity patterns and cause harmful health impacts from intense heat, are common in cities (Stone Jr & Rodgers, 2001). In addition to having obvious health effects on inhabitants, the absence of clean (Brown, 1995; Greenberg, 1993; Liu, 1997)water and sanitary facilities in many developing country cities (Development, 2010) also draws attention to pervasive social equality concerns.

The high cost of living in urban areas is mostly attributed to limited land availability and dense growth, leading to issues of segregation and inequality. Individuals with lower incomes are sometimes compelled to reside in less favourable (and often less sanitary) areas, such as flats in close proximity to industrial facilities or residences near the nearby waste disposal site (Brown, 1995; Greenberg, 1993; Liu, 1997). In addition, those with low income often have limited availability of essential resources and services, such as dependable transportation, adequate food, and excellent education (Brulle & Pellow, 2006; Moser, 1998).Addressing these problems and reorienting urban areas' future toward more promising possibilities is becoming more and more crucial since these metropolitan regions have the capacity to improve sustainability and livability for their citizens.

Mingora, Swat is the 26th largest city of Pakistan by population (Ullah & Hong, 2023), a country with world's fifth largest population according to the (UNODC, 2023). The city has faced all major threats that a modern city can face (major administrative changes, war, floods, earthquake, migration etc.) and that has had a lasting impact on the growth and development of the city leading to its current status. This research dives deeper into the cause-and-effect phenomenon and palpable solutions that Mingora as a city faces and needs to grow on sustainable terms.

2. Literature Review

In response to this realization, mandates and programs promoting sustainable urban development have emerged globally over the past 20 years. Numerous urban centers are actively working towards enhancing their sustainability, while others have already made significant strides in achieving urban sustainability. For instance, the US Department of Housing and Urban Development (HUD) launched the Sustainable Communities Program in 2010, supporting locally-led partnerships aimed at promoting long-term, sustainable development and reinvestment in US cities. However, the majority of concrete policy changes and initiatives are spearheaded by the individual cities or other autonomous organizations. For instance, the C40 Cities Climate Leadership Group is an international alliance of major cities that have made a commitment to address climate change via individual and collective efforts to decrease greenhouse gas emissions and mitigate climate-related hazards. Several initiatives have been implemented, such as comprehensive bicycle plans in Bogotá, Colombia, and designated car-free days in Seoul, South Korea. The Institute for Transportation and Development Policy is an additional progressive organization that collaborates with cities worldwide to establish sustainable transportation solutions that effectively decrease greenhouse gas emissions, alleviate poverty, and enhance urban life (I. f. D. a. T. Policy, 2023). One of their Buenos Aires projects cleared and widened sidewalks and crosswalks, improved signs, installed bike parking, and planted trees in an effort to increase pedestrian safety at the biggest transportation hub in the city. Even during periods of insufficient national and international efforts towards achieving sustainable and habitable development, these projects demonstrate a dedication to attaining more of a desirable future.

Experts and professionals recommend that the process of planning and making decisions should be guided by visions and visioning processes in order to achieve a city's full potential in the pursuit of sustainability (Costanza, 2000; Newman & Jennings, 2012; Olson, 1995; Swart, Raskin, & Robinson, 2004; Wheeler, 2000; Wiek & Iwaniec, 2014). A city's vision is its ideal future state (Shipley & Newkirk, 1998) and ought to serve as the benchmark for choices about the city's growth and future policies. Newman and Jennings (2012) assert that having a long-term vision is the first step in stimulating good transformation, ultimately resulting in sustainability. According to Costanza (2000) establishing a common vision is the most powerful catalyst for driving change in the intended direction. A compelling vision should mobilize people to take action toward observable, desirable change (Wheeler, 2000) and assist in uniting corporations, governments, communities, and other stakeholders around a shared goal (Newman & Jennings, 2012). To put it briefly, a well-crafted vision ought to serve as a source of inspiration, a "light at the end of the tunnel" that unites a community and guides its members in making choices and doing activities that will ultimately lead to their ideal future.

2.1. The concept of Sustainability and Urban Sustainability

In response to the numerous challenges that humanity is currently confronted with, sustainability has emerged as a critical topic of discussion. Despite the fact that it was a popular topic in the 1970s (Hong, Kweon, Lee, & Kim, 2019), it is not a novel concept. Indigenous cultures have consistently integrated the principles of sustainability into their lifestyles and have always held the earth in high regard, regarding it with a greater degree of reverence than is currently the case (Anoliefo, Isikhuemhen, & Ochiye, 2003; Magni, 2017). The practice of establishing norms during hunting and agriculture to guarantee the survival of stock for future generations is no longer the case (A. J. Echendu, 2019; Heinberg & Lerch, 2010; Mebratu, 1998).

The environmental movement of the 1970s was initiated by the unprecedented environmental pollution and development that brought more attention to environmental problems. Although there are numerous definitions of sustainability (Keivani, 2009), a common understanding is that the current generation must consider the requirements of the future generation when consuming resources for development and protecting and preserving the environment. Sustainability is a development objective that encompasses social, economic, and environmental dimensions. It is imperative that we consider the capacity of future generations to satisfy their own requirements at the same time as we address our own (Brundtland, 1987). Humans are increasingly confronted with the challenge of regulating the heightened pressure on the environment upon which they rely. Pollution, resource depletion, mitigation, and adaptation to climate change are all examples of such (Bank, 2018) pressures (S. f. E. Policy, 2018).

Urban sustainability refers to the concept of living in vibrant cities that improve the quality of life for residents while also guaranteeing the availability of resources for future generations to meet their own requirements (Hamman, 2017). It is the concept that a city can exist and be operated with the least possible ecological footprint and minimal impact on climate change. A sustainable city is defined by its compactness, concentrated mixed-use settlements that maximize efficiency, increased innovation and production capacity, and minimal environmental impact (Bibri & Bibri, 2020; A. Echendu & Georgeou, 2021; La Greca & Martinico, 2018; Turvey, 2019). A sustainable city is defined in the literature as a city that is characterized by a healthy and secure urban environment that allows for the flourishing of both people and nature. This includes affordable housing, safety and security, quality healthcare, education, and employment opportunities, as well as the use of clean energy and a well-functioning public transportation system that includes dedicated cycling paths and active mobility.

A sustainable city is characterized by its focus on well-being, minimal environmental damage, and the preservation of ecosystems. The preservation of environmental and physical assets ensures their availability for future generations, while also enhancing the city's competitiveness in a sustainable manner. Efficient municipal government and management are implemented to carry out urban responsibilities, including opportunities for public involvement (Bank, 2018). Cities, being densely populated areas with many human activities, use substantial resources. However, they also generate a considerable quantity of garbage, which has a major influence on the broader urban environment. Cities provide several opportunities for achieving economies of scale and optimizing the use of natural resources. For example, compact urban settlements consume less energy compared to scattered ones.

Urban sustainability is fundamental to sustainable development in general, and there is a broad consensus among a variety of stakeholders that the design and administration of cities are the key to accomplishing it (Bibri & Bibri, 2020; A. Echendu & Georgeou, 2021; Madu, Kuei, & Lee, 2017; Ochoa, Tan, Qian, Shen, & Moreno, 2018; Zhang & Li, 2018).

In order to move forward towards a future that is environmentally viable, it is crucial that the long-term goals and aspirations be likewise environmentally sustainable. However, what precisely is the concept of sustainability, and what are the defining characteristics of a city that may be considered sustainable? A sustainable city is characterized by the enduring design of social, economic, and physical progress, possesses a long-term supply of natural resources for development, as well as protection against environmental threats that may hinder progress (UNEP, 2000). The Brundtland Report is well recognized and often cited for its sustainability concept, which asserts that growth should satisfy the current demands while safeguarding the capacity of future generations to fulfill their own requirements. (WCED, 1987).

Researchers have suggested that sustainable visions should adhere to normative reference points, such as needs and identity, as presented by Newman & Jennings (2012). Several criteria and principles have been suggested for sustainability, including the need for the integrity of socio-ecological systems and the sufficient and availability of livelihood opportunities, among other factors. (Gibson, 2006). To guarantee that cities advance toward a condition of better social fairness, environmental conservation, and economic stability, visions that take these kinds of sustainability principles and criteria into consideration and adhere to them are necessary. "Business as usual" has resulted in cities beset by problems including weather instability, urban sprawl, and homelessness.

We cannot afford to continue on this path, and cities must reform their planning and decision-making processes to build more livable and sustainable communities. In order to inspire sustainable urban development and behaviors, it is necessary to complete visioning methods that have a clear emphasis on sustainability. Visions are powerful instruments for inspiring and achieving positive change.

2.2. Criteria for Urban Sustainability

To conduct a sustainability assessment, it is imperative to establish a set of sustainability criteria that will serve as the basis for the evaluation. A diverse range of scholarly works, dispersed across numerous journals, comprises research that delineates attributes of sustainability pertaining to every aspect of urban existence. An instance of collaborative effort among the HUD, the Environmental Protection Agency (EPA), and the US Department of Transportation (DOT) is the livability principles, which delineate six tenets of sustainable development that inform federal policies and decision-making in the United States regarding land use, transportation, housing, and community development. In a similar way, Gibson's (2006) establishment of the fundamental, generic criteria for sustainability is an additional instance of seminal research in delineating what constitutes sustainability with regard to various environmental characteristics.

The basic principles were used to establish a set of sustainability goals that would precisely describe the sustainable condition against which future visions could be assessed, in addition to a variety of additional sources that were based on expert opinions and vetted by peers. (Duany, Speck, & Lydon, 2010; Hack, Birch, & Sedway, 2008; Luederitz, Lang, & Von Wehrden, 2013; Programme, 2009). Illustration of this iterative procedure for the housing objectives here. According to Hack, Birch & Sedway (2008), "affordable, well-located, and energy-efficient housing" should be a feature of sustainable housing. Sustainability is emphasized by International Council for Local Environmental Initiatives (ICLEI) by "encouraging historic resource usage and preservation to preserve and enhance community character and conserve material resources". As part of sustainable and smart growth initiatives, the EPA promotes " Compact, environmentally-friendly dwelling with many transportation alternatives." (EPA, 2012). These three claims were combined to create the principle of "efficient resource utilization" in sustainable housing, which is defined as "limiting unit size, using energy and water efficient appliances, choosing green, local materials and means of construction, and preserving and reusing old buildings."

This approach was subsequently further developed during a final cycle, resulting in two of the housing objectives listed in Table 1: Conserve natural resources in houses while preserving significant cultural and historical identity. This procedure was completed for five key sectors of urban development that will be crucial in the future: Land use, housing, mobility, economic development and health and green systems. List of 3-12 objectives compiled for each planning element, all of which were cited as necessary to meet that aspect's sustainability.

Table 1: Combined set of criteria

Land Use	Housing	Mobility
Make sure the area offers all necessary services.	Provide enough living choices to meet demand.	Safe mobility
Promote lively neighbourhoods and strong community links.	Provide enough good homes and work to make sure that housing conditions are healthy.	Diverse mobility
Reduce transportation and infrastructure costs	Conserve natural resources in homes.	Affordable mobility
Eliminate health hazards associated with contaminated land	Keep important historical and cultural traits.	Time-efficient mobility
Mitigate the negative health impacts caused by traffic or public infrastructure such as roads, canals, and utilities.		Clean mobility
Make sure there is enough open space.		Foster walkable and bikeable neighborhoods Avoid congestion
Economic Development	Health and Green Systems	
Economic Development	Health and Green Systems	
Access to a wide range of job and training options	Equitable access to healthy food	
Promoting economic strength via robust, community-based economies	Access to recreation	
The economy affords all citizens the opportunity to attain a satisfactory level of life.	Abundant shade	
	Social network and morality	
	Public place safety	
	Experience superior environmental quality	
	Social network accessibility	
	Affordable access to preventive and therapeutic medical care	
	Reduce storm water loads and harvest water on-site	
	Reduce potable water consumption	
	Reduce daytime Temperatures	
	Improve the health, movement, and ecological benefits of green systems for people and the economy.	

This collection of aims is wide, encompassing both clearly quantifiable and measurable principles (guaranteed housing affordability) and more abstract and difficult-to-quantify ideas (fostering strong community links and thriving communities). However, it is critical to consider all aspects of sustainability for each of these categories, such as environmental, financial, and social sustainability. These objectives serve as the foundation for our visioning process and the cornerstone of our evaluation approach.

3. Methodology

Research Methodology Proposed consultations, interviews, questions to answers amongst Locals & Professionals, Surveys (on site), Literature Review, and investigation of Master planning of the city and Analysis on Google images. Steps involved in the analysis of research methodology are:

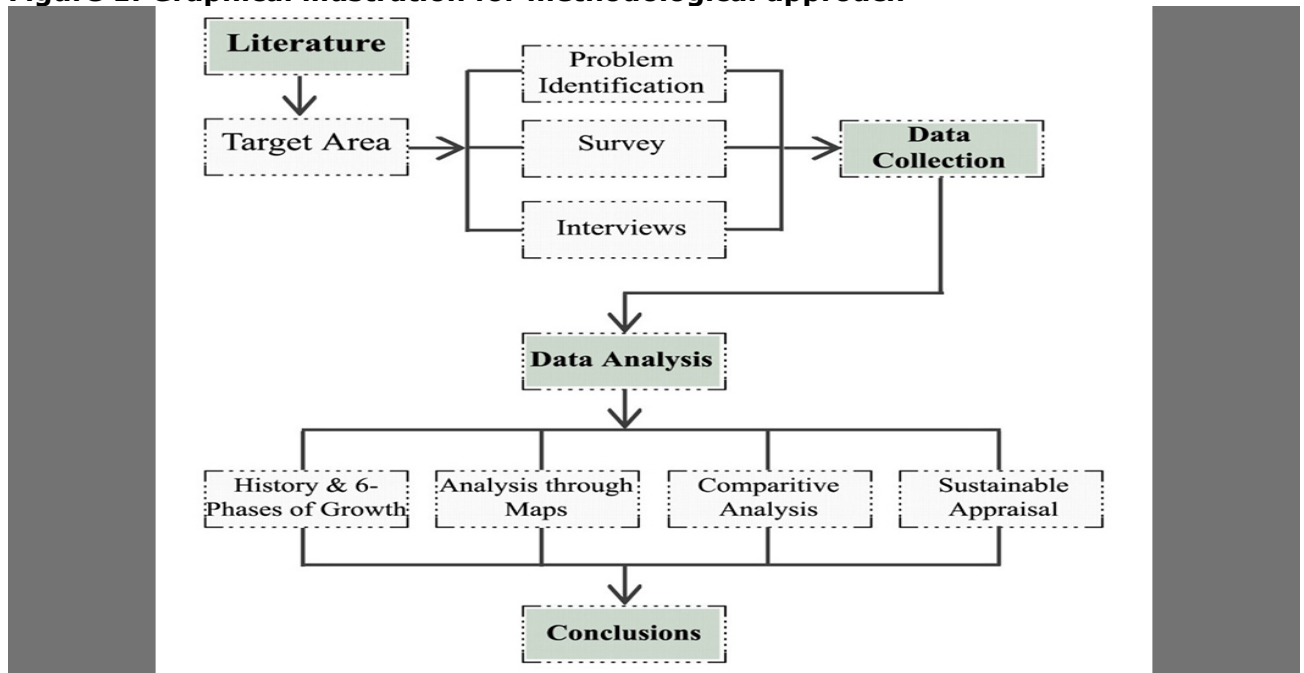
Step 1: The research collects data and information on the history and development of Mingora City, to establish context and understanding of the fringe growth patterns and its aspects of transportation, housing, household sizes, and land use. This data collection is done through use of Google earth/maps.

Step 2: The collected data is viewed in retrospect of literature review, and maps/images are analyzed to show aspects of study in terms of urban growth, housing issues and transportation through visual drawings.

Step 3: Based on the analyzed data, varying propositions and possibilities for improvement in the aspects of housing, transport and growth are considered.

Step 4: A devised sustainable appraisal is finalized and proposed for the development of Mingora city in conclusion on the previous steps.

Figure 1: Graphical illustration for methodological approach



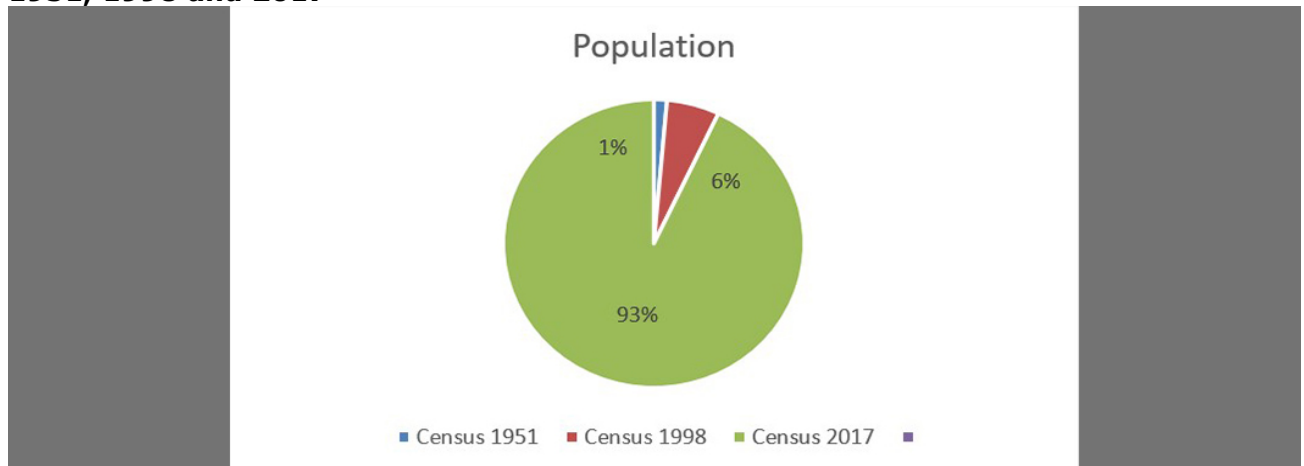
4. Data and Analysis

4.1. Land use and Spatial Growth in Mingora

4.1.1. Population and Expansion of the City

Population of Mingora has increased nearly four and a half time since 1951 as compared to 1998. As the Population of the town was 5050 as per 1951 census as it increased up to 20295 according to 1998 Census. the House Hold Size was 8.8 according to 1998 census, total population of the town was 20295 and no of housing unit was 2,306, so the overall growth rate of the town as well as the district was 3.40% according to 1998 Census. latest census in Pakistan took place in 2017. Where, Mingora city was ranked 26th in the country by population with increased, with a total of 333,091 residents (Ullah & Hong, 2023).

Figure 2: Graphical presentation chart of the population growth difference between, 1951, 1998 and 2017



4.1.2. Analysis of the phases of expansion in Mingora

The Categories of Fringe growth is established with reference to different phases and time periods of its historical context, where the urbanization in Mingora occurred. Six Phases of fringe growth are:

Table 2: Six divisions represent the evolution of growth in the city

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Before 1969 Swat was independent state & Saidu Sharif was the capital.	1969 to 1981.	1981 to 1988 institutional anarchy.	1988 to 1998 land covered with buildings, peak of expansion.	1998 to 2010 faced severe challenges due to the Swat war conflict	2010 to 2022 reconstructed era due to manmade conflicts i-e Swat War and Natural disasters i-e 2005 earthquake flood 2010 & 2022.

Phase 1, Swat's independent statehood, Butkada, now Saidu Sharif, housed a thriving residential community. However, a rat invasion in the early 19th century triggered a mass migration.

Phase 2, spanning Swat's integration into Pakistan in 1969 until the 1981 census, brought significant administrative and institutional changes. This era witnessed the expansion of commerce along main roads, with housing developments sprouting to the east and west.

Phase 3, from 1981 to 1988, marked a turbulent period of institutional upheaval, transforming Mingora into an educational hub amidst administrative turmoil. this phase saw extensive physical growth, expanding northward to Janbil Khwar and Mingora city, southward to Shagai village, westward to the banks of Marghazar Khwar, and eastward towards the Ilum mountainous range.

Phase 4, 1988 to 1998, marked the region's crisis as urbanization surged, leading to a peak in expansion. A period of profound changes in physical growth and institutional structures.

Phase 5, between 1998 and 2010, faced severe challenges due to the Swat war conflict and Talibanization from 2007 to 2012. Natural disasters like floods halted expansion and new constructions, causing heavy destruction and mass migration, turning inhabitants into IDPs.

Phase 6: 2010 to 2022 reconstructed era due to manmade conflicts i-e Swat War and Natural disasters i-e 2005 earthquake, flood 2010 & 2022.

4.1.3. Evaluation of fringe growth in Mingora in present scenario

Figure 3

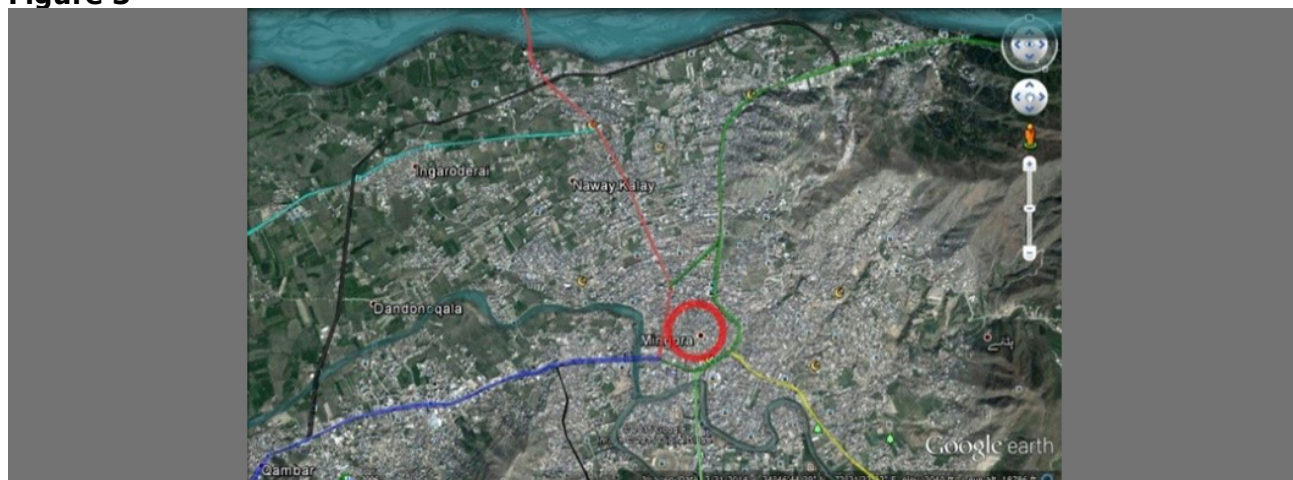


Figure 3. Highlighting Route maps its connection with city, other tehsils having the Janbil and Marghazar khwar and especially the Qambar bypass in black in north-west of the city after reconstruction.

Figure 4

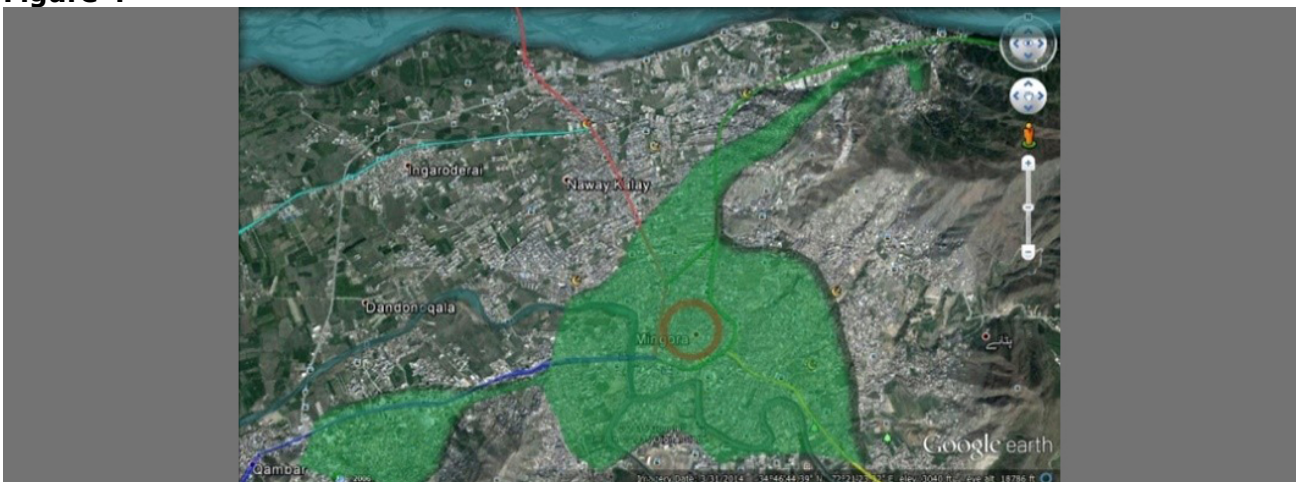


Figure 4. Highlighting City Center in red circle and old city its patterns in green

Figure 5

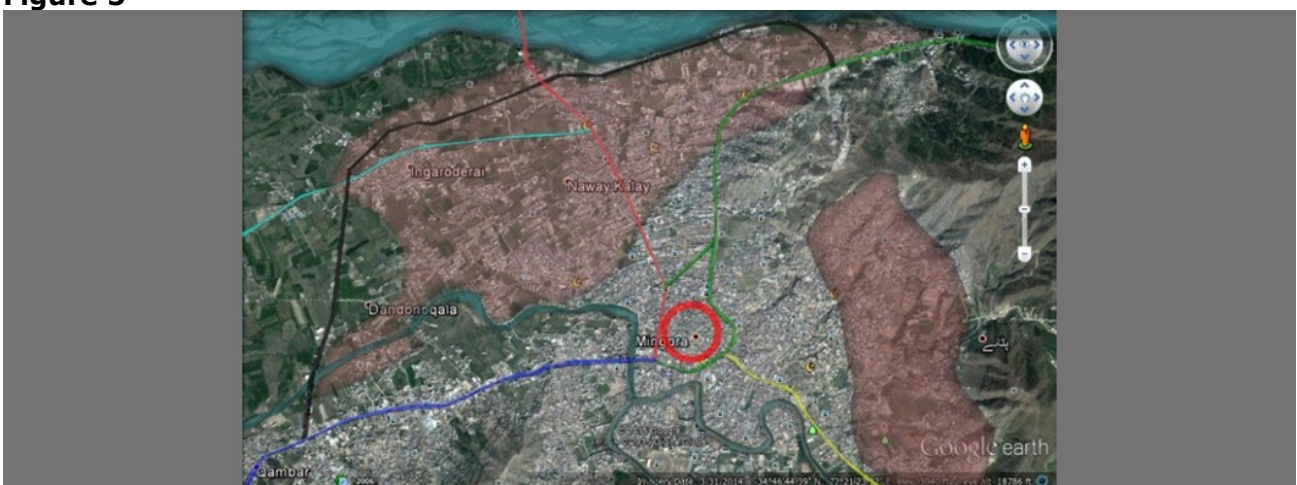


Figure 5. Highlighting City Center in red circle and the expansion towards north-west and south-east.

Figure 6

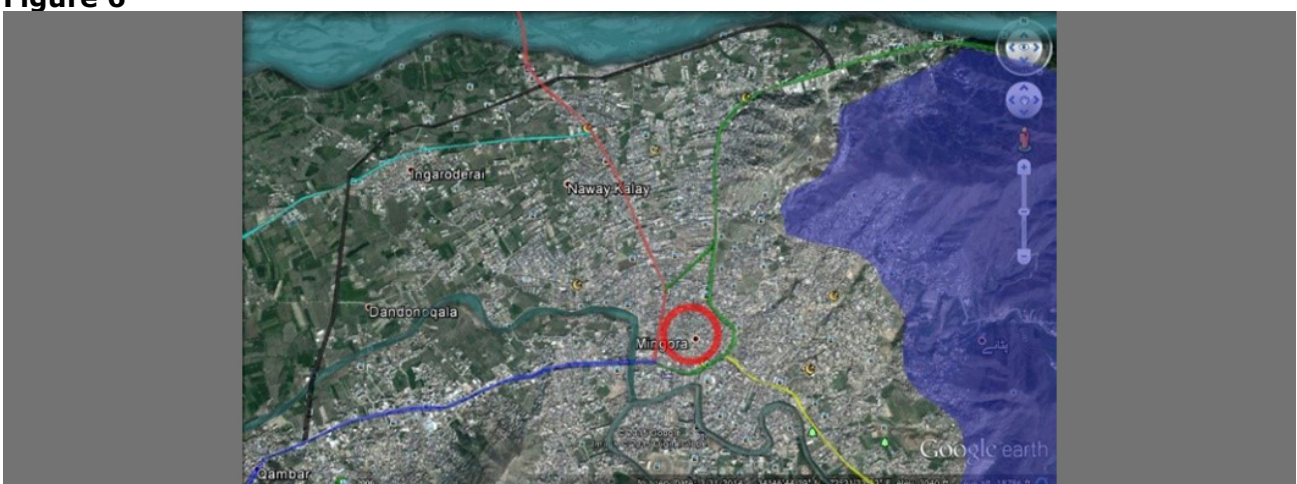


Figure 6. Highlighting City Center in red circle and the Elum mountainous range in blue.

Figure 7

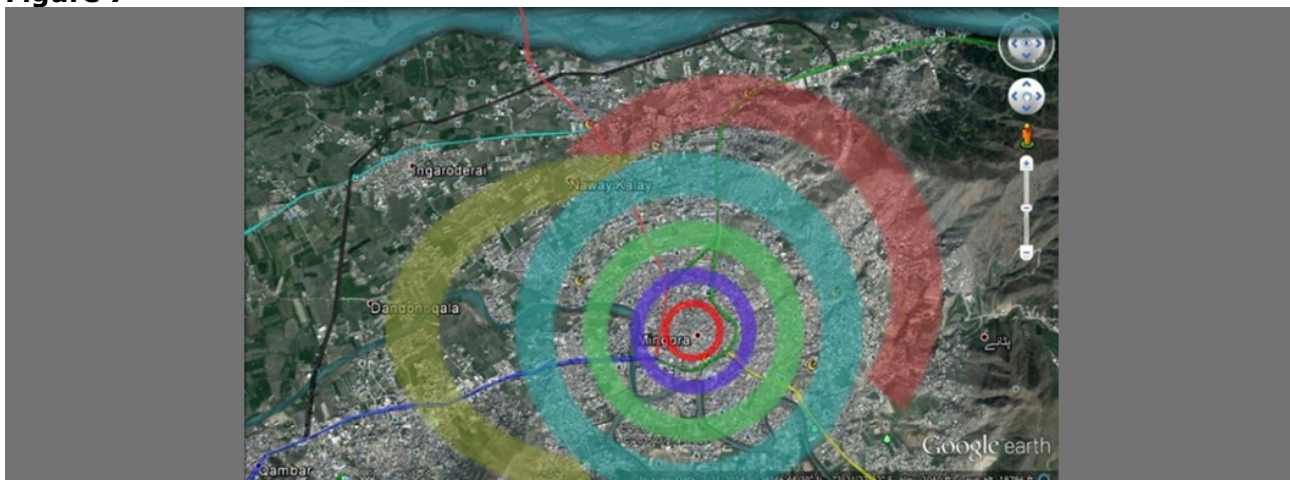


Figure 7. City center in red, Expansion of city in phase 1 in blue through 360-degree, Phase 2 Expansion in green all around, Phase 3 expansion in sky blue all around, Phase 4 Expansion in red towards Elum range and Fizaghat, Phase 5 Expansion in yellow towards West-Bypass.

4.2. Housing Situation

According to 1998 Census, the number of housing units in Swat was 142,000, with 76.28% of these being owned, 13.1% rented, and 10.20% being rent-free houses. On average, there were 9.1 persons residing in each housing unit in urban areas, and 8.8 persons within rural regions. 22.36% of houses were single roomed, 68.01% had 2-4 rooms and 9.62% had five or more rooms. The present (2007-2008) estimate for the Swat district only is 198,000 houses. Informal housing development presently occurring in agricultural land nearly on the bank of Marghazar Khwar on the west without concerning the details of infrastructure which are necessary to make housing as efficient as possible.

A rising population exerts pressure on urban areas, leading to increased spatial expansion to accommodate housing, infrastructure, and services for the growing populace. Latest census in Pakistan took place in 2017. Where Mingora city was ranked 26th in the country by population with a huge increase, with a total of 333,091 residents, inhabitants migrated from rural areas to the urban area can significantly impact spatial growth trends.

While in the case of Mingora about 17% of the house hold in the city consists of migrants of whom 6% are from the outskirts of Mingora city and other towns of the district, where 10% or from near districts and other part of the country and most of them are from the Afghanistan, where about 62% of the migrants settled in the city after 1980's, the settlements and house typologies have three types i-e: pucca, semi-pucca and kacha located in the main city or in hill side the south east of the town. The population of the city has increased from 20,000 to 50,000 as estimated in 2002, which shows an absolute increase.

4.3. Mobility & Transportation

Approach to the town is easy through main 60 feet wide Mingora GT Road, which can easily connect Mardan, Peshawar and Islamabad, one of the provincial Swat express way is connecting the big cities to Mingora till Chakdara interchange and soon phase two will connect Mingora directly to other part of the country. Main city of Mingora is connected with other towns and tehsil through single roads, but due to availability of non-custom paid vehicles one can see rush and traffic congestion in and around the city.

Figure 8: Highlighting transportation/patterns, Road network (White), major buildings and squares of the Mingora



Most of the public, educational, hospital buildings and amenities services like Jehnazeb college, Saidu Central hospital, Saidu group of teaching hospital, Swat Serena hotel, Swat Museum and Saidu medical college are located on the main Mingora-Saidu road along with Grassy ground and district high court.

Figure 9



Figure 10



Figure 11



Figure 12



Figure 9,10,11 and 12. Main educational and public buildings serve the inhabitants of the district and city, Government Postgraduate Jehanzeb College, White Palace, Wadudia Hall and Swat Serena Hotel

Figure 13

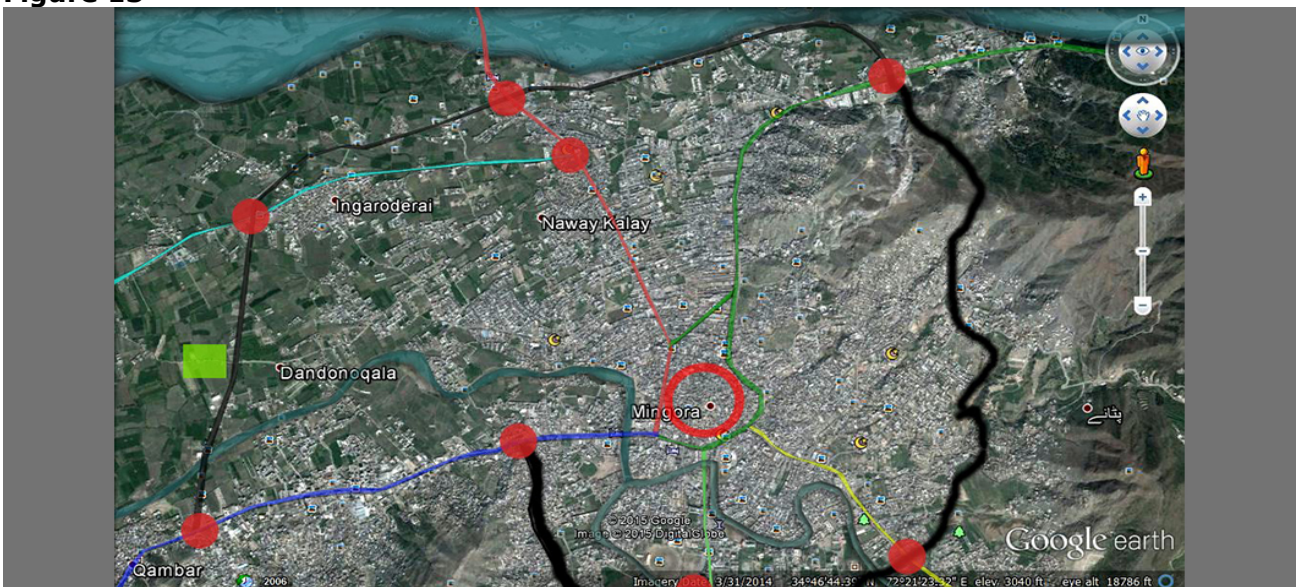


Figure 13. Proposed bypass road all around the city on 360-degree angle, different junctions in red spots connecting all other tehsils /towns of Swat.

4.4. Health and Green Systems

Sustainability of a city could be in terms of material flows within the city.

1. Maximization of the percentage of reused and recycled material in cities.
2. Minimization of pollution and waste discharged from cities into nature.

Four resources that could be conserved within the city: Energy, Water, Material and solid waste (Lehmann, 2011).

The city faces environmental, social, and infrastructural threats, resembling a man-made disaster. Changes in climate, like extreme snowfall in 2013 and recent harsh summers, link to the city's growth, fringe expansion, and pollution from industrial waste, impacting water sources.

Its growth relates to issues like dengue outbreaks and pollution of once-pure water streams like Janbil and Marghazar. Before 2006, a detailed study delved into the city's atmosphere, climatology, transportation, and architectural styles. Swati wooden architecture, combining dajji and state, emerged in the northern belt, shaping the city's unique architectural identity.

The region's identity was shaped by stone, mud, lime, and wood in a style that was eco-friendly and harmonious for society. However, natural calamities like the 2005 earthquake, the Swati war conflict (2007–2012), and the devastating 2010 and 2022 floods obliterated the Swati architecture, causing social, economic, and infrastructural turmoil, setting a research benchmark. Post-2009, reconstruction commenced with locals engaging in informal planning and construction, deviating drastically from Swati architecture. This shift led to a new, unsustainable skyline, congested transportation, and a lack of waste management, epitomizing an era of destruction coined as the reconstruction era.

This study focused on analyzing the threats and proposing solutions for the city's upkeep. Recommendations included a bypass road encircling the city to reduce traffic congestion and proper legislative measures for urban development. Urging the use of traditional materials and techniques, progress was made in appointing district architects to oversee building plans and approvals in 2020. Implementing solid waste management systems was also highlighted as a crucial step for the city's future sustainability. For an expanded city, prioritizing recreational spaces, parks, and a sustainable transport system over numerous autorickshaws is crucial. A controlled traffic system should manage pedestrian and vehicular movement effectively.

4.5. Economic Factors

Economic factors and its activities of the city which directly belongs to industrial business, employment opportunities to accommodate work force and utilization of human resources skills van enhance to improve and play a vital role in terms of financial and economic factors of the city (Mahamud, Samat, & Noor, 2016).

In terms of infrastructural development of the city it needs to improve its transportation system along with providing the basic utilities and accessibility to these services in terms of highways, road networks, by pass roads and movement inside city, while looking at the growth of the city provision to utilities like water, power, sanitation, health care and public services impacts the spatial distribution.

5. Conclusion

Cities form a basic unit of living and set the living quality standard for the populous in our globalized world. It is of paramount importance that the existing cities develop or be transformed into one on sustainable pattern for its current inhabitants and keeping in view the future use case which ever growing urban population and fabric. For Pakistan only about 36% of the population is already settled in urban centers with a rapid growth ongoing while worldwide the figure reaches up to 56 percent. Hence the goal of sustainability for urban growth is essential.

The case of Mingora swat is a prime example of the challenges faced by cities in Pakistan and globally in terms of its growth and this study evaluated the factors based on the set criteria that contribute to the case. Keeping in view the diverse challenges that the city has faced including administrative changes, natural hazards like floods and earthquake, war conflict and migration, the urban fabric faces a steep curve on all fronts of sustainable development.

Unplanned growth of urban fabric and expansion with rapid increase in housing but not ample expansion of mobility infrastructure and services has let the city center and commercial hub overcrowded with acute access and rush issues. While being forefront of tourist inflow as well not only itself but also as a gateway, the city faces environmental threats and is up for severe impact of climate change with floods being a primary example. Beside this, the human resource and economic development are facing a grim outlook due to unsustainable development as well.

5.1. Future Work

Future work should involve developing a comprehensive master plan for the city which should cater to the key issues discussed in the paper and prioritize the main areas for sustainable appraisal and resolution.

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